Conference Proceedings

COOPERATION CHALLENGES AFTER THE EU ACCESSION OF CROATIA

April 23, 2015, Opatija, Croatia

Slovensko društvo za raziskovanje evropskih integracij
European Communities Studies Association of Slovenia

Edited by:

Andrej Kumar
Chair Jean Monnet, ECSA Slovenia
Katja Zajc Kejžar
University of Ljubljana, Faculty of Economics

Publisher: ECSA Slovenia
URL: http://konference.ef.uni-lj.si/ecsa/publications/

Ljubljana, September 2015

Co-funded by the Lifelong Learning programme of the European Union

CIP - Kataložni zapis o publikaciji
Narodna in univerzitetna knjižnica, Ljubljana

339.94(497.5)(0.034.2)

COOPERATION challenges after the EU accession of Croatia [Elektronski vir] : conference proceedings, April 23, 2015, Opatija, Croatia / edited by Andrej Kumar, Katja Zajc Kejžar. - El. knjiga. - Ljubljana : ECSA Slovenia, 2015

ISBN 978-961-281-965-1 (pdf)
1. Kumar, Andrej
281112320

Program Committee

Vinko Kandžija
University of Rijeka, Faculty of Economics, Croatia
Andrej Kumar
Chair Jean Monnet, ECSA Slovenia
Katja Zajc Kejžar
University of Ljubljana, Faculty of Economics

Organizing Committee

Marko Tomljanović
University of Rijeka, Faculty of Economics
Tadeja Žabkar
University of Ljubljana, Faculty of Economics
Dejan Guduraš
University of Ljubljana, Faculty of Economics

Reviewers

Andrej Kumar
Chair Jean Monnet, ECSA Slovenia
Katja Zajc Kejžar
University of Ljubljana, Faculty of Economics
Sonja Šlander Wostner
University of Ljubljana, Faculty of Economics

Slovensko društvo za raziskovanje evropskih integracij
European Communities Studies Association of Slovenia

Lifelong Learning Programme

CONTENTS

Preface

After the accession of Croatia to the EU in July 2013 new opportunities have been created for more active co-operation among researchers, institutions and firms from Slovenia and Croatia and as well from other Western Balkan and EU countries. As part of its Jean Monnet project ECSA Slovenia organized the international conference on **Cooperation challenges after the EU accession of Croatia**, on April 23, 2015 in Opatija, Croatia. With the goal of promoting further cooperation in the field of research, institutions and business the conference aimed at (i) evaluating economic, political, legal and other implications of the Croatian accession to the EU, (ii) identifying changes in business environment for Croatian firms after joining the EU internal market and (iii) facilitating the transfer of experience of "older" EU member states to the to the Croatian academic, institutional and business community.

This volume presents the proceedings of this conference with nine peer reviewed papers and notes on the opening lecture by ECSA Slovenia President, Professor *Andrej Kumar* on EU trade strategy and the Balkans. Papers in this volume address the impacts, challenges and opportunities for the cooperation among Croatia, other EU member states and countries of Western Balkan region in the context of the European integration processes. They have been divided into three sections.

Papers in the first section deal with different aspects of pre-accession economic development of Croatia and the early evidence on the impacts of the Croatian membership in the EU. The section starts with the industry perspective where *Golob, Golob and Kandžija* analyse the development of the Croatian insurance market after the EU accession. The paper finds that real liberalisation only started in 2013 after the EU accession and resulted in increased competition pressure, leading to, among others, overall decline of gross written premiums. *Botrić* estimates the wage equation for Croatian manufacturing sector in the 10 year period and confirms the industry-specific wage premiums pointing towards rigidities in labour market and low inter-sectorial labour mobility. While *Zaninović and Zajc Kejžar* analyse trade patterns of Croatia in the recent decade and decompose them into intensive and extensive margins. The gravity model results show that Stabilization and Association Agreement and the introduction of the diagonal cumulation of rules of origin significantly affect intensive export margin (average firm exports across industry divisions), specially exports of consumption goods, while the global trade collapse affected negatively both intensive and extensive trade margin (number of firms and as well average firm exports).

The second group of papers review and evaluate experiences of selected EU member states in different policy areas. *Dušek and Pána* compare approaches to the projects based on partnership between private and public sector (PPP) on various levels (state, regional, municipalities) between Czech Republic and Austria with the suggestion to improve practises in such projects. A series of three papers provides lessons related to the EU cohesion policy. *Dušek* identifies problematic aspects of the use of structural funds in the programme period 2007/2013, while *Kumar and Šlander Wostner* expose the importance of the absorption capacity for successful use of the EU cohesion funds for the regional and national economic growth improvements. *Šlander Wostner, Gonza and Zajc Kejžar* focus on the Slovenian experiences with triangulation-based Cohesion policy evaluation process. Further,

Dautović, Orszaghova and Schudel assesse real, nominal and institutional determinants of intra-industry trade between EU 15 and new EU member states, EU candidates and potential candidates showing that even though determinants for new EU member states deviate considerably from those of candidate and potential candidate countries, there exist common factors promoting intra-industry trade across the CESEE region, such as the corporate tax competitiveness, the flexibility of exchange rate regimes and lower levels of corruption.

The third section addresses the challenges of other WBCs in the process of European integration. *Topić-Pavković* analyses expected fiscal and monetary implications of joining the monetary union for BiH and discusses necessary reforms before entering the E(M)U. She suggests that a rational solution for BiH, after joining the EU, would be gradual process of monetary integration with stable monetary policy, effective management of public finances and careful management of public debt.

This conference would not have been possible without the support and assistance of the University of Rijeka, Faculty of Economics, especially professor Vinko Kandžija and his group of researchers. We would also like to thank Sonja Šlander Wostner for her help in referring the papers. We are very grateful to Dejan Guduraš and Tadeja Žabkar for editorial assistance.

We hope these proceedings bring important and useful new insights, evidence and policy implications needed to foster future cooperation among the countries in this region and their economic success within the context of European integration processes.

Andrej KUMAR
Katja ZAJC KEJŽAR

OPENING LECTURE

EU TRADE STRATEGY AND THE BALKANS

International conference Opatija, April 2015
ECSA Slovenia; ***„COOPERATION CHALLENGES AFTER THE EU ACCESSION OF CROATIA“***

EU TRADE STRATEGY AND THE BALKANS

Prof. dr. Andrej Kumar

Chair Jean Monnet

The discussion TOPICS

• The discussion conceptually connects two issues:

- **The First Issue**; The perspectives of the Western Balkan States (WBSs) to successfully conclude the accession process to the EU soon.
- **The second issue**; The characteristics of the EU Trade Strategy and Policy and its recent specifics,

Both issues together create the following **QUESTION**:

Does the contemporary EU‘s Trade Strategy reduces the actual dynamics and perspectives of the WBSs to successfully realize the EU accession process soon?

The structure of the presentation

A. **WBSs specifics and relations with the EU;** WBSs changing membership, the EU attitude towards WBSs accession, the accession process, WBSs‘ challenges and obstacles.

B. **EU Trade Strategy concepts and orientation;** Europe 2020, general EU Trade Strategy orientation, Strategy implementation and its contemporary focus, the EU trade interests towards WBCs.

C. Evaluating the impacts of the EU Trade Strategy on the WBSs accession perspectives.

The EU and its relations with the WBSs

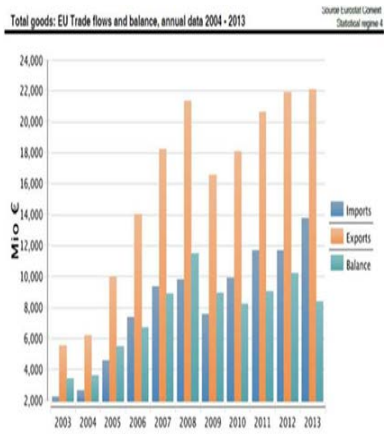
- The EU declared its **willingness and determination** in accepting all states of the Balkan region into the EU. Such EU determination was expressed in the EU-Western Balkans Summit Declaration (http://europa.eu/rapid/press- release_PRES-03-163_en.htm) agreed in **Thessaloniki on June 21, 2003**.
- The Thessaloniki Declaration was based on decision taken by the European Council “recalling its conclusions from Copenhagen (December 2002) and Brussels (March 2003), repeated its determination to fully and effectively support **the European perspective** of the Western Balkan Countries, which will become an integral part of the EU, **once they meet the established criteria.**

Who are the WBSs in 2015?

- When in 2003 Thessaloniki Declaration was accepted none of the states from the Balkans was part of the EU.
- The region got **its geographic name** from the **Balkan mountains**. **Balkan Peninsula** is another name for this region of the **South East Europe** (see: http://en.wikipedia.org/wiki/Balkans)
- **The combination of geographic and political aspects created the EU used regional name.** In 1999 the EU initiative was called the **Stability Pact for South Eastern Europe**. The EU defined the "Western Balkans" as the **south-east European area that include states not being the EU members yet**.
- **Croatia** as the 2013 EU member **isn't any more the WB state**. **In 2015 the WBSs are** by the EU definition; **Serbia, B&H, Montenegro, Macedonia, Albania and Kosovo**.

The EU Trade with WBSs*; 2003-2013

- **EEC/EU** member states' trade has always been the major driving force for their improved economic growth and for new jobs creation. WBSs accession to the EU is similarly **DEPENDING** on the trade growth potential.
- EU trade with WBSs has been growing **but is not large** – only 1%** of the EU external trade in 2014.
- After 2013 the WBSs trade potential for the EU was further **reduced when Croatia joined the EU.**



* in 2013 the data still include Croatia
* * see: http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_122530.pdf

WBSs‘ trade potential and interests to join EU

- **Only Serbia has some, although small, potential for larger trade with EU.** For the EU Albania, B&H, and Macedonia present highly limited trade potentials. Kosovo and Montenegro are even not „visible“ EU trade partners. Further
- **Serbia might have reservations to speed up EU accession** considering presently growing positive impacts of its trade agreement **with Russia**.
- All WBSs might have similarly certain reservations to join realizing that by accession they will lose FTA **or other arrangements‘ advantages** that **they presently have with non EU states**.

Client and Supplier Countries of the EU28 in Merchandise Trade (value %) (2014, excluding intra-EU trade

WBSs	Value of EU total trade (%)	Value of EU M (%)	Value of EU X (%)
Serbia	0.5	0.4	0.6
FYR Macedonia	0.2	0.2	0.2
B&H	0.2	0.2	0.3
Albania	0.1	0.1	0.1
Montenegro	0.0	0.0	0.1
Kosovo	0.0	0.0	0.0
	1.0	0.9	1.3

Source: Author‘s calculation from; http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_122530.pdf

WBSs‘ trade shares with CEFTA partners as % of total trade in 2013;

http://www.unwe.bg/uploads/Alternatives/9_Moraliyska.pdf

	Share of exports to CEFTA as % of total exports	Share of imports from CEFTA as % of total imports
Albania	11	7
Bosnia and Herzegovina	16	11
Kosovo	36	28
Macedonia	17	10
Serbia	21	5
Montenegro	43	47

- For WBSs trade with CEFTA is **rather substantial**. Data not include Serbia trade with Russia or other trade of the WBSs with other preferential partners.

The EU and Global Trade

- In 2015 the European Union (EU) seen as a SINGLE ENTITY **is still the largest player in global trade and investments.**
- As economic, and even more complex **integration of 28 states**, the EU's impact on global trade and investments is **realized through** the economic **size and specifics of each EU member state**, and by their **ability to create** and implement **common external trade policy.**
- **TRADE POLICY IS A CORE COMPONENT OF THE EU'S 2020 STRATEGY(see;COM(2010)612)**

EU Trade Strategy orientation & specifics

- The EU' **general development strategy** „Europe 2020" is based on the triple objectives;

  - smart,

  - inclusive and

  - sustainable growth of all EU member states.

- The **external** dimension of the „Europe 2020" strategy specify how **trade** and **investment policies** should **support** the three Strategy's objectives **realization**.
- **The EU Trade Strategy sets the economic framework of the EU interests** towards the WBSs accession process.

Why Trade is so vital for the EU development strategy realization?

- **The theory suggests**; more trade creates additional economic growth, more jobs, better standard of living and better market choices. **The dilemma is whether that is always true? The trade growth combined with national growth into the misery is one of such potential problems.**
- **The entire EU history** is about **enhancing trade growth. First among the member states**; starting from customs union to the internal market and economic and monetary union. The **internal trade growth concept is continuously implemented** by the EU **enlargement** and **deepening** processes.
- From 1968 the **EU common Trade Policy** has been focused on **increasing EXTERNAL trade based on market opening with required reciprocity**. In the specific cases - G 77, ACP countries, or to be potential EU member countries - **the EU** market opening could be **asymmetric** in time or in functional specifics.

The EU external trade some facts

- The EU estimated (COM(2010)612) that about **90 % of world economic growth will be generated outside Europe** already in 2015 and after, with one third from China alone.
- In the years to come the EU intend to seize the opportunity of higher levels of economic growth abroad, **especially in East and South Asia**.
- The EU envisage (COM(2010)612) that the developing and emerging states are likely to account close **to 60 % of world GDP by 2030**, compared to less than 50 % today.

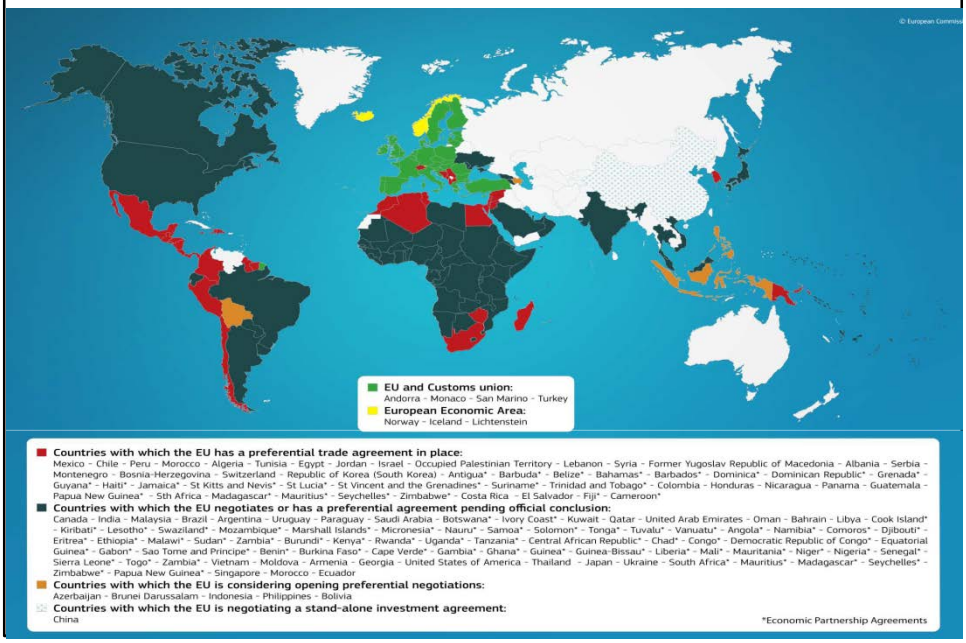
EU trade expansion to the third markets

http://trade.ec.europa.eu/doclib/docs/2012/november/tradoc_150129.pdf

- **The key priority for the Eu is to open up more market opportunities for European business** by negotiating new FTAs or other agreements with **the key countries**. If EU complete all its current free trade talks tomorrow, (see next slide) it could add 2.2% to the EU's GDP or €275 billion. This is equivalent of adding a country as big as Austria or Denmark to the EU economy.
- **In terms of employment**, these agreements could generate 2.2 million new jobs or additional 1 % of the EU total workforce. At present 14% of EU workforce directly depend on trade with the third countries.
- **Realistically the new jobs vreated by the EU oppening UNFORTUNATELY will not be evenly distributed among the all 28 EU member states.**

EU‘s future FTAs and expected – 2014

http://trade.ec.europa.eu/doclib/docs/2012/june/tradoc_149622.jpg



EU external Trade Strategy and the WBSs

- The WBSs are included into the EU external trade strategy based on **asymmetric trade openning** defined by **the Stabilization Association Partnership** agreements **(http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=URISERV:r18008&rid=1** and **http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:r18003)**

- The present focus of the EU external trade strategy on negotiating different global FTAs including among others the one with USA (TTIP), and Canada (CETA), **reduces the ability and interest of the EU to create new and enhancing trade and investment opportunities for the WBSs.**

EU and WBSs‘ accession future

- **Based on EU Trade Strategy** (see; http://eur-lex.europa.eu/summary/chapter/external_trade.html?root_default=SUM_1_CODED=07), the **WBSs are not in the main focus of the EU Trade Strategy, neither they are among the top strategic development goals of the EU up to 2020,**

- **Such facts limit the EU future WBSs‘ support for faster realization of the market efficiency and of the other accession criteria requirements.**

- **The WBSs accession to the EU, based on the EU strategic trade orientation, is in fact moved into the foggy distant future.**

Concluding remarks

- **At present the EU doesn't shows any specific eagerness to enlarge towards the WBSs.**
- **The limited EU enlargement interest towards the WBSs is caused by the EU‘s Foreign trade strategy orientation and by WBSs‘ limited trade potential.**
- **EU Trade strategy is focused on East and South Asia and USA with Canada. The WBSs are not an evident part of the EU trade strategy.**
- **Among the WBSs are substantial objective differences and in some cases eventual national political or economic reservations towards their interests and abilities to join the EU by fulfilling the accession criteria.**

Concluding remarks (2)

- WBSs have different reasons for slow realization of the accession process. The WBSs limitations are:

- **Internal difficulties** to speed up the fulfilling of the accession criteria - case of B&H,
- **The limits in overcoming the external** obstacles to proceed with negotiations - case of FYR Macedonia,
- **Specific internal and external impacts -** case of **Serbia,**
- **Limited economic potential relative to the EU –** case of Montenegro
- **Not entire EU confirmed national sovereignty –** case of Kosovo

- The EU economic and political tensions with Russia lead to the new challenges for Serbia on the bases of the Serbia-Russia customs union treaty. Similarly Montenegro is strongly influenced by Russia FDI flows.

Concluding remarks (3)

- WBSs general dilemma is about the actual content and type of the EU fictional framework that they will join in the future. The varies are enhanced by the size and dynamic of changes in the EU external trade environment that will occur before their membership. WBs are not part of the ongoing EU external trade environment change but will have to join and accept all impacts of its enlarged trade openness.

- The EU trade strategy to open its market to Worldwide competition, creates potential dangers for WBSs . As transitional states, with limited economic support from the EU, they might enter the EU with low level of economic ability to resist the **increased global competition** on **national markets**

- The experiences gained after the past EU enlargements by the transitional countries (from 2004 to today 11 of 28 members) are at least partially documenting different negative national economic impacts created after entering the strongly open EU market.

- When the WBSs will join the EU its global market openness **will be much higher and more complex as it is in 2015**. That expectedly leads to substantially larger development problems for the new EU members states from the WB region in the future.

SECTION I

IMPLICATIONS OF EUROPEAN INTEGRATION FOR CROATIA: PRE-ACCESSION EVIDENCE AND EARLY MEMBERSHIP EXPERIENCES

Marino Golob
Colegium Fluminense Polytechnic of Rijeka, Rijeka, Croatia
Martin Golob
Mara Mara d.o.o., Pazin, Croatia
Tomislav Kandžija
Primorsko–goranska County, Rijeka, Croatia

CROATIAN INSURANCE MARKET OVERVIEW AFTER EU ACCESSION

ABSTRACT

The aim of this paper is to examine Croatian insurance market after The Republic of Croatia EU accession in July of 2013. Insurance has evolved as a process of safeguarding the interest of people from uncertainty and can be described as a social device to reduce or eliminate risk of loss to life and property. Insurance industry contributes to the general economic growth of the society, provides safety and security that reduces uncertainties in business and human life, generates financial resources, encourages savings, etc. Thus far, it is safe to say that the insurance industry is vital to any economy. In the past, the insurance market in The Republic of Croatia was characterized with state-owned monopoly that only slightly changed during the last decades and after the EU accession and the market liberalization, market conditions are changing rapidly every day. The aim of this paper is to give an overview of the main key indicators on the Croatian insurance market, including the amount of premiums, the scale of investment and the essential social and economic role the insurance market operators play on personal and business risk coverage on the Croatian market; but more importantly to give an overview of the market liberalization effects in the past year and a half after The Republic of Croatia EU accession and a perspective for the future.

JEL classification: G22

Keywords: liberalization, insurance market, Croatia, effects, EU accession

1. INTRODUCTION

Insurance companies are important participants of the financial markets and represent an important factor of economic development of each country. The primary function of insurance is to provide security to individuals from the dangers of an uncertain future. In economic terms, insurance is an instrument which an individual uses to pay a relatively small amount of insurance premium to gain an "upper hand" in case of a relatively large and uncertain financial loss that would be possible if there were no insurance present to protect this individual from his loss. Insurance industry has its own characteristics; Insurance is based on the Law of Probability, the Law of Large Numbers and the Dispersion of risks. Insurance business process begins with sales and the conclusion of insurance contracts. Competitive advantages in the Insurance industry are achieved through greater specialization of offers, in creating new and improving existing insurance services, in providing wider choice in the selection of coverage, in the use of new sales channels, in managing a consistent business policy as well as creating a positive self-image with the use of wide spectrum of promotional activities (The Geneva Association, 2012). It is a known fact that European insurance law advocates a free market competition in all areas. All European Union Member States must adapt their legislation in this area and strongly comply with all relevant laws of The European Union. This adjustment is done during the process of negotiations and the process of

adjusting the regulations of each state with EU regulations. The Republic of Croatia has gone through some of those adjustments in the years prior to EU accession and the Financial and Insurance services sector is now still under the influence of the global financial crisis. Combination of unstable economic conditions and rapid changes in the competitive environment due to EU accession are forcing some companies to face a very challenging future. The main aim of this paper is to give an overview of the Croatian Insurance Market in the past year and a half after EU accession and a perspective for the future.

2. MARKET OVERVIEW

The Croatian insurance industry in comparison with other countries of the European Union shows visible signs of an industry still in development. This is firstly visible in the basic division of insurance on Life and Non-life in The Republic of Croatia, whereas in the developed European markets, Life insurance has an approximate share of 60%. The most dominant countries in the case of Life insurance are the Scandinavian countries, as well as countries that are carriers of the European industry, firstly United Kingdom, France and Italy, with the exception of Germany where the relationship is much more balanced. In the lower part, the share of Life insurance around 30 percent, are developing countries such as Romania, Bulgaria, Croatia, Slovenia and the Baltic countries. Croatian insurance industry can be described as small and emerging with a high potential for further growth and development in the future (Filipović, 2014).

The Republic of Croatia, as an EU member, has a harmonized national insurance regulation according with the EU insurance directives and its industry shareholders strongly adhere to the international insurance standards and core principles. Foreign ownership of insurance companies in The Republic of Croatia is still dominant and a year and a half after Croatia's EU accession insurance companies are more than forced to constantly innovate and design new insurance products in a market that is clearly getting more competitive with every passing year. The importance of insurance industry in The Republic of Croatia can be drawn from the share of total assets of financial institutions. The share was 6.49% in 2013. Commercial banks occupied a high share of 73.95% in the same year and mandatory pension funds took up 10.68%. The structure of financial institutions hasn't changed largely regarding previous years. The insurance industry's share rose from 5.92% in 2008. to 6.41% in 2012 (HUO, 2014).

Table 1. Number of insurance and reinsurance companies

Type of Insurance	2008	2009	2010	2011	2012	2013	2014
Life insurance	8	8	6	7	7	7	7
Non - Life insurance	9	10	10	10	10	10	10
Composite	10	10	10	10	10	9	8
Reinsurance	2	2	1	1	1	1	1
Total	**29**	**30**	**27**	**28**	**28**	**27**	**26**

Source: HANFA, 2015; HANFA, 2014

There were 26 insurance companies operating in The Republic of Croatia in 2014. There was only 1 company providing reinsurance services while 10 companies engaged in Non-Life insurance services. Number of companies providing only Life insurance declined by 1 and in 2014. there were 7 Life insurance companies. Composite insurance companies provided Life and Non-Life services and there were 8 of them operating the Croatian market in 2014. The overall number of business entities declined in the observed period from 29 to 26. Croatian insurance industry in the past two years has undergone a significant restructuring in the market. The largest company in the industry went from state owned to private ownership and there were several acquisitions of smaller companies.

Table 2. Gross Written Premium in 000 HRK

Year	Life Insurance	% of Total	Non-Life Insurance	% of Total	Total	Index
2003	1.349.981	22,25	4.717.061	77,75	**6.067.042**	108,8
2004	1.569.421	23,68	5.057.446	76,32	**6.626.867**	109,2
2005	1.895.769	25,79	5.454.305	74,21	**7.350.074**	110,9
2006	2.165.061	26,47	6.015.094	73,53	**8.180.156**	111,3
2007	2.482.743	27,39	6.582.189	72,61	**9.064.932**	110,8
2008	2.545.775	26,28	7.140.327	73,72	**9.686.102**	106,9
2009	2.488.675	26,44	6.922.661	73,56	**9.411.336**	97,2
2010	2.457.683	26,58	6.787.860	73,42	**9.245.543**	98,2
2011	2.431.268	26,59	6.713.977	73,41	**9.145.245**	98,9
2012	2.461.154	27,23	6.577.321	72,77	**9.038.475**	98,8
2013	2.538.414	27,97	6.538.186	72,03	**9.076.600**	100,4

Source: HUO, 2014

Gross written premium was showing strong and consistent growth starting from 2003. and up to 2008. when premium started to decline due to the current global economic developments. In 2013., after four years of negative growth rates, total premium recorded a mild positive growth compared to 2012. Total premium in 2013 amounted to 9,08 billion HRK. This stopped the decline in insurance premiums, which from 2009 to 2012 ranged between -2,8% and -1,1%. As previously stated, share of Life insurance premium in total written premium in the observed period was ranging from 22% to 28%. The share has been showing positive trends throughout the period which indicates a slow but consistent direction of Croatian life insurance segment to life insurance segments existing in more developed insurance markets. Non-life insurance has dominated the Croatian insurance market from its beginnings and it remains so to this day. Still, the share of Non-life insurance premium has been showing a reverse trend from Life insurance premium and from 2003., when the share was 77,75%, it decreased to 72,03% in 2013. On 1st of July 2013. The Republic of Croatia accessed the EU and further liberalization of the insurance market could not be stopped. It took some time for insurance companies to adapt and prepare for a now truly free market. By the end of 2013. two insurance companies applied their own commercial tariffs and soon every insurance market operator had to follow. The next table compares Life, Non-life and total premiums in 2013. and 2014 (Svijet osiguranja, 3/2015).

Table 3. Grow Written Premium in 2014 in 000 HRK

INSURANCE	Gross Written Premium in kn	%	Gross Written Premium in kn	%	Change 14/13	
	I.-XII./2013	2013	I.-XII./2014	2014	Aps.(HRK)	Relat.(%)
NON-LIFE INSURANCE	6.538.186.057	72,03	5.923.573.258	69,19	- 614.612.799	-9,4
LIFE INSURANCE	2.538.414.004	27,97	2.637.784.389	30,81	99.370.385	3,91
TOTAL	9.076.600.061	100	8.561.357.647	100	- 515.242.414	-5,68

Source: HUO, 2014

As evidenced in the table, Non-life premium declined from 6,53 billion HRK in 2013. to 5,93 billion HRK in 2014. which makes a staggering decline of 614 million HRK or 9,4%. This certainly was a significant impact for the insurance industry and is a direct result of lowering the compulsory motor liability premiums during the last

year and a half. This negative impact was somewhat mitigated with the rise of Life insurance premium for 99 million HRK or 3,91%. The overall written premium a year and a half after the start of the real liberalization in July of 2013. is characterised with a decline of 5,68% or 515 million HRK. The share of Non-life insurance is further declining in 2014, from 72,03% to 69,19% thus marking the point of the lowest market share for Non-life insurance premium in the observed period. On the other hand, Life insurance premium is rising to a highest share recorded of 30,81% in 2014. Insurance companies continue to take measures to stabilize the total portfolio of Life insurance through regular activities concerning the collection of due premium, reducing the number of buy-outs along with the possibility of changes (the amount of premium and life insurance duration) or giving loans to clients with favourable interest rates. Gross amount of settled claims in 2013. amounted to 4.68 billion HRK with a growth rate of 1% compared to 2012. The rate of growth was affected by the high growth rate of Life insurance settled claims of 10.1%, while Non-life insurance settled claims growth rate had decreased by -3.1%. The growth rate of Life insurance settled claims was always higher than Non-life claims in all of the observed years except for the 2008. This growth rates can be attributed to the expiration of Life policies made in large numbers during 1995. after the stabilization of Croatian currency when a faster growth of Life insurance premium had started (HUO, 2014).

Table 4. Settled Claims Gross Amount in 000 HRK

Year	Life Insurance	Non-Life Insurance	Total	Index
2003	173.422	2.791.330	**2.964.752**	108,1
2004	259.748	2.951.202	**3.210.950**	108,3
2005	315.131	3.139.855	**3.454.986**	107,6
2006	421.048	3.510.062	**3.931.110**	113,8
2007	636.639	3.634.697	**4.271.336**	108,7
2008	682.594	3.909.271	**4.591.865**	107,5
2009	931.253	3.849.595	**4.780.848**	104,1
2010	1.038.460	3.357.310	**4.395.770**	91,9
2011	1.298.669	3.269.099	**4.567.768**	103,9
2012	1.420.631	3.214.206	**4.634.837**	101,5
2013	1.564.285	3.115.561	**4.679.846**	101,0

Source: HUO, 2014

The trend evidenced in premium data can be observed as well in gross amount of settled claims. Non-life claims declined 7,49% regarding the previous year (233 million HRK) and Life insurance premium declined 2,28% (35 million HRK) which totals of 5,75% of overall decline in settled claims (268 million HRK).

Table 5. Settled Claims Gross Amount in 2014 In 000 HRK

INSURANCE	Gross Claims Paid in HRK	%	Gross Claims Paid in HRK	%	Change 14/13	
	I.-XII./2013	2013	I.-XII./2014	2014	Aps.(kn)	Relat.(%)
NON-LIFE INSUR.	3.115.890.824	66,58	2.882.571.493	65,35	- 233.319.331	-7,49
LIFE INSURANCE	1.564.284.852	33,42	1.528.664.126	34,65	- 35.620.726	-2,28
TOTAL	4.680.175.676	100	4.411.235.620	100	- 268.940.057	-5,75

Source: HUO, 2014

Throughout the observed period, share of Life insurance premium in GDP was averaging from 0,60% to 0,78%. Share of Non-life premium in GDP shows a higher range of percentage, but a declining trend from 2,06% in

2003. to 1,97% in 2011. and 2,00% in 2013. From Table 6. can be observed that in the years of GDP growth the share of insurance premiums in GDP followed that growth, in the years of the global economic crisis the share of premium was showing a declining trend alongside with the declining GDP.

Although the crisis was mostly a banking crisis, insurance companies in The Republic of Croatia were not directly threatened and remained fairly solvent. The overall decline can be attributed directly to the reduced investment portfolio, reduced economic activity and reduced purchasing power as a consequence of the crisis (HUO,2014).

Table 6. Share of Gross written premium in GDP (%)

Year	Life Insurance % of GDP	Non-Life Insurance % of GDP	Total
2003	0.59	2.06	**2.65**
2004	0.63	2.04	**2.67**
2005	0.71	2.05	**2.76**
2006	0.74	2.07	**2.81**
2007	0.78	2.07	**2.85**
2008	0.74	2.07	**2.81**
2009	0.74	2.07	**2.81**
2010	0.73	2.03	**2.76**
2011	0.71	1.97	**2.68**
2012	0.75	1.99	**2.74**
2013	0.78	2.00	**2.78**

Source: HUO, 2014

Total premium per capita in 2013. amounted to 2.127 HRK, 1.532 HRK for Non-life insurance and only 595 HRK for Life insurance. Compared to the previous year there was a slight increase recorded but regarding this indicator, The Republic of Croatia is far behind the average of developed countries. In 2012 an average of 1 843 EUR per capita was spent on insurance in European union`s full member countries. Of this insurance amount, 1 083 EUR was spent on life insurance and the remaining 760 EUR on non-life insurance, of which 190 EUR was on health insurance. These figures were broadly stable compared to the previous year of 2011 (Insurance Europe, 2014).

Even when comparing The Republic of Croatia with neighbouring Slovenia, which has a smaller insurance market, Croatia is still lagging. For reference, The Republic of Slovenia has an average insurance premium per capita of 960 EUR in 2013. (268 EUR for Life insurance and 691 EUR for Non-life insurance) whereas Croatia has an average of 279 EUR (Ivanušič, 2014).

Table 7. Premium per capita in HRK

	Life Insurance	Non-Life Insurance	Total
2003	304.00	1062.00	**1366.00**
2004	354.00	1139.00	**1493.00**
2005	427.00	1228.00	**1655.00**
2006	488.00	1335.00	**1823.00**
2007	560.00	1484.00	**2044.00**
2008	574.00	1610.00	**2184.00**
2009	562.00	1563.00	**2125.00**
2010	556.00	1534.00	**2090.00**
2011	552.00	1525.00	**2077.00**
2012	574.00	1535.00	**2109.00**
2013	595.00	1532.00	**2127.00**

Source: HUO, 2014

Premiums per employee grew from 2003. to 2005., in the period between 2006. and 2013. premiums per employee were shaped by a constant rate of decline. The decline is caused by the rapid employment of employees in insurance companies. At the moment there are 11,500 employees working in the insurance industry. This declining trend also showcases the fact that recent use of different distribution channels, especially internet, does not necessarily mean downsizing of employees in the industry. In The Republic of Croatia, insurance is still mainly distributed internally, followed by agency and broker distribution channels (HUO, 2014).

Table 8. Premium per employee in HRK

Year	Insurance Industry Employees	Total Premium per Employee
2003	6059,00	**1001,00**
2004	6485,00	**1022,00**
2005	6970,00	**1055,00**
2006	7984,00	**1025,00**
2007	9360,00	**968,00**
2008	10544,00	**919,00**
2009	11184,00	**841,00**
2010	11145,00	**830,00**
2011	11288,00	**810,00**
2012	11616,00	**778,00**
2013	11533,00	**787,00**

Source: HUO, 2014

In the analysis of business performance of insurance companies, indicators specific to this industry were used, such as: claims ratio, costs ratio and combined ratio (HUO, 2014). Claims ratio, which is calculated as the ratio of the sum of claims paid, changes in claims reserves and changes in other technical reserves and earned premium (multiplied by 100), in 2013 amounted to 61.1% Costs ratio is calculated as the ratio of the sum of operating expenses (reserves and administrative costs), other technical expenses and gross written premium reduced by premium ceded to reinsurance (multiplied by 100) in 2013 amounted to a high 47.6%. Normal range for the indicator within the insurance industry ranges between 20% to 30%. Combined ratio is calculated as the sum of the claims ratio and costs ratio, and it shows operating results before inclusion of income from investments, in 2013 is as high as 108,7%.

Table 9. Basic insurance indicators

Year	Claims Ratio	Costs Ratio	Combined Ratio
2003	69.60	34.10	103.70
2004	71.00	36.10	107.10
2005	70.50	37.80	108.30
2006	70.80	39.40	110.30
2007	73.90	40.20	114.10
2008	68.40	39.40	107.80
2009	69.80	44.50	114.30
2010	67.60	44.30	111.90
2011	64.40	45.70	110.10
2012	63.00	46.40	109.40
2013	61.10	47.60	108.70

Source: HUO, 2014

Combined ratio is calculated as the sum of the claims ratio and costs ratio, and it shows operating results before inclusion of income from investments, in 2013 is as high as 108,7%.

3. COMPULSORY MOTOR LIABILITY INSURANCE MARKET

Croatian compulsory motor liability insurance market has been chosen for a detailed analysis due to the importance of this insurance segment in The Republic of Croatia and because the effects of the liberalization, upon accessing the European Union, have been very visible from the start, given the short amount of time (only year and a half) in which the effects could be observed.

Croatian compulsory motor liability market can historically be divided into several periods. The first period lasted until the 1st of January 2008. when regarding the compulsory insurance segment there was, on a regulatory level regulated by HANFA (Croatian Agency for Supervision of Financial services), an administrative determination of the insurance conditions and tariff systems for all insurance companies operating the market. Companies were required to obtain authorization from HANFA prior to the application of insurance conditions and tariff system. The conditions and tariff system approved by HANFA were common and were used by all companies on the market. HANFA had legal power to independently adopt binding common conditions and tariff systems with unique functional bases of premiums, if such was neccessary based on the technical results of the insurance companies. HANFA determined, after the given permission, even the day from which the conditions and the tariff system was applicable. So, it can easily be concluded that the State owned agency used the system of prior control of conditions and tariff systems, and the procedural approval of conditions and tariffs was only a formality. The insurance market in The Republic of Croatia was administratively controlled up to 2008 (Ćurković, 2014).

Along with the legislative change, after 1st of January 2008., the market should have been fully liberalized. The objective of reporting to supervisory body was not, like it was up to 2008., getting an approval for the change of conditions and tariff systems, but only to enable the supervisory authority to check whether the conditions and premiums were according to regulations, actuarial principles and other rules of the profession. Lack of conditions and tariff systems transparency was still evident. All the companies operating the market actually continued to use the same insurance conditions and tariff systems (HANFA approved) that were already used on the market. There was no real competitiveness on the market and competition was reduced to a slightly decreased expenses loading with (secretly, and this necessarily meant unlawful) offer of benefits to clients such as free technical inspections, free gift certificates, gas vouchers and other. The role of the supervisory authorities was thereon reduced to a relatively strict control of application of the bonus-malus system. Few insurance

companies (foreign owned) tried to apply their own new insurance conditions and tariff systems, but these efforts ended unsuccessful as the supervisory body objected the aforementioned conditions and systems as being inadequate due to being based on a insufficiently broad statistics base. The period from 2008. up until the accession of The Republic of Croatia to the European Union could truly be called a quasi-liberalised market (Ćurković, 2014).

Gross written premium of compulsory motor liability insurance during the observed period was always maintaining a relatively steady share in Total gross written premium. The share ranged from 32,26% in 2003. to its lowest share of 29,96% in 2006. The same share of compulsory motor liability insurance was 32,81% in 2013. Given the fact that Non-life insurance segment dominated the Croatian insurance market from its beginnings, Compulsory motor liability insurance has and it still is an important segment of it as evidenced from the Table 10. below. Share od compulsory motor liability insurance had a dominant and steady market share of 40% to 42% of Non-life insurance premium up to 2008. After 2008. a steady rise can be observed in the Table 10. Reaching up to 45,55% in 2013. Gross written premium amounted to 2.978.147.000 HRK in 2013. Reaching its higher number so far.

Table 10. Gross Written Premium of Compulsory Liability Insurance for Motor Vehicles in 000 HRK

Year	Gross Written Premuim	Index	% of Non Life Insurance	% of Total Gross Written Premium
2003	1.957.116	110,00	**41,49**	32,26
2004	2.111.470	107,90	**41,75**	31,86
2005	2.246.038	106,40	**41,18**	30,56
2006	2.450.936	109,10	**40,75**	29,96
2007	2.721.082	111,00	**41,34**	30,02
2008	2.922.728	107,40	**40,93**	30,17
2009	2.922.648	100,00	**42,22**	31,05
2010	2.890.062	98,90	**42,58**	31,26
2011	2.935.198	101,60	**43,72**	32,10
2012	2.939.904	100,20	**44,70**	32,53
2013	2.978.147	101,30	**45,55**	32,81

Source: HUO, 2014

Settled claims of Compulsory liability insurance reached its lowest share of 23,19% in 2013. thus trending a steady decline in the years after 2008. as evidenced in Table 11.

Table 11. Settled Claims of Compulsory Liability Insurance for Motor Vehicles in 000 HRK

Year	Settled Claims	Index	% of Non Life Insurance Claims	% of Total Settled Claims
2003	1.286.947	109,80	**46,11**	43,41
2004	1.327.199	103,10	**44,97**	41,33
2005	1.385.872	104,40	**44,14**	40,11
2006	1.590.194	114,70	**45,30**	40,45
2007	1.581.392	99,40	**43,51**	37,02
2008	1.634.874	103,40	**41,82**	35,60
2009	1.422.808	87,00	**36,96**	29,76
2010	1.202.030	84,50	**35,80**	27,35
2011	1.195.476	99,50	**36,57**	26,17
2012	1.112.080	93,00	**34,60**	23,99
2013	1.085.247	97,60	**34,83**	23,19

Source: HUO, 2014

After 1st of July 2013., real liberalization and deregulation of the market could finally start. HANFA can now only ask for a premium tariff system, technical and other elements of it, while prior it was an automatic obligation of insurance company to deliver the conditions and tariff system for approval. Insurance companies could now sell insurance based on their own insurance terms & conditions and tariff systems. Two insurers started applying their own and new conditions and tariffs at the end of 2013. and every other insurance company had to follow. New compulsory motor insurance premiums are now based on an „individualised" tariff. This tariff is based on periods without damages/accidents, age of the insured, other family vehicles insured, the existence of other types of insurance with the same insurer, vehicle mileage, bonus points given in conjunction with banks and other enterprises. Along with new conditions & terms and an individualized tariff system came a significant lowering of the compulsory motor liability insurance premium. The effect of it can be observed in the following tables.

Table 12. Gross Written Premium of Compulsory Liability Insurance for Motor Vehicles in HRK

RISK	Gross Written Premium in HRK	%	Gross Written Premium in HRK	%	Change 14/13
	I.-XII./2013	2013	I.-XII./2014	2014	Relat.(%)
Third Party	2949920371	99,38	2357112780	99,22	-20,1
Public Transportation	4814775	0,16	4853072	0,2	0,8
Air Vessels	1582928	0,05	1471100	0,06	-7,1
Marine	12125030	0,41	12396938	0,52	2,2
Total	2968443104	100	2375833889	100	-20

Source: HUO, 2015

As evidenced in the table above, third party liability insurance comprises more than 99% of gross written premium of compulsory motor liability insurance, which makes this segment of insurance market in the Republic of Croatia very important for insurance companies. There has been only a slight change in market share of this type of insurance, going from 99,38% in 2013. to 99,22% in 2014. Other types of compulsory insurance like public transportation liability, air vessels liability and marine vehicles liability comprise only a smaller share,

and compared to 2013. these types show a slight rise in percentages regarding market share. Apart from marine vehicles and public transportation liability which recorded a relative positive change, +2,2% and +0,8% respectively; air vessels liability recorded a negative relative change of -7,1%. Main focus is on third party liability insurance that recorded truly staggering -20,1% in 2014. regarding to 2013. This is directly connected with transfer from administrative (common) to commercial ("individualised") tariffs and the liberalization of the insurance market. Average compulsory motor liability premium went from 1500 HRK in 2013. to 1196 HRK in 2014 (HUO, 2015). An overall decline of 20% is evidenced in this type of insurance.

Table 13. Settled Claims of Compulsory Liability Insurance for Motor Vehicles in HRK

RISK	Gross Claims Settled in kn	Gross Claims Settled in kn	Change 14/13
	I.-XII./2013	I.-XII./2014	Relat.(%)
Third Party	1065888100	984631420	-7,6
Public Transportation	436825	328962	-24,7
Air Vessels	65729	1000	-98,5
Marine	1075190	264010	-75,4
Total	1067465844	985225393	-7,7

Source: HUO, 2015

Settled claims for the same type of insurance shows an overall decline of 7,7%. Public transportation liability claims are declined for 24,7%, while air vessels show a big drop of 98,5%, marine vehicles liability recorded a decline of 75,4%.

After 1st of July 2013. insurance companies had to increase the minimum of principal sum insured regarding compulsory motor liability insurance. Minimum formerly in force was 3.500.000 HRK for persons (460.000 €) and 1.500.000 HRK for property (200.000 €) (HUO, 2014). Current minimum amounts to 5.600.000 € for persons and 1.120.000 € for property. It is an enormous one-time increase which was positive news for consumers, but there is a possibility that some smaller insurance companies will bear some consequences in the long run. New minimum of sum insured means increased outflow of domestic capital accumulation for reinsurance mainly to foreign reinsurers. Another result of the liberalization are certainly new coverages and commercial insurance products (riders) with compulsory insurance and certain other novelties:

- long-term period contracts/policies are now permitted,
- coverage of legal protection is included in the compuslory insurance,
- compulsory casualty insurance now covers 24hrs,
- new benefits for drivers regarding coverage,
- benefits for combined motor insurance (compulsory + motor hull),
- free road assistance is attached with the compulsory insurance,
- replacement vehicle coverage (is now cheap or free),
- loyalty bonus is given to consumers, as well as,
- family bonus (if more family members are insured with the same company),
- discounts for cash payments (enterprises are now included),
- lower premiums for certain kinds of vehicles (leasing, taxi, dangerous cargo transport)
- Bonus protection options (are now cheap or free).

All the above mentioned changes on the compulsory insurance market, along with the lower average compulsory premium, introduction of new terms & conditions and tariff systems that differ from insurer to insurer, are a direct effect of the liberalization. Combined with constantly rising competitiveness levels among insurance companies and number of insurance companies that operate on the compulsory motor liability insurance market make little room left for any new company to enter the market given that there are 15 insurance companies providing such services for 1.884.000 motor vehicles in the Republic of Croatia (HANFA, 2014).

4. LEGISLATIVE AND REGULATORY OVERVIEW

The biggest possible obstacles for Croatian insurance companies definitively represent the possibilities of difficulties in business operations regarding implementation of "Solvency II" framework. In May 2012. a working group was formed among HANFA (Croatian Financial services Regulatory Agency), HUO (Croatian Insurance Bureau) and HAD (Croatian Actuarial Association) to conduct a QIS Study (Qualitative Impact Study) to gather market operators insight regarding implementation of "Solvency II" framework. Majority of participants of the QIS study reported that they are not fully prepared for the implementation of the "Solvency II" framework. According to data from the questionnaire, participants in majority felt that they don't have all the available resources and the implementation plan of the "Solvency II" framework has not yet been completed in their companies. "Solvency II" implementation in the Republic of Croatia starts with 1st of January 2016 (HANFA, 2014).

New insurance law is currently being in development and will enter into force on 1st of January 2016. This new legislative should improve the existing one and fully adjust it with the European insurance law. New insurance law (NN 30/15) will enable insurance companies to sell investment fund shares and offer different retirement programs to their clients. In addition, insurance companies will be able to represent business interest and sell insurance products and services for other insurance industry companies. Adjustments will also include some new prospects for insurance agencies. After 1st of January 2016, insurance agencies will be able to provide different kinds of intellectual and technical services to their clients regarding insurance. Also, insurance agencies will be able to sell investment fund shares and retirement programs (Gajski, 2014). Insurance agents will no longer have to have 300 ECTS accompanied with a 3-year working experience, but 180 ECTS and a 3-year working experience to provide intermediary services on their own (Gajski, 2015). New category of insurance agent Assistant is being introduced with the implementation of the new law and assistants will be able to conduct a part of insurance agents` operations without the required license issued by HANFA (Gajski, 2014).

5. CONCLUSIONS

Before EU accession, despite legally declared and regulated liberalization and deregulation of the Insurance Market (especially in the Compulsory Motor Liability Insurance), the expected liberalization was not achieved. The real liberalisation of the insurance market started from 1st of July 2013. The role of HANFA is now, after the accession to the European Union, reduced to sufficiency control of capital coverage regarding obligations of each Insurer and insistence on transparency for additional benefits that are given to policyholders. Each insurer can now operate the market with its own terms and conditions and tariff system. Resulted freedom of insurance companies in designing their own tariffs and with no further obstacles regarding the implementation of commercial tariffs directly led to create a significant overall decline in gross written premium (Total) as well as Non-life written premium (mostly due to liberalisation of the compulsory motor liability insurance market). Along with the commercialized tariffs, insurance companies started to discount compulsory motor liability premium for 10%, 20, even 30% thus accumulating a bigger client base. Bigger client portfolio also means bigger payments of claims, which could, in the long run, confront some smaller or capitally insufficient insurers with serious operating difficulties (possible bankruptcy). Significant decline in premium for an insured

individual followed the before mentioned development (from average 1500 HRK in 2013. to 1196 HRK in 2014.). The accession also obliged insurers to increase Insured Sums (in Compulsory Motor Liability insurance) and to provide equal premium for men and women in all types of insurance services and products. Final adjustments are being prepared for law implementation to fully adjust Croatian insurance laws with the European insurance laws and certain new provisions are being introduced that will largely advance and benefit insurance companies and insurance intermediaries.

Further decline of Compulsory motor liability premiums can be expected, as well as an overall decline in premium, at least for the foreseeable future. Possible disappearance of insurers that are less capitally secured is to be expected to some extent, but eventual bankruptcy of certain insurers still cannot jeopardize the insurance market due to the Guaranty fund. Mergers & Acquisitions of smaller insurers had already occurred on the market and similar development can be expected in the future. Some difficulties are expected for insurers regarding the implementation of "Solvency II" framework. Further increase of competitiveness is eminent, which will lead to further development of new and innovative insurance products, especially in health and life insurance segment which is considered as a market for further progress within the insurance industry. Re-designing of existing insurance services and products is currently an on-going process on the Croatian insurance market. In the long period, new technology risks will inevitably produce new insurance coverage that will be offered on the market. All the above mentioned development will certainly force greater segmentation of insurance products.

Croatian economy is still feeling the effects of the financial crisis and it will take more time to recover to the level of economy which will have a significant impact on the further growth of written premiums. Because of the overall decline in premiums, insurers will try to improve their business results by lowering claims handling costs, they will try to enhance detecting and preventing of frauds, rationalize internal costs, which will in the long run have a positive effect on most of the Non-life insurance sector.

Greater use of information technologies and internet by insurance companies is to be expected. Social networks and internet distribution will certainly be an important asset in improving insurance companies` business results. Financial literacy and education is an important issue in the European Union. The European insurance sector recognizes the importance of financial education of consumers and strives toward awareness by supplying simple and user-friendly access to information that will equip them with basic knowledge about finance. Croatian insurance regulatory body, as well as other stakeholders on the market are hosting public events, issuing publications and brochures, conducting and publishing research and other studies and surveys, consulting consumer services, media activities & campaigns and similar activities, but further efforts will be neccessary to successfully educate wider Croatian public on matters of insurance.

REFERENCES

Ćurković, M., (2014), "Liberalizacija tržišta obveznog osiguranja od automobilske odgovornosti – hrvatsko iskustvo", 25. Susret osiguravača i reosiguravača 2014., Sarajevo

Filipović, H., (2014), "Dohodovna elastičnost tržišne penetracije odabranih kategorija osiguranja", Zbornik radova: Dani hrvatskog osiguranja 2014., Opatija

Gajski, Z., (2014), "Kako zaboraviti 2014. godinu", Svijet osiguranja, 12/2014, Zagreb, p. 13, 14

Gajski, Z., (2014), "Milijarda manje nego 2008.", Svijet osiguranja, 12/2014, Zagreb, p. 28, 29

Gajski, Z., (2015), "Prilagodba novom Zakonu već od 1. travnja", Svijet osiguranja, 3/2015, Zagreb, p. 7

HANFA (2014), "Statistika osiguranja u Republici Hrvatskoj za 2014. godinu", Zagreb

HANFA (2015), "Statistika osiguranja u Republici Hrvatskoj za 2013. godinu", Zagreb

Hrvatski ured za osiguranje (2014), “Tržište osiguranja u Hrvatskoj”, Hrvatski ured za osiguranje, Zagreb

Insurance Europe, (2014), „Statistics: European Insurance in Figures“, Brussels

Ivanušič, Z., (2014), “Slovenija – pregled tržišta osiguranja u 2013. godini“, 25. Susret osiguravača i reosiguravača 2014., Sarajevo

Letica, G., (2014), “ Tržište osiguranja u Republici Hrvatskoj godinu nakon ulaska u Europsku uniju", presentation, Dani hrvatskog osiguranja 2014., Opatija

The Geneva Association, (2012), “Social and Economic Value of Insurance”, Brussels

Valerija Botrić
The Institute of Economics, Zagreb, Zagreb, Croatia

INDUSTRY WAGE PREMIUM AND EU TRADE EFFECTS IN CROATIAN MANUFACTURING SECTOR

ABSTRACT

Public debates and previous studies in Croatia emphasize different adjustment mechanisms in private and public sector in terms of wage corrections during the recent economic downturn. The general conclusion is that the public sector, mostly due to the collective bargaining procedures, enabled the employees to enjoy both relatively more secure and better paid jobs. The aim of this paper is to investigate the parallel processes within manufacturing sector, in particular the segment expected to compete on the international market. The initial hypothesis is that two aspects have shaped the wage dynamics of manufacturing during the recent period – crisis and EU integration. By relying on the Labour Force Survey (LFS) data, and restricting the analysis to the manufacturing sector, we explore the development of the industry wage premium in the analysed segment of the Croatian economy. Furthermore, the identified industry wage premiums are analysed with respect to the international trade pressures indicators. Specifically we investigate whether the intra-industry trade with European Union had impact on wages in Croatia's tradable sector. In order to empirically investigate this relationship, we match the Eurostat COMEXT with LFS data.

Key words: intra-industry trade, industry wage premium, Croatia, integration.

JEL classification: F14, F15, F16

1. INTRODUCTION

Croatia is a small open economy, recently under the dominance of two powerful external factors – global economic crisis and EU accession process. The latter process entails complete liberalization of trade with EU countries and expected successful integration of the domestic producers on the wider common market. The process could also incur costs, which could manifest themselves on the labour market. As Brülhart and Elliot (2002) explain, the size of the costs are assumed to be in line with smooth adjustment hypothesis, which states that they will be lower if trade is mostly intra-industry in nature. So the trade with European Union and specific pattern of trade play important role in the success of the integration process, but could also be significant for the local labour market developments.

Public debates and previous studies in Croatia emphasize the different adjustment mechanisms in private and public sector in terms of wage (and employment) corrections during the recent economic crisis. The general conclusion is that the public sector, mostly due to the collective bargaining procedures, enabled the employees to enjoy both relatively more secure and better paid jobs. The aim of this paper is to investigate the parallel processes in manufacturing sector, in particular the segment expected to compete on the international market. The initial hypothesis is that two aspects have shaped the wage dynamics of manufacturing during the recent period – crisis and EU integration.

The integration process and its effects are dynamic in nature. To assess the overall impact of the integration process on labour market adjustment would consequently require building and estimating a model in a dynamic framework. Due to the fact that there are no prior estimates for Croatia, we focus on the relatively simple estimation strategy in order to provide first insights. Naturally, the wages and their dynamics do not depend only on trade patterns. In addition to personal characteristics of workers, labour market factors – including wage bargaining process, tax policy, strength of the unions, skills demand and supply, etc. – are the most important determinants of final wage determination. However, in order to fill in the gap in the existing literature, we want to focus on specific industry features and trade patterns and abstain from other possible determinants.

Structure of the paper is following. The next section briefly summarizes the main findings from the literature in order to provide theoretical framework for the empirical analysis. Section 3 discusses data sources and provides preliminary insights on the subject. Section 4 presents empirical strategy, while results are laid out in Section 5. The last section offers conclusions.

2. THEORETICAL FRAMEWORK

The idea that labour markets (wages) are under the influence of trade patterns, and that different segments of the labour force (skilled vs. unskilled) are expected to have different consequences accordingly, is standard textbook case of trade economics. The traditional models of Heckscher-Ohlin and famous Stolper-Samuelson theorem are frequently used to analyse the effects of trade liberalization. One of the issues is that in the long run, when factors of production are mobile across industries, standard Heckscher-Ohlin's theory predicts that factor prices will be equalised across industries and any differences in wages for similar types of work will eventually disappear. The empirical studies have usually not been able to find this long-run relationship. Another point can be attributed to Krugman (2008) who states that the nature of trade has significantly changed during the past decades and this is not frequently taken into account in the empirical studies.

Relying on theoretical models, we can foresee benefits from increased integration-related trade related to product variety. This love for variety increases consumers' utility, but on the other hand produces new competitiveness pressures for the domestic firms. One assumption is that, as a result, domestic firms will adopt more efficient behaviour (Helpman and Krugman, 1985). If the trade is more intra-industry (defined as intensive trade of similar products within the same industry) than inter-industry (when the division of trade products is more clear, implying trade of products with different quality) it is assumed that the consequence will be relatively low adjustment costs of production factors reallocation through smooth adjustment process. Such success stories are more likely in case of developed economies integration. Whether integration induces low adjustment costs in case of transition economies is a question that deserves empirical verification.

In general we can assume several adjustment mechanisms of labour markets to trade. The first one is related to the increased variety gains as previously described (Krugman, 1981). It could be foreseen that the internal restructuring due to increased competition on the domestic market will result in closing down of low competitive firms (Melitz, 2003). We can also assume the case when the effect will be entirely shifted to the reduction of labour costs, without closing down of enterprises (Davis and Harrigan, 2011). Both adjustment mechanisms have been documented in Croatia on a case-level basis.

The focus of this paper is on the trade patterns at the level of economic activity, and in particular the links to labour market indicators. Revealing the trade patterns on the level of economic activities is important in order to enhance the discussion of competitiveness. The attention to the latter issue has been frequently drawn within the analysis of EU accession process of transition economies, related to the smooth adjustment hypothesis. The hypothesis states that if intra-industry trade (IIT) has higher share in the overall trade between the countries, the integration associated adjustment costs will be less severe than in cases when the share of inter-industry trade is

relatively higher. Azhar and Elliot (2008) offer following explanation for this argument. The increases in trade will result in changes in imports and export on a sector/product level. If the trade patterns are for the most part inter-industry in nature, than these sector changes will be reflected in transferring production resources between industries, from contracting to expanding industries. If there are large differences in relative production factor endowments of the two trading countries, the costs of adjustments from one industry to another will be higher.

Smooth adjustment hypothesis has been frequently assessed and confirmed or refuted in empirical studies. Part of the differences in results could certainly be attributed to the different measures of intra-industry trade and labour cost changes. However, the precise measurement issues related to the appropriate intra-industry trade dynamics and/or those related to the adequate labour market changes remain unresolved. Brülhart, Elliott and Lindley (2006) suggest individual employees sectoral and occupational distance indicator within the manufacturing sector. Earlier studies have used industry employment change as an indicator of adjustment cost (Brülhart and Elliott, 1998; Greenaway et al, 1999), while others made use of job turnover indicator (Brülhart, 2000; Andersson, Gustafsson and Lundberg, 2000). Over the years more consensual tone has been achieved for the measurement of intra-industry trade, where researchers mostly agree that marginal intra-industry trade is more appropriate for dynamic analysis of the changes in the labour market. Another frequently used indicator of intra-industry trade - Grubel-Lloyd index has been challenged in the literature (Brülhart and Elliot, 1998) for its ability to disentangle trade patterns especially in the cases of transition countries, which usually have large trade disbalances as well as structural changes.

3. DATA SOURCES AND PRELIMINARY ANALYSIS

The nature of the analysis is empirical, making clear presentation of the data used in the estimates provided below important. For the labour market data, we rely on the most frequently used data source for this type of analysis – Labour Force Survey (LFS) data. Individual LFS data without identifier has been used in empirical estimation. Since 2007, LFS methodology includes panel component. However, the data used was not actually anonymised, so the panel component could not be utilised for the research purposes. In order to avoid double-counting the same respondent, the individual data have been used only when they appeared first time in the analysis (Drinkwater and Robinson, 2011).

In order to provide industry perspective, some indicators had to be aggregated to relevant NACE classification. This has been done both in the case of labour market and trade data. The LFS data prior and including 2008 relied on an earlier NACE classification version (in Croatia referred to NKD2002) in comparison to more recent data (NKD 2007). Fortunately, the data for 2009 included information on both classifications, so matching could have been performed to ensure the comparability for longer time period.

To produce IIT indicators, Eurostat COMEXT data has been used. Estimates were made on the most detailed level of aggregation (CN8), which enables correspondence between CN-PRODCOM-NACE classifications. Using the available Eurostat correspondence procedures, the data were aggregated to the most recent NACE 2-level classification (NKD2007) throughout the analysed period.

After presenting the data sources, we provide some initial trade indicators. Trade with EU countries presents a large part of overall Croatian trade, which is one of the arguments behind integration process. However, the question is whether this trade resembles more North-South pattern or the pattern which develops between similarly developed economies. To provide some insights, we present the intra-industry trade indicators. The methodology applied has been previously frequently used in the literature (Abd-el-Rahman, 1991; Fontagné and Freudenberg, 1997; Freudenberg and Lemoine, 1999). IIT can be estimated following the concept of trade overlap:

$$Trade\ overlap = \frac{Min(exports, imports)}{Max(exports, imports)}$$

The expression is evaluated at the disaggregated level of product classification. If it is above certain threshold, then it is assumed that significant trade overlap exists and the trade is considered to be two-way (or IIT). Threshold of 10 percent, frequently used in the literature, is applied in order to avoid the possible sensitivity of the results to this parameter.

Figure 1 IIT with EU-15 and industrial production (1998=100) in Croatia

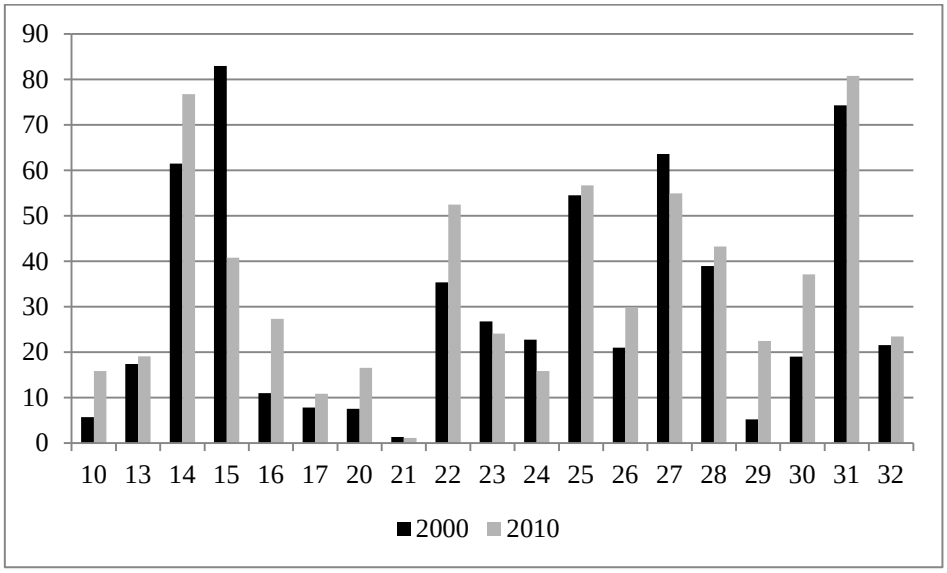
Source: Central Bureau of Statistics and author's estimates based on COMEXT.

The previous data shows that the share of two-way trade (IIT) between Croatia and EU-15 is relatively low, but it seems to be increasing in the last few years. The industrial production pattern, on the other hand, reveals the severe impact the crisis had on Croatian economy. Since we are analysing labour market effects, we cannot assume that all of the changes in specific industries could be attributed to trade effects. Clearly, specific industries have followed the defensive restructuring through shedding labour (Botrić, 2012). It does not necessarily imply that retained workers have suffered from wage cuts or were able to gain additional wage increases. Thus, the overall effect on the industry level cannot be assumed in advance.

The intra-industry trade varies significantly among specific industries. Also, trade patterns might be quite different across time. To illustrate this, we present the shares of intra-industry trade in Croatian trade with EU-15 in two specific years – 2000 and 2010. The results are presented in Figure 2.

The data clearly shows that intra-industry trade shares in the overall trade are not the same through time. It might be suspected that integration process in general increases the share of IIT, however there are examples where the trend is reversed. In Croatian case, there is a sharp decline in IIT in leather industries, but some other industries have also recorded decline. On the other side of the spectrum seem to be wearing apparel and rubber manufacturing, which have recorded increase in IIT. One of the arguments behind these data could be attributed to restructuring of specific enterprises. However, we might also argue that these data are year-specific, since it has been frequently argued in the public debates that Croatian exports and imports dynamics is erratic due to the lack of consistent economic policies.

Figure 2 IIT shares in total trade across industries



Source: author's estimates based on COMEXT data.

NACE codes refer to the manufacture of: 10 - food products; 13 – textiles; 14 – wearing apparel; 15 – leather and related products; 16 – wood and products of wood and cork, except furniture; 17 – paper and paper products; 20 – chemicals and chemical products; 21 – basic pharmaceutical products; 22 – rubber and plastic products; 23 – other non-metallic mineral products; 24 – basic metals; 25 – fabricated metal products, except machinery and equipment; 26 – computer, electronic and optical products; 27 – electrical equipment; 28 – machinery and equipment n.e.c.; 29 – motor vehicles, trailers and semi-trailers; 30 – other transport equipment; 31 – furniture; 32 – other manufacturing.

The dynamics of the intra-industry trade in time is more appropriately explored with marginal intra-industry trade (MIIT) indicators, which capture the relative changes in trade between two periods. Similar to IIT, the literature proposes various indicators. We follow the methodology proposed by Brülhart (1994) and calculate MIIT based on following expression:

$$MIIT = 1 - \frac{|\Delta X - \Delta M|}{|\Delta X| + |\Delta M|}$$

Where X refers to exports and M refers to imports, both of which are on a detailed level of aggregation. This index varies between 0 and 1, where 0 indicates marginal trade in the particular industry to be completely of the inter-industry type, and 1 represents marginal trade to be entirely of the intra-industry type. Specifically this index has been used in the empirical estimates further discussed in subsequent sections.

4. EMPIRICAL STRATEGY

Our basic empirical strategy is to estimate the wage equation, which includes following traditional labour market variables:

Age and age-squared. The persons can expect relatively different wages with respect to their age. It could be argued that older persons have important experience, which cannot be measured directly with other observable variables. However, there are arguments that diminishing returns are associated with age, so in order to capture this effect all the specifications include age-squared.

Gender. It has been frequently addressed in the literature, even in case of Croatia (Nestić, 2010) that women obtain on average lower wages than men. Consequently, we include dummy variable - which takes value 1 if a person is male - into our specification.

Living in urban areas. It is frequently argued that urban areas offer wider variability in jobs, and consequently also that important business centres are frequently located in such areas. Wage patterns are related to the urbanisation degree. To capture this effect, we include a dummy variable which has value 1 if a person lives in urban or semi-urban area.

Education is measured by the qualifications obtained and aggregated to the three levels – lower secondary, upper secondary and tertiary. Due to the fact that the classification has changed during the analysed period, the categories within each segment are not the same. Prior and including the year 2009, as lower secondary education, categories »No school«, »1-3 basic school grades«, »4-7 basic school grades« and »Basic school« are considered. As upper secondary education, categories »School for skilled and highly skilled workers«, »Vocational secondary schools« and »Grammar school« are included. As tertiary education, categories from »Non-university college« to »Doctorate« are considered. From the year 2010, the classification is as following. Lower secondary includes three categories up to basic school. Upper secondary includes all the varieties of high school education in Croatia, including short specialised after high school courses that enable students for certain activities (like craftsmanship certificates). Tertiary starts with short university programmes (2 or 2.5 years) and finish with doctorate. In order to avoid multicolinearity, upper secondary has been excluded from estimation.

Occupation in the analysis is defined as the occupation of the main job listed by the employed person. Following occupation-dummies have been included in the specifications: Armed forces occupations; Managers; Professionals; Technicians and associate professionals; Clerical support workers; Service and sales workers; Skilled agricultural, forestry and fishery workers; Craft and related trades workers; Plant and machine operators, and assemblers; Elementary occupation.

There are two sets of estimates. The first one is concentrated on the issue of industry wage premium. To that end, previous list of variables is augmented with dummy variables for each NACE2 industry. Since we are interested only in manufacturing sector, workers from other economic activities are not included in the sample. In order to avoid multicolinearity, we have excluded activity NACE 19 – manufacture of coke and refined petroleum products because the total trade with European Union in this segment was negligible throughout the analysed period.

The first specification, consequently, has the following form:

$$\ln wage = \alpha + \beta_1 age + \beta_2 age^2 + \beta_3 male + \beta_4 urban + \beta_5 lower + \beta_6 upper + \sum_{i=7}^{14} \beta_i occupation_{i-5} + \sum_{j=10}^{32} \delta_j activity_j + \epsilon$$

Where all the variables have been previously explained and the estimates have been repeated for each year in the period 2004-2012. In this case we are interested in the delta-coefficients and in order to save space, only these are presented in Table 1.

In case of alternative specification, most of the variables are the same, but instead of the dummy variables for economic activity, MIIT indicator has been used for the NACE-2 level activity a worker is employed in. In that case we have specific coefficient related to that variable, and these results are presented in Table 2. Both results are presented and discussed in following section.

5. RESULTS

The results of the estimation in Table 1 reveal that there is an industry wage premium within Croatian manufacturing sector. Relative to the sector that had the lowest share of trade with the EU countries throughout analysed period, some industries had consistently lower wages. This implies that the openness to competition of those industries and orientation towards the foreign markets results in relatively lower wages (after controlling for education, age, sex, occupation and living area of their workers). Important fact is that we were not able to find any positive significant coefficient in the analysed period. Thus, those industries that are competing on the international market are not able to compensate their workers in a same way that those oriented towards the local market were. Not only that we can see negative wage premium for the manufacturing sector vs. for example, public sector and other non-tradables, we have also detected tradable-non tradable pattern within the manufacturing sector.

It is interesting to notice that traditional labour-intensive industries - such as food, textiles, wearing apparel, leather – have consistently significant negative wage premium, even after controlling for worker-specific characteristics. This suggests that labour intensive industries continue to compete on the international market with relatively lower labour costs, even though the competition from Asian markets has significantly increased during the last decades.

Another interesting point is that, even during this relatively short timeframe, we can notice that changes occur. The relative wage premiums are not the same through time.

Table 1 Estimated industry wage premium coefficients

NACE activity	Estimated coefficients (standard errors) across years								
	2004	2005	2006	2007	2008	2009	2010	2011	2012
10	-0,20*** (0,05)	-0,27*** (0,06)	-0,24*** (0,06)	-0,23*** (0,09)	-0,13* (0,07)	-0,23** (0,10)	-0,24** (0,11)	-0,18** (0,08)	-0,20*** (0,07)
11	-0,30*** (0,06)	-0,13** (0,07)	-0,26*** (0,07)	-0,15 (0,10)	-0,03 (0,08)	-0,17 (0,11)	-0,20 (0,13)	-0,17* (0,10)	-0,21** (0,10)
12	-0,20* (0,11)	-0,15 (0,11)	-0,22* (0,12)	-0,20 (0,14)	0,41*** (0,13)	0,01 (0,15)	-0,14 (0,17)	-0,03 (0,13)	0,11 (0,14)
13	-0,56*** (0,06)	-0,44*** (0,07)	-0,65*** (0,07)	-0,43*** (0,10)	-0,15* (0,08)	-0,40*** (0,11)	-0,58*** (0,13)	-0,33*** (0,10)	-0,39*** (0,10)
14	-0,58*** (0,05)	-0,50*** (0,06)	-0,68*** (0,07)	-0,50*** (0,09)	-0,40*** (0,07)	-0,46*** (0,10)	-0,45*** (0,11)	-0,42*** (0,08)	-0,46*** (0,08)
15	-0,62*** (0,05)	-0,45*** (0,07)	-0,60*** (0,07)	-0,30*** (0,10)	-0,23*** (0,08)	-0,40*** (0,11)	-0,42*** (0,12)	-0,34*** (0,09)	-0,34*** (0,08)
16	-0,49*** (0,05)	-0,42*** (0,06)	-0,56*** (0,07)	-0,40*** (0,09)	-0,22*** (0,07)	-0,36*** (0,10)	-0,40*** (0,12)	-0,28*** (0,08)	-0,38*** (0,08)
17	-0,35*** (0,06)	-0,40*** (0,07)	-0,28*** (0,07)	-0,25*** (0,10)	-0,18** (0,08)	-0,15 (0,11)	-0,22* (0,12)	-0,26*** (0,09)	-0,27*** (0,09)
18	-0,33*** (0,06)	-0,25*** (0,07)	-0,32*** (0,07)	0,02 (0,10)	-0,28*** (0,08)	-0,31*** (0,11)	-0,35*** (0,13)	-0,33*** (0,10)	-0,32*** (0,10)
20	-0,29*** (0,05)	-0,21*** (0,07)	-0,24*** (0,07)	-0,33*** (0,10)	-0,13* (0,08)	-0,18 (0,11)	-0,25** (0,12)	-0,26*** (0,09)	-0,21** (0,09)
21	0,05 (0,07)	0,19** (0,08)	-0,48*** (0,08)	0,12 (0,10)	-0,15* (0,09)	-0,00 (0,14)	0,11 (0,14)	0,09 (0,10)	0,11 (0,11)
22	-0,24*** (0,05)	-0,24*** (0,07)	-0,31*** (0,07)	-0,21** (0,10)	-0,28*** (0,08)	-0,17 (0,11)	-0,40*** (0,12)	-0,29*** (0,09)	-0,20** (0,09)
23	-0,27***	-0,17***	-0,23***	-0,39***	-0,00	-0,17*	-0,25**	-0,13	-0,13

	(0,05)	(0,06)	(0,07)	(0,09)	(0,07)	(0,10)	(0,12)	(0,08)	(0,08)
24	-0,49*** (0,06)	-0,44*** (0,07)	-0,51*** (0,07)	-0,44*** (0,09)	-0,30*** (0,08)	-0,26** (0,11)	-0,45*** (0,12)	-0,33*** (0,09)	-0,28*** (0,09)
25	-0,29*** (0,05)	-0,22*** (0,06)	-0,35*** (0,07)	-0,25*** (0,09)	-0,11 (0,07)	-0,15 (0,10)	-0,21* (0,11)	-0,24*** (0,08)	-0,25*** (0,08)
26	-0,09 (0,06)	-0,12 (0,07)	-0,28*** (0,08)	-0,09 (0,11)	-0,08 (0,09)	-0,16 (0,13)	-0,15 (0,13)	-0,20* (0,11)	-0,22** (0,10)
27	-0,20*** (0,05)	-0,17** (0,07)	-0,32*** (0,07)	-0,23** (0,09)	-0,15** (0,08)	-0,17 (0,11)	-0,11 (0,12)	-0,12 (0,09)	-0,18** (0,09)
28	-0,31*** (0,05)	-0,26*** (0,07)	-0,47*** (0,07)	-0,23** (0,10)	-0,16** (0,08)	-0,27** (0,11)	-0,25** (0,12)	-0,30*** (0,09)	-0,20** (0,08)
29	-0,07 (0,06)	0,04 (0,07)	-0,30*** (0,08)	-0,34*** (0,10)	-0,10 (0,08)	-0,17 (0,11)	-0,17 (0,13)	-0,32*** (0,11)	-0,19* (0,11)
30	-0,16*** (0,05)	-0,09 (0,06)	-0,19*** (0,07)	-0,12 (0,09)	-0,03 (0,08)	-0,10 (0,10)	-0,15 (0,12)	-0,12 (0,08)	-0,07 (0,08)
31	-0,30*** (0,05)	-0,48*** (0,06)	-0,56*** (0,07)	-0,86*** (0,09)	-0,41*** (0,07)	-0,47*** (0,10)	-0,46*** (0,11)	-0,51*** (0,08)	-0,55*** (0,08)
32	-0,51*** (0,07)	-0,31*** (0,07)	-0,34*** (0,08)	-0,45*** (0,10)	-0,23** (0,09)	-0,10 (0,12)	-0,30** (0,14)	-0,49*** (0,10)	-0,42*** (0,09)
N	3371	3134	3182	2986	2798	1434	1327	1045	1009
Adjusted R^2 (%)	44,85	46,88	44,42	56,95	51,90	47,70	44,94	48,83	50,63

Source: author's estimates based on LFS and COMEXT data.

Notes: *** denotes significance at 1 level, ** at 5 and * at 10 percent.

NACE codes refer to the manufacture of: 10 - food products; 11 – beverages; 12 – tobacco products; 13 – textiles; 14 – wearing apparel; 15 – leather and related products; 16 – wood and products of wood and cork, except furniture; 17 – paper and paper products; 18 – printing and reproduction of recorded media; 20 – chemicals and chemical products; 21 – basic pharmaceutical products; 22 – rubber and plastic products; 23 – other non-metallic mineral products; 24 – basic metals; 25 – fabricated metal products, except machinery and equipment; 26 – computer, electronic and optical products; 27 – electrical equipment; 28 – machinery and equipment n.e.c.; 29 – motor vehicles, trailers and semi-trailers; 30 – other transport equipment; 31 – furniture; 32 – other manufacturing.

To further elaborate the issue of trade pressures on the wages, we have explicitly included marginal intra-industry trade estimated on the level of NACE2 activity into the equation. Controlling for individual labour market indicators (education, age, gender, occupation and living area), we focus on the relationship between intra-industry trade and wages. Specifically, we analyse whether the industries in which the intra-industry trade with European Union have on average higher or lower wages. The results for the analysed period are presented in following Table 2. All of the estimated coefficients from the wage equations are not presented in order to save space, but could be available from the author upon request.

Table 2 Estimated MIIT coefficients in wage equations

Year	Estimated coefficient(standard error)	N	Adjusted R^2 (%)
2004	-0,19*** (0,06)	3371	34,57
2005	-0,35*** (0,07)	3134	37,73
2006	-0,80*** (0,06)	3182	36,08
2007	-0,81*** (0,09)	2986	45,84
2008	-0,41*** (0,07)	2798	45,35
2009	-0,29*** (0,09)	1434	41,48
2010	-0,14* (0,07)	1327	38,91
2011	-0,81*** (0,12)	1045	43,41
2012	0,08 (0,10)	1009	40,79

Source: author's estimates based on LFS and COMEXT data.

As the results of the estimation show, until 2011 the higher marginal intra-industry trade in the activity was associated with significantly lower wages. This means that the more industry actively tried to integrate into the European market by trading products of similar value, the lower average wage it was able to offer to its workers. The accession period in Croatian industry was consequently associated with increased pressures on its workforce in tradable sector.

6. CONCLUSIONS

The paper has addressed the issue of industry wage premium and trade pressures on wages in Croatian manufacturing sector. The estimates have revealed that within manufacturing sector there is an industry wage premium, which remains for some industries active throughout the period. Specifically, relative to the economic activity that virtually had no trade with EU-15 during the 2004-2012 period, all other activities had negative wage premiums. In case of labour intensive activities, those negative wage premiums were consistently significant.

To further investigate the issue, wage equation has been re-specified in order to explicitly include the marginal intra-industry trade with EU-15. The analysis has confirmed that the higher the marginal intra-industry trade in specific economic activity, the lower the relative wage of the workers in that industry. This implies that the more specific industry is integrated in the common EU market, the more it tries to compete with relatively cheaper labour force.

The analysis presented in the paper points to the conclusion that there is an additional tradable vs. non-tradable wage policy issue within the manufacturing sector itself. It has been frequently emphasized that this Dutch decease has important consequences for the overall Croatian competitiveness position. However, previous analysis in the literature did not go beyond the public-private gap or the manufacturing-services gap. The analysis in this paper implies that the effects are possibly even deeper.

The notion that there are industry wage premiums is of particular importance for Croatian labour market policy. It has been frequently emphasized that the labour market in Croatia is rather rigid and suffering from low occupational and any sort of mobility. This implies that workers "stuck" in low-wage industry are most likely to have less prospects to move to other industries. Without increased mobility, however, there are even less chances for decreasing wage premiums in the future.

REFERENCES

Abd-el-Rahman, K. (1991), *Firms' competitive and national comparative advantages as joint determinants of trade composition*, Weltwirtschaftliches Archiv, Vol. 127, No. 1, 83–97.

Andersson, L., Gustafsson, O. and Lundberg, L. (2000) *Structural Change, Competition and Job turnover in the Swedish Manufacturing Industry 1964-96*, Review of International Economics, Vol. 8, 566-582.

Azhar, A.K.M. and Elliott, R.J.R. (2008), *On the Measurement of Changes in Product Quality in Marginal Intra-Industry Trade*, Weltwirtschaftliches Archiv, Vol. 144, No. 2, 225-247.

Brülhart, M. (1994), *Marginal intra-industry trade: measurement and relevance for the pattern of industrial adjustment*, Weltwirtschaftliches Archiv, 130(3): 600–613.

Brülhart, M. (2000), *Dynamics of Intra-Industry Trade and Labour-Market Adjustment*, Review of International Economics, Vol. 8, 420-435.

Brülhart, M. and Elliott, R.J.R. (1998), *Adjustment to European single market: inferences from intra-industry trade patterns*, Journal of Economic Studies, Vol. 25, 225-247.

Brülhart, M. and Elliott, R.J.R. (2002), *Labour-Market Effects of Intra-Industry Trade: Evidence for the United Kingdom*, Weltwirtschaftliches Archiv, Vol. 138, No. 2, 207-228.

Brülhart, M., Elliott, R.J.R. and Lindley, J. (2006), *Intra-Industry Trade and Labour-Market Adjustment: A Reassessment Using Data on Individual Workers*, Review of World Economics, Vol. 142, No. 3, 521-545.

Botrić, V. (2012), *Mehanizmi prilagodbe hrvatske prerađivačke industrije: analiza s aspekta tržišta rada*, Ekonomski vjesnik, Vol. 25, No.1, 121-132.

Davis, D. R. and Harrigan, J. (2011), *Good Jobs, Bad Jobs, and Trade Liberalisation*, Journal of International Economics, Vol. 84, 26 – 36.

Drinkwater, S. and Robinson, C. (2011), *Welfare Participation by Immigrants in the UK*, IZA Discussion Paper Series No. 6144.

Fontagné, L. and Freudenberg, M. (1997), *Intra-industry trade: methodological issues reconsidered*, CEPII Working Paper, No. 97-01, January, Paris: CEPII.

Freudenberg, M. and Lemoine, F. (1999), *Central and Eastern European Countries in the International Division of Labour in Europe*, CEPII Working Paper, No. 99-05, April, Paris: CEPII.

Greenaway, D., Hine, R., Milner, C. And Wright P. (1999), *An Empirical Assessment on the Impact of Trade on Employment in the United Kingdom*, European Journal of Political Economy, Vol. 15, 485-500.

Helpman, E. and Krugman, P.R. (1985) *Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition, and the International Economy*, Cambridge MA: MIT Press.

Krugman, P. R. (1981), *Intra-industry Specialization and the Gains from Trade*, Journal of Political Economy, Vol. 89, No. 5, 959 – 973.

Krugman, P. (2008), *Trade and wages, reconsidered*, Brookings Papers on Economic Activity, No.1, 103-154.

Melitz, M. J. (2003), *The Impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity*, Econometrica, Vol.71, No. 6, 1695 – 1725.

Nestić, D. (2010), *The Gender Wage Gap in Croatia – Estimating the Impact of Differing Rewards by Means of Counterfactual Distribution*, Croatian economic survey, Vol. 12, No.1, 83-119.

Vinko Zaninović
University of Rijeka, Faculty of Economics, Rijeka, Croatia
Katja Zajc Kejžar
University of Ljubljana, Faculty of Economics, Ljubljana, Slovenia

INTENSIVE AND EXTENSIVE MARGINS OF CROATIAN MANUFACTURING EXPORTS: EVIDENCE FROM 2000-2012 PERIOD

ABSTRACT

This paper investigates the development of intensive and extensive export margins using augmented gravity model on the industry level data for Croatia during the 2000-2012 period. During this period important events on national and global level occurred with the significant implications for trade flows. On the national level: signing of Stabilization and Association Agreement (SAA) in 2001 and Croatia's signing of the Central European Free Trade Agreement 2006 (CEFTA). Moreover, in 2011, Croatia began applying protocols on the rules of origin providing diagonal cumulation (DC) between CEFTA parties involved in the Stabilisation and Association Process (SAP) and European Union.

Also, during observed time period, financial crisis originating in the United States, spread to the rest of the world and the sovereign debt crisis in European Union resulted in low economic growth in the whole Europe. Sharp drop in economic activity was particularly noticed in Croatia, where manufacturing sector lost more than 50,000 workers (around 17% of total workforce in manufacturing sector) and the number of firms decreased by 2,650 (around 11% of all firms in manufacturing sector). We use augmented gravity model, where apart from standard variables used in gravity equations, dummy variables for trading partners under preferential trading systems are included to explain changes in export activity of Croatian firms across industrial divisions during observed period. Separate analysis is carried out for exports of intermediate, consumption and capital goods, defined using Broad Economic Categories classification. Our results show that SAA and DC significantly affected intensive export margin (average exports across industry divisions), specially exports of consumption goods, while the global trade collapse affected negatively intensive margin and the extensive trade margin (number of firms across industry divisions exporting to foreign markets).

Keywords: economic crisis, manufacturing sector, intensive and extensive export margins, gravity model

JEL classification: F10, F12, F15

1. INTRODUCTION

Gravity equation, introduced into international trade by Tinbergen in 1962, became standard tool in the analysis of bilateral trade flows due to its excellent explicative power. Standard gravity equation assumes that trade between countries is determined by the economic masses of trading partners, proxied by gross domestic product (GDP), and by the distance between trading partners, distance being proxy variable for the bilateral trade costs. Gravity trade model is generally used for ex post estimation of impacts of different trade policies and trade distortions on bilateral trade. Subsequently, so-called augmented gravity model emerged in the literature with the primary aim of capturing ever-wider set of trade policy options effects.

Since its introduction, gravity model was estimated on the country level, and from 1990s, analysis performed on firm level and transaction level data (in 2000s) emerged. Mainly, focus of these papers was estimation of elasticities of bilateral trade with respect to trade costs. Trade costs include costs incurred from engaging in international trade such as transportation costs, tariffs, non-tariff barriers, etc. Aim of the papers was to understand the factors that affect trade costs, so that the welfare implications of their change can be given. One of the main issues in this research field is the problem of measure, since the "direct measures are remarkably sparse and inaccurate" (Anderson & van Wincoop, 2004).

In this paper we estimate augmented gravity model on industry level data for Croatia with the aim of estimating effects of the change of macroeconomic surroundings on Croatian manufacturing export. We estimate how signing of Stabilization and Association Agreement (SAA) in 2001 and Croatia's admission into the Central European Free Trade Agreement 2006 in 2006 (hereinafter CEFTA) affected industry export flows. Moreover, we are interested to see whether enabling of diagonal cumulation of origin between CEFTA parties involved in the Stabilisation and Association Process (SAP) and European Union significantly affected exports of Croatian manufacturing sector. Also, we are interested to see whether so-called trade collapse in 2009 had major impact on exports and the number of firms exporting. Trade collapse in 2009 was induced by the financial crisis originating in the United States, that spread to the rest of the world and the sovereign debt crisis in European Union resulted in low economic growth in the whole Europe. Sharp drop in economic activity was particularly noticed in Croatia, where manufacturing sector lost more than 50,000 workers (around 17% of total workforce in manufacturing sector) and the number of firms decreased by 2,650 (around 11% of all firms in manufacturing sector) (CBS, 2015). By using country-time dummy variables we take into account time specific effects for each destination market, so we can monitor changes in trade margins by year. Moreover, separate analysis is carried out for exports of intermediate, consumption and capital goods, defined using Broad Economic Categories (BEC) classification. BEC classification was used because we wanted to test whether vertical specialization and supply chains in general play important part of Croatian manufacturing exports.

According to Behrens et al. (2013), who did analysis of the global trade collapse effects on the firm level data for the Belgium, trade fall affected strongly intensive margin (exports per firm), while the extensive margins (number of firms, average number of destination and origin markets countries per firm) were relatively unaffected. Our results confirm their findings for intensive margin (average exports across sectors per country), but in the case of Croatia's industry sector, extensive margin was affected negatively as well (although we follow only one definition of extensive margin, i.e. number of exporters per country).

In second chapter we provide brief literature review of the gravity model in general and empirical papers using industrial level data. Third chapters contain description of the database used and explanation of the methodology applied. Fourth chapter is reserved for the estimations results and discussion. The final chapter concludes.

2. LITERATURE REVIEW

Gravity model of international trade by Tinbergen (1962) became the corner stone of the bilateral trade flows research, and was continually methodologically updated, since the original model lacked microfoundations and was not consistent with prevailing theories of that time (like Heckscher-Ohlin theory). First, so-called augmented gravity model, was developed by Linnemann (1966), which included population as a measure of country size. Also, other papers included different right hand side variables (RHS) like per capita income, common language, common currency, historical ties (like colonial links, wars, etc.). Each specification of the gravity model had primary aim of capturing supply structure of the exporter and demand structure of the importer country.

Seminal papers by Bergstrand, in 1985 and 1990 introduced price indexes and exchange rate variables in the gravity equation (1985) and monopolistic competition (1990) by assuming that countries completely specialize in different product varieties. One the most important methodological contributions came from Anderson and van Wincoop (2003) and are discussed in chapter 3 (see equation [2]).

From the econometric point of view, standard estimation of cross-sectional data that prevailed in 1990s was substituted for panel data analysis using fixed effects estimation (Cheng & Wall, 2005). Aim of the change (apart from the fact that panel data become more available) was to control for heterogeneity between trading pairs and to allow for unobserved and/or misspecified factors that explain trade flows (see term Ω_{ijt} in equation [1]).

When it comes to the gravity model estimation on industry level, paper from Chen and Novy (2011) measures trade integration across manufacturing industries in EU using modern gravity model setting (baseline is Anderson and van Wincoop's contribution). They use data for 163 manufacturing industries and find substantial degree of heterogeneity across industries for substitution elasticities and the degree of trade integration (degree of trade integration is connected with industry-specific characteristics). Moreover, they find that cross-country trade integration is lower for new EU member states (EU-10) and that cross-border trade significantly depends on transportation costs, proxied by c.i.f./f.o.b. ratios.

Paper from Sohn (2005) uses gravity model in order to explain change in bilateral trade flows of South Korea, using industry level data. His findings are that APEC variable (Asia-Pacific Economic Cooperation) has significant effects of Korea's trade volume.

Aforementioned papers present theoretical and empirical baseline for our paper in which we estimate gravity model (using theoretically valid gravid model setting) on industry level data for Croatia between 2000 and 2012.

3. DATA AND METHODOLOGY

3.1. Data

Trade data was obtained from Croatian Bureau of Statistics and includes firm-level data on exports and imports of goods (8-digit Combined Nomenclature codes) for Croatian firms from 2000 up to 2012. We then aggregated the data on industry level according to 2-digit National Classification of Activities (2007 version). Sample includes bilateral trade flows between Croatian manufacturing sector (from division 10 to division 33) and 39 countries and represents more than 90% of total export from Croatia during observed period (EU27, CEFTA countries, Unites States, Turkey, China, Switzerland, South Korea and Japan).

From 8-digit CN codes, we aggregated products into three BEC product categories, namely intermediate, consumption and capital goods (BEC1, BEC2 and BEC3, respectively). Nominal GDP data for the destination countries were taken from Eurostat, while dummy variables for free trade agreements and application of the

protocols on rules of origin providing diagonal cumulation (DC) between Croatia and other CEFTA countries with EU were taken from official journals.

Next chapter explains methodology used in order to explain changes in trade margins of Croatian industrial sector during observed period.

3.2. Gravity model specification

General formulation of the gravity equation in multiplicative form is the following:

$$X_{ijt} = GS_{it}M_{jt}\Omega_{ijt} \quad , \qquad [1]$$

where X_{ijt} is the monetary value of exports (or imports or total trade) from country (or firm or industry) "i" to country "j" in time "t". S_{it} includes exporter-specific factors (usually gross domestic product) that effectively presents supply of exports (in general equilibrium context of the gravity model), M_{jt} comprises importer-specific factors (again, gross domestic product) that effectively present demand for imports of destination market "j" in time "t". Last term, Ω_{ijt} denotes the ease of access to market "j" for exporter "i". Equation [1] is so-called naive form of gravity equation. Modern approach is to include fixed effects for exporter and importer (in the case of panel data, exporter-year and importer-year effects, i.e. exporter and importer fixed effects are time varying).

We loosely follow approach Anderson and van Wincoop (2003) and include multilateral resistance terms (MRT) which take into consideration trade resistance between a country and all other trading partners (their original approach is technically demanding and is very rarely followed empirically – we used country-year fixed effects to account for MRT). Main idea is that bilateral trade flows between trading partners "i" and "j" are depending on the multilateral resistance, i.e. they are depending on all other trading partners of those two countries. Their formulation of the gravity equation, which is the basis for almost all subsequent papers that use gravity models in order to explain bilateral trade flows is the following:

$$X_{ijt} = \frac{Y_{it}Y_{jt}}{Y_t}\left(\frac{t_{ijt}}{\pi_{it}P_{jt}}\right)^{1-\sigma}, \qquad [2]$$

where Y_{it} and Y_{jt} stand for particular countries and Y_t stands for world GDP, while t_{ijt} stands for tariff equivalent of overall trade costs. Elasticity of supstitution between goods is represented with σ, while π_{it} and P_{jt} represent multilateral resistance terms (in another words – exporter and importer ease of market access). In practice, importer and exporter fixed effects (dummy variables) are usually used in order to capture multilateral resistance terms. Since we have panel data, we use country-year dummies in order to avoid "gold medal mistake" in estimating gravity model, as suggested by Baldwin and Taglioni (2006). Since one part of our dyadic relationships is always fixed (exports from Croatia) we only use destination country-year fixed effects.

So, the gravity model on industry-country level is the following:

$$z_{kjt} = \alpha_0 + \beta_1 gdp_{jt} + \beta_2 dist_j + \beta_3 contig_j + \beta_4 saa_{jt} + \beta_4 cefta_{jt} + \beta_5 diag\_c\_wb_{jt} + \beta_{jt} + \beta_t + \varepsilon_{kjt} \,, \qquad [3]$$

where the dependent variable z_{kjt} can be decomposed into the extensive and intensive trade margins:

$$exports_{kjt} = n_{kjt} + \frac{exports_{kjt}}{n_{kjt}}, \qquad [4]$$

where values are expressed in logs and $e_{xport_{kjt}}$ stands for industry division "k" ("k" being divisions from 10 to 33) exports to country "j" in year "t", n_{kjt} is a number of firms in industry division "k" exporting to the

destination j, $\frac{exports_{kjt}}{n_{pjt}}$ are average exports per firm in industry division "k" to country "j". For the other variables we have the following notation - gdp_{jt} stands for GDP of the trading partner, $dist_j$ stands for distance between capital cities between Croatia's capital city and capital cities of partner countries, while $contig_j$ stands for contiguity and has value 1 if the partner country shares land border with Croatia and 0 otherwise. Terms saa_{jt}, $cefta_{jt}$, $diag\_c\_wb_{jt}$ are dummy variables with the value of 1 if the free trade agreement is implemented between Croatia and EU, CEFTA and whether Croatian firms can cumulate origin with firms from other CEFTA members and EU (value 1 if the trading partner is one of the WBC), respectively.

We use two free trade agreements (FTA) as proxies for variable trade costs of exporting, therefore we expect positive signs of the parameters for saa_{jt} and $cefta_{jt}$. Inclusion of the dummy variable for the adoption of protocols enabling diagonal cumulation should generally also affect positively exports, since theoretical prediction and empirical findings prove that inclusion into the system of diagonal cumulation leads to a trade creation effect, i.e. switch from less efficient domestic sources towards imports (in our case, we predict that other CEFTA members will increase their import demand from Croatia, since we analyze only exports flows of Croatian industrial sector). Diagonal cumulation should also contribute to trade reorientation – in our case from EU towards other partners in the diagonal cumulation system. The study on the economic impact of extending the pan-European system of cumulation of origin to the Mediterranean countries in the Barcelona process made by The Sussex European Institute (2003) found supporting empirical evidence on cumulation based on a gravity model estimates. They found that the trade actually taking place between partners that are not part of a system allowing diagonal cumulation of origin with the European Economic Area is lower by up to 40-45% compared to trade flows between countries which do allow for diagonal cumulation.

All continuous variables are in logs, so the estimated coefficients can be interpreted as elasticities. The coefficients for the dummies need to be transformed in order to be interpreted as elasticities with the following transformation – [exp(a)-1] (multiplied by 100 in order to get the percentage change) – where "a" is the estimated coefficient of the dummy variable. Also, estimations of [2] were done with clustering on the panel variable (nkd_iso, i.e. industry division and trading partner), which produces estimates that are robust to cross-sectional heteroscedasticity and serial correlation.

Among different econometric estimators used in gravity model estimations, two are the most prominent - fixed effects estimator (FE) and random effects estimator (RE). The estimation techniques allow us to control for partner country and time-specific effects and to thereby control for economic and other country-pair-specific factors that are constant over time and are not explicitly represented in the model. Usually, Hausman's test is used to test the specification for the fixed versus the random effects model. High values of Hausman $\chi 2$ statistics reject the null hypothesis that individual specific effects are not correlated to the explanatory variables, which is the assumption of REM. Low values of Hausman's statistics thus favour REM. Since, the Hausmans's test is valid only under homoscedasticity, we use test of overidentyfing restrictions in order to see which of the two estimations methods is more suitable. Logic of the test is the following:

a) The FE estimator used ortogonality conditions that the regressors (X_{it}) are uncorrelated with the idiosyncratic error term – e_{it} , so expected value of $X_{it}*e_{it}$ is equal to zero.
b) The RE estimator uses additional (overidentifying restrictions with respect to FE) orthogonality conditions that the regressors are uncorrelated with the group-specific-time-invariant error term - u_i , so expected value of $X_{it}*u_i$

The test is implemented in Stata 13 statistical package (as all estimations in this paper) and follows artificial regression approach described by Arellano (1993) and Woolridge (2002).

Based on this test, we decided for fixed effects estimator, so the basic structure of our model is the following:

$$y_{it} = \alpha + x_{it}\beta_k + z_i\delta + u_i + \varepsilon_{it} \quad , [5]$$

Where, by the assumptions of the model, individual-specific (and time-invariant) effect (u_i) is potentially correlated with the regressors. When estimating, time-invariant variables (z_i) like distance and contiguity are removed together with time-invariant characteristics due to the demeaning, but we obtain estimates δ using residuals from fixed effects estimations and regress them on distance and contiguity. Term ε_{it} stands for idiosyncratic error term.

In the context of our research we find that using by using fixed effects we partially (only partially because we are accounting for time fixed effects, while time variant effects for each of the industry division are not accounted for) overcome the lack of other variables on the industry level (only variable at the industry level are exports by industry divisions).

4. RESULTS OF THE EMPIRICAL ANALYSIS AND DISCUSSION

Results obtained from estimation of equation [2] can be explained as the elasticity of average exports across industry divisions (for intensive margin see decomposition of total exports under [3]) and number of firms across industry (for extensive margin, see [3]) with respect to the change in one of the RHS while holding other RHS variables constant. Results for estimation of FE model are shown in tables 1a, 2a and 3a. Estimates of the time-invariant variables, obtained after regressing FE residuals on distance and contiguity dummy are shown in appendix (tables 1b, 2b and 3b).

Table 1a shows that aggregate exports across industries are significantly affected by the rise in foreign demand, as well as by the enabling of diagonal cumulation between CEFTA members and EU. Parameters for two FTAs are negative, but after estimating with the one-year lags (results not shown, but available upon request), parameters are in line with theoretic predictions. When looking across different product groups, enabling of diagonal cumulation affected significantly exports of intermediates.

Table 1a Gravity regression results for intensive export margin (total exports) on industry level, total and by BEC products groups, 2000-2012, fixed effects estimation

	(1)	(2)	(3)	(4)
VARIABLES	lnexp	lnexp	lnexp	lnexp
	Total	Intermediate goods	Consumption goods	Capital goods
gdp	1.580**	1.129	0.206	-0.541
	(0.697)	(0.820)	(0.916)	(1.630)
saa	-1.795*	0.807	1.856**	-1.921
	(0.954)	(1.026)	(0.905)	(1.834)
cefta	-1.634*	-1.647	-0.317	-2.944
	(0.964)	(1.178)	(1.349)	(2.126)
diag_c_eu	2.567**	2.519**	2.364	0.246
	(1.080)	(1.068)	(1.708)	(2.999)
Constant	-27.15	-17.50	5.874	24.11
	(17.80)	(20.92)	(23.54)	(41.60)
Observations	9,686	8,638	6,570	5,303
R-squared	0.162	0.149	0.144	0.169
Number of nkd_iso	906	871	823	711

*Country-year and year effects included
**Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' estimations

Results from Table 2a indicate that average exports per firm across industry divisions reacted positively for exports of intermediates and consumption goods as a results of the SAA, but the impact on exports of consumption goods is stronger that for intermediates, which is in line with theory, i.e. substitution elasticities are higher for consumption that for intermediate goods (Broda & Weinstein, 2006). Same is for the impact of diagonal cumulation.

Table 2a Gravity regression results for intensive export margin (average exports per firm) on industry level, total and by BEC products groups, 2000-2012, fixed effects estimation

	(1)	(2)	(3)	(4)
VARIABLES	lnavg	lnavg	lnavg	lnavg
	Total	Intermediate goods	Consumption goods	Capital goods
gdp	1.294**	0.948	0.511	-0.391
	(0.650)	(0.731)	(0.934)	(1.469)
saa	-1.843**	1.252	1.756*	-1.750
	(0.932)	(0.920)	(0.961)	(1.699)
cefta	-1.547	-1.338	-1.296	-3.168
	(0.956)	(1.140)	(1.377)	(2.003)
diag_c_eu	2.315**	2.457***	3.095*	1.173
	(1.000)	(0.928)	(1.769)	(2.698)
Constant	-20.30	-14.06	-2.767	19.44
	(16.58)	(18.62)	(23.94)	(37.40)
Observations	9,686	8,638	6,570	5,303
R-squared	0.139	0.096	0.112	0.136
Number of nkd_iso	906	871	823	711

*Country-year and year effects included
**Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' estimations

Table 3a shows that the number of exporters across industry divisions was positively affected by the increase of foreign demand in general, while the SAA affected negatively. Reason for the significant negative effects of SAA could be increased competition from the EU. CEFTA membership affected positively number of firms exporting consumption goods that indicates (estimation using one-year lags also showed positive effects on total exports as well) that Croatian industry sector adapted quickly to tariff reduction/removal.

Table 3a Gravity regression results for extensive export margin (number of firms in industry) on industry level, total and by BEC products groups, 2000-2012, fixed effects estimation

	(1)	(2)	(3)	(4)
VARIABLES	lnid	lnid	lnid	lnid
	Total	Intermediate goods	Consumption goods	Capital goods
gdp	0.428***	0.155	-0.194	-0.0444
	(0.130)	(0.172)	(0.119)	(0.177)
saa	-0.370**	-0.354*	0.0842	-0.182
	(0.187)	(0.204)	(0.143)	(0.177)
cefta	-0.118	-0.240	0.687***	0.0865
	(0.248)	(0.260)	(0.189)	(0.185)
diag_c_eu	0.211	0.0393	-0.469**	-0.591*
	(0.205)	(0.296)	(0.191)	(0.303)
Constant	-9.084***	-2.385	6.268**	2.427
	(3.321)	(4.419)	(3.017)	(4.564)
Observations	9,686	8,639	6,571	5,303
R-squared	0.387	0.361	0.299	0.324
Number of nkd_iso	906	872	823	711

*Country-year and year effects included
**Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' estimations

Estimation results for our gravity model show dependence of Croatian exports at the industry level with respect to foreign demand for both trade margins. This is logical, since more that 90% of Croatian exports are covered with in our data set and exports of goods makes around 20% of the national GDP on average during observed period. FTAs variables (SAA and CEFTA), that are proxies for variable trade costs have negative effects on total exports flows (although, as already mentioned, estimations with one-year lag show positive signs on the parameters), while when looking at the different product groups, we see that exports of consumption goods was positively affected by trade integration. Enabling of the diagonal cumulation of origin affected positively both the total exports and export by product groups which testifies to importance of the rules of origin rules to regional trade flows.

When looking at the country-dummy variables (not presented, available upon request), global trade collapse from 2009 (started at Q4 of 2008) affected negatively both intensive and extensive margins. Results from the Tables in the Appendix all confirm negative effect of distance and positive effects of common land border on total exports and exports across product groups as well.

5. CONCLUSION

The results based on gravity model estimations confirm that enabling of diagonal cumulation of rules of origin had significantly positively impact on Croatian export across industry divisions (on both trade margins), in particular for trade with intermediates and consumption goods. This is in line with theoretical predictions and proves that the introduction of a system of diagonal cumulation of origin between the European Union, the Western Balkan countries participating to the Stabilisation and Association Process and Turkey is contributing to reduction of regional trade costs and enhance the trade performance of, in our case Croatia. On the other hand, estimates of the impact of the trade part of the Stabilization and Association Agreement as well as Central European Free Trade Agreement 2006 are ambiguous and therefore it is impossible to conclude whether they had significant impact of exports performance of Croatian manufacturing sector.

REFERENCES

Anderson, J. E., van Wincoop, E. (2003), Gravity with Gravitas: A Solution to the Border Puzzle, The American Economic Review, 93(1): 170-192.

Anderson, J. E., van Wincoop, E. (2004), *Trade costs*, Journal of Economic Literature, 42(3), 691-751.

Arrelano, M. (1993), *On the testing of correlated effects with panel data*, Journal of Econometrics, 59(1-2): 87-97.

Augier, P., Evans, D., Gasiorek, M., Holmes, P. and Lai-Tong, C. (2003), Study on the economic impact of extending the pan-European system of cumulation of origin to the Mediterranean partners' part of the Barcelona process.

Baldwin, R. and Taglioni, D. (2006), *Gravity for dummies and dummies for gravity equations*, National Bureau of Economic Research Working Paper 12516, NBER.

Behrens, K., Corcos, G., and Mion, G. (2013), *Trade Crisis? What Trade Crisis?*, The Review of Economics and Statistics, 95(2): 702-709.

Broda, C., and Weinstein, D. E. (2006), *Globalization and the Gains from Variety*, Quarterly Journal of Economics, 121(2): 541–585.

Chen, N., and Novy, D. (2011), *Gravity, trade integration, and heterogeneity across industries*, Journal of International Economics, 85(2): 206-221.

Cheng, I. H., and Wall, H. J. (2005), *Controlling for Heterogeneity in Gravity Models of Trade and Integration*, Federal Reserve Bank of St. Louis Review, 87(1): 49-63.

Clark, T. S., and Linzer, D. A. (2015), *Should I use Fixed or Random Effects?*, Political Science Research Methods, 3: 399-408.

Linnemann, H. (1966), *An Econometric Study of International Trade Flows*, Amsterdam: North-Holland.

Tinbergen, J. (1962), *Shaping the World Economy – Suggestions for an International EconomicPolicy*, New York: The Twentieth Century Fund.

Woolridge, J. M. (2002), Econometric Analysis of Cross Section and Panel Data, The MIT Press, Cambridge, Massachusetts.

APPENDIX

Table 1b Gravity regression results for intensive export margin (total exports) on industry level, total and by BEC products groups, 2000-2012, OLS estimation

	(1)	(2)	(3)	(4)
VARIABLES	lnexp	lnexp	lnexp	lnexp
	Total	Intermediate goods	Consumption goods	Capital goods
dist	-3.149***	-2.032***	-0.462***	-0.0372
	(0.121)	(0.120)	(0.138)	(0.197)
contig	1.129***	2.257***	1.822***	-1.780***
	(0.314)	(0.339)	(0.346)	(0.396)
Constant	21.46***	13.50***	2.781***	0.608
	(0.860)	(0.867)	(0.971)	(1.366)
Observations	9,686	8,638	6,570	5,303
R-squared	0.565	0.449	0.124	0.048
Number of nkd_iso	906	871	823	711

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' estimations

Table 2b Gravity regression results for intensive export margin (average exports per industry) on industry level, total and by BEC products groups, 2000-2012, OLS estimation

	(1)	(2)	(3)	(4)
VARIABLES	lnavg	lnavg	lnavg	lnavg
	Total	Intermediate goods	Consumption goods	Capital goods
dist	-2.652***	-1.401***	-0.527***	0.169
	(0.110)	(0.107)	(0.134)	(0.155)
contig	0.798***	1.538***	1.448***	-1.626***
	(0.282)	(0.273)	(0.319)	(0.277)
Constant	18.09***	9.310***	3.279***	-0.785
	(0.782)	(0.770)	(0.938)	(1.059)
Observations	9,686	8,638	6,570	5,303
R-squared	0.526	0.330	0.123	0.093

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' estimations

Table 3b Gravity regression results for extensive export margin (number of firms in industry) on industry level, total and by BEC products groups, 2000-2012, OLS estimation

	(1)	(2)	(3)	(4)
VARIABLES	lnid	lnid	lnid	lnid
	Total	Intermediate goods	Consumption goods	Capital goods
dist	-0.951***	-0.553***	-00157	-0.220***
	(0.0351)	(0.0351)	(0.0504)	(0.0429)
1.contig	1.068***	0.549***	0.464***	0.0266
	(0.138)	(0.138)	(0.127)	(0.132)
Constant	6.388***	3.680***	0.0251	1.447***
	(0.259)	(0.258)	(0.364)	(0.304)
Observations	9,686	8,638	6,570	5,303
R-squared	0.608	0.389	0.039	0.066

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Source: Authors' estimations

SECTION II

EU MEMBER STATES' EXPERIENCES IN DIFFERENT POLICY AREAS

Jiří Dušek, Lubomír Pána
College of European and Regional Studies, Ceske Budejovice, Czech Republic

THE USE OF PPP PROJECTS ON THE LEVEL OF STATES, REGIONS AND MUNICIPALITIES UNDER THE CONDITIONS OF THE CENTRAL EUROPEAN REGION

ABSTRACT

In the last 20 years, there has been a revival in Central Europe of the idea of including private capital in financing construction and operating public infrastructure in the form of partnership between public and private sector (so-called PPP). In the Czech Republic, several projects have been selected, so-called pilot projects. On these projects, legislative conditions and the ability of both sectors to cooperate in this area should have been tested. One of these pilot projects should have been the D3 motorway between Prague and České Budějovice. Up until today, however, not a single PPP has reached the implementation stage and all remain more or less in the area of ideas and preliminary discussions. In contrast, in the neighbouring Austria, a number of PPPs have been completed, albeit not without problems. One of the consequences of this experience in Austria with PPPs was a decision of ending these projects on federal level and leaving them in the competence of individual ministries and federal states. Big infrastructure projects are then realised with the help of a "private partner" which is a company founded and fully owned by a state.
This contribution thus focuses on an analysis of selected private partnership projects on various levels of state and on a comparison of conditions for their implementation in the Czech Republic and Austria, which will show the historically different development of implementation and inclusion of PPP projects in both countries. However, the objective of the contribution is not only to show the diametrically different experience of the two countries, but also to lay out suggestions which could be useful for successful implementation and use of this method of cooperation. A major problem encountered during work on the contribution is the fact that the situation around the PPP projects is highly politicized and unclear, in neither of the two countries there is a fully functional and to the public available central register of projects which would transparently declare a useful use of public finances. The topic of PPPs is frequently discussed. However, almost exclusively this discussion remains a theoretical discussion without practical application. Under certain conditions, PPP projects seem to be a promising form of cooperation suitable for both the public and the private sector. However, it still remains a form of cooperation which is negatively influenced by many half-truths, myths and political unwillingness, which are only some of the obstacles which hinder its spread in Central Europe.

Keys words: Austria, Czech Republic, PPP projects, private sector, public sector, regional policy

JEL classification: R580 Regional Development Policy

1. INTRODUCTION

The need to include private capital into construction of public infrastructure already occurred in the 19th century when states issued to private companies temporary licenses for transport constructions (especially canals and railways) under the condition that the private investor builds the construction at its own cost and will have the right to operate it for a defined time. In cases where it was obvious that the profit from operating such a construction would not cover the costs or generate profit, a guarantee of some profit was a part of the licence (local railways guaranteed by the Municipal Committee of the Czech Kingdom and others). In the 20th century, after most licenses ran out, these constructions were taken over by the state and further development of infrastructure was financed solely by the state.

In the last 20 years, there has been a revival in Central Europe of the idea of including private capital in financing of construction and operation of public infrastructure in the form of partnership between public and private sector (so-called PPP). In the Czech Republic, several projects have been selected, so-called pilot projects. On these projects, legislative conditions and the ability of both sectors to cooperate in this area should have been tested. One of these pilot projects should have been the D3 motorway between Prague and České Budějovice. Up until today, however, not a single PPP has reached the implementation stage and all remain more or less in the stage of ideas and preliminary discussions.

At the same time, in the years 2007-2010, the Austrian government decided to extend and modernize infrastructure and to facilitate application of the PPP model. In this context, it is important to stress that in Austria, there is no solid legal framework for implementation of PPP projects and there is no single state-wide concept for PPP projects. As a result, there is no central register of projects. Although many projects were successfully implemented, the overall situation makes a very uncoordinated impression (EIB, 2009, p. 4). Up until now, only one major transport infrastructure project has been successfully implemented in Austria on federal level. The project in question is a PPP project called PPP-Projekt Ostregion, i.e. the connection of Vienna with the northern part of the country via a motorway and the follow-up by-pass roads and motorways around Vienna. Responsible for financing of such highly important transport infrastructure projects is the state-owned company ASFINAG (Autobahn- und Schnellstraßen-Finanzierungs-Aktiengesellschaft). Within the PPP project Ostregion, a part of the planning, construction, operation and maintenance was transferred to a private partner - Bonaventura Consortium through a licence contract. This project was implemented in the so-called Design-Build-Finance-Operate (DBFO) form and the contract was signed on 12th December 2006. Work on the construction was completed in January 2010 and since February 2010, the motorway has been in operation. Notably, gradual take-over and putting into operation of parts of the motorway was taking place since the year 2009. However, apart from this Ostregion PPP project, there is no other PPP project under way on federal level in Austria.

In the area of railway infrastructure, an analysis was carried out in the past using an external advisor in regard to the possibility of including private entities in the construction of planned railway tracks. However, it has shown that for this area, the use of a PPP model is not suitable. The reasons are as follows: firstly, it is very difficult in railway transport to clearly define and mark routes and areas which should be operated separately. Secondly, the size of the projects and at the same time the slow return of investment would mean a big financial burden for a possible private investor. In this context, it would be very difficult to find somebody who would be interested in such an investment.

It is clear from what has been said above that in regard to financing transport infrastructure, financing from public money is without doubt still predominant. Alternative forms of financing can, in special cases, represent a kind of additional financing. In the latest Austrian government programme for the period of 2013-2018, we can read in regard to financing of transport infrastructure projects that a new analysis will be carried out with the objective of determining where and to which extent it would be possible and suitable to use alternative sources of financing such as PPP projects. This analysis is especially important in the context of the planned project of a broad gauged railway which is supposed to connect Moscow, Bratislava and Vienna and thus open up a railway connection to China. It is obvious from the project plan that financing will be more than difficult and for this

reason it is necessary to take into consideration all available options since the possible future railway connection Vienna-Bratislava-Moscow and further east is economically very interesting. However, in view of the currently uneasy relationship of the EU with Russia, it is a question whether this project will be implemented.

2. MATERIAL & METHODS

This contribution focuses on an analysis of selected private partnership projects on various levels of state and on a comparison of conditions for their implementation in the Czech Republic and Austria, which will show the historically different development of implementation and inclusion of PPP projects in both countries. However, the objective of the contribution is not only to show the diametrically different experience of the two countries, but also to lay out suggestions which could be useful for successful implementation and the use of this method of cooperation. A major problem encountered during work on the contribution is the fact that the situation around the PPP projects is highly politicized and unclear; in neither of the two countries there is a fully functional and to the public available central register of projects which would transparently declare a useful use of public finances. The topic of PPPs is frequently discussed. However, almost exclusively this discussion remains a theoretical discussion without practical application.

The methodology of this contribution is in compliance with methods usually used in scientific research; it is based on the use of the latest theoretical knowledge gained from specialised literature, specialised research and studies, newspapers and materials published by individual participants in regional development. Also, the methodology is based on looking for and assessment of mutual relationships which contribute to the clarification of the problems solved and to a deduction and formulation of adequate conclusions which can be derived from such an analysis. The analysis done in the contribution is based on data from the European Commission, the Ministry of Finances of the Czech Republic and the Ministry of Regional Development of the Czech Republic. The main methods used in the article are analysis, description and comparison.

3. FORMS AND CHARACTERISTICS OF VARIOUS PPP MODELS

In practical reality, there are a huge number of various forms of contract arrangements related to PPP projects. The differences lie mainly in the form of spreading risks between the private and the public investor and in division of benefits created as a result of the cooperation. The state is looking for a private license holder to which it could transfer the right to build, finance and operate an infrastructure project using a so-called license contract. After expiry of a period defined in this contract, i.e. after 25 to 30 years, the thus constructed project goes into the possession of a state (Mittendorfer, Weber, 2004, p. 36).

This model most resembles contractual agreements known as concession models, although it is also possible to use other forms of agreements, specifically the mixed or the leasing model. All these models have in common that the licensee usually commits to financing, construction and maintenance of an infrastructure project for the whole period of a contract.

- Operation model – A private company commits to design, construct, finance and operate an infrastructure project at its own risk. Mostly, so-called one-purpose companies are founded for this purpose, the only purpose of which is the above mentioned activity.
- Licence model – An ownership company is founded which subsequently rents a facility to another company which operates it. The reward for this activity is paid out from taxpayer money, usually in annual instalments in the form of instalments or directly by enabling to collect tolls.
- Mixed model – Depending on the purpose of a construction, a “reward” is paid out from public money, i.e. an amount defined in a licence treaty.
- Leasing model – Regular annual leasing payments are paid from public sources and the value of an investment is paid back in the form of leasing.

A different classification of PPP projects according to types and forms is provided by the European Commission (2014): DBB (Design-Bid-Build), OM (Operation and Maintenance), BOT (Build-Operate-Transfer), DBFO (Design-Build-Finance-Operate), BOO (Build-Own-Operate).

Similarly as the classification of PPP projects differs, differ the opinions about them. It is thus not possible to clearly and with general validity state all advantages and disadvantages because every involved party approaches these projects differently, from its own angle.
PPP projects are usually characterized by the following features (Ministry of Regional Development of the Czech Republic, 2006, ASPI, 2003):

- The commissioner is always a public entity which defines requirements for a public service and remains responsible for provision of this service,
- The role of a private partner is to provide as effectively as possible public infrastructure and/or service according to requirements defined by the commissioner,
- The commissioner transfers to the private partner some risks which it usually bears alone when implementing a public project (i.e. the risk of demand, availability and the construction risk),
- The project is usually implemented using a purpose-founded company,
- In a number of projects, the private partner builds, operates, maintains and finances an infrastructure project alone. This makes control and easier planning of overall costs of a project possible,
- The public commissioner pays to a private partner in the course of a project regular payments or enables to a licence holder to use an infrastructure project or a service (the collection of payments from users) or both, there are a number of payment mechanisms available that can be used,
- The projects are characterized by relatively long duration of contract regarding cooperation between public and private partner on different aspects of a project, the licence contracts are usually signed for 25-30 years,
- The method of financing a project, partially by the private sector, sometimes using complex agreements among various parties which define the transfer of level of risk and responsibility among individual partners,
- The significant role of the economic operator which takes part in various stages of a project (design, implementation, financing). The public partner mainly focuses on defining aims which have to be reached in public interest, the quality of the services provided and the price policy. It is also responsible for overseeing the fulfilment of these aims,
- The division of risks between a public partner and a private partner, to which risks usually born by the public sector are transferred. However, PPP does not necessarily have to mean that a private partner bears all or most risks connected with a project. Division of risks is defined according to possibilities of parties involved to evaluate, control and confront this risk.

4. RESULTS AND DISCUSSION

Experience with PPP projects abroad varies greatly. They are the most popular in Anglo-Saxon countries where their use was to a great extent connected with the government of neo-conservative political forces and the arrival of a theory called New Public Management (Nemec, Wright, Stillman, 2002). Within this theory, or better said in its British form, the presupposition is accentuated that the private sector is more effective in production of goods and services than the public sector, especially due to hard budget limitations (and thus also the possibility to go bankrupt) and the presence of a profit motive. According to proponents of this philosophy, it is thus necessary to leave the maximum possible volume of production of good and services to the private sector and to try to use successful methods of management from the private sector in the public sector. One of the possible tools is then seen in the use of PPP projects. However, the use of PPP projects is not limited to Anglo-Saxon countries. They are also used in countries of Continental Europe, although to a lesser extent. Moreover, not all existing mutations of these projects are used in Continental Europe, only the basic forms.

There is also historical experience with PPP projects in the region of Central Europe where first projects were already implemented in the 19th century. In most cases in the Czech Republic and Austria, the projects were nationalized in subsequent decades, in some cases without any form of compensation having been paid. Under current circumstances, it can be assumed that the society has moved so far forward that this kind of treatment caused by possible political changes is unlikely, nevertheless this fact can represent a certain risk for private partners. Especially in ex-communist countries where political culture and the party system is still developing we cannot speak of stability.

In the following table, the current situation in the Czech Republic and in Austria is summed up. We can see clear differences in the understanding and use of PPP projects. Also, the number of successfully implemented projects is different. In the Czech Republic, special legislation is in place which defines the area of PPPs, i.e. the already mentioned licence law; in Austria, only already existing laws are used, i.e. the Federal Law on Public Orders from the year 2006 into which amendments required by the EU were incorporated. In the Czech Republic, so-called pilot projects were selected; in Austria there were no official pilot projects, although sometimes the Ostregion project is considered as such, especially as it was the first project in the area of transport infrastructure. In the Czech Republic, there is not a single project implemented on the level of state or even region, whereas in Austria there are several big infrastructure projects implemented on federal level, as well as on the level of ministries and federal states. Similarly, we can find many more projects on the level of municipalities in Austria than is the case in the Czech Republic, very different are also the areas in which PPPs are used the most often. Due to missing or unavailable information, it is not possible to compare the financial volume of successfully implemented projects in both countries.

Table 1 - Comparison of conditions for the implementation of PPP projects in the Czech Republic and Austria (own analysis, 2014)

Area	Czech Republic	Austria
Legal framework	Law 137/2006 Code on Public Orders and Law 139/2006 Code on Licence Treaties and Licence Procedures.	There is no legal framework intended exclusively for PPP projects, contracts are awarded according to existing laws.
Pilot projects	9 so-called pilot projects were selected, none was implemented for various reasons.	Only one project is considered as a pilot/trial – the construction of 52 km of motorways and express ways as a part of the Ostregion project. The project was fully implemented.
Projects awarded by ministries	In the Czech Republic, no project announced by a ministry has been implemented.	Big transport infrastructure projects have been implemented (motorways, railways).
Projects on the level of regions / federal states	According to available information, no project has been implemented.	Dozens of projects have been implemented, a big part in the area of healthcare and transport infrastructure.
Projects on the level of towns and municipalities	Dozens of projects have been implemented, some cases more similar to outsourcing than PPPs in their classic sense.	Almost two hundred projects have been implemented. However, due to lack of central evidence of public orders, data is only hard to obtain or completely unavailable.
Areas where PPPs are used the most often	Most projects in terms of volume of signed licence treaties are in the area of water management.	Most projects in terms of quantity are in the area of sport and leisure time.
Value of implemented projects	CZK 4358 mil. (municipalities).	EUR 1075.3 mil. (only projects implemented on the federal level or the level of ministries).

It is obvious from the comparison that although the two countries have common initial experience in the area of cooperation of the private and the public sector (the construction of railways in the Austro-Hungarian Monarchy), the current functioning of this cooperation in both countries is diametrically different. In both countries, centres were founded the task of which was to promote, support and monitor the functioning of PPPs. In the Czech Republic, this centre was the now defunct PPP Centre (activity of the PPP Centre was stopped in

2012, since then PPP projects are fiscally managed from the Ministry of Finances of the Czech Republic and legislatively by the Ministry of Regional Development of the Czech Republic, which was partially replaced by the PPP Association (in Czech: Asociace PPP)), in Austria by the so-called PPP Forum, which has not been replaced by any other institution. Exact data and detailed information about projects are not available because there is no centralized database of projects as there is no central institution managing the projects. The once functioning PPP Forum.at, i.e. a kind of equivalent of the Czech Asociace PPP has its web pages continually unavailable. The whole PPP Forum.at project was cancelled due to lack of finances and individual projects are managed by the involved institutions themselves, i.e. by municipalities, towns, federal states and ministries on federal level – especially the Austrian Ministry of Finances and the Austrian Ministry for Transport, Innovation and Technology.

Both countries also differ in the area of selection of a private partner. In Austria, in case of big infrastructure projects, there is an affiliated company founded and fully owned by the state, or as the case may be, a corporation of several big companies, e.g. the Bonaventura consortium. Except for the D47 motorway project, it was not possible to find out from available sources which private investor was selected in so-called pilot projects in the Czech Republic, but it can be said that most of these pilot projects were stopped before a private partner was selected.

Also in the number of successfully implemented and functioning projects, Austria is ahead of the Czech Republic, even though there are problems with availability of data necessary for exact monitoring of projects.

4. CONCLUSION

Worldwide, the process of including private sector in the provision of public services only reached maturity at the end of 1980s. The first country where this concept started to be applied on a bigger scale and which first acquired experience in this area was Great Britain. In the last decade, the role of the private sector in financing and operating infrastructure increased significantly. PPP projects proved useful in Ireland, the Netherlands, Portugal, Spain, France, Austria, USA, Canada, Japan and Australia, but also in a number of developing countries such as Chile and South Africa.

The study of experience with PPP projects in individual countries and sectors enables to acquire certain know-how and avoid the repetition of mistakes and methods which proved as wrong. When evaluating projects on both national and international level, it is necessary to abstain from specific problems or successes of individual projects and to focus on general features which make PPPs a desirable method of operating public services or providing public goods (Ministry of Finance of the Czech Republic, 2004).

The necessity to finance public interest projects and to preserve and develop the quality of life of citizens is obvious. However, not only in the Czech Republic but also in the neighbouring Austria, questions are asked where to get finances for these expensive investments. Especially in the area of transport infrastructure, it is necessary to further invest into development of roads and railways, to enable better transport connections and thus create better business environment. This can subsequently contribute to economic growth and thus new finances for the state. One of the ways is the above described cooperation of the private and the public sector. If we look at the situation in the Czech Republic, it is obvious that this form of cooperation has not been accepted enthusiastically and the effort to implement it failed from the start, notably on projects which were intended to test its functionality. Most of so-called pilot projects turned out to be expensive for the state, without even reaching the stage of implementation. However, it has to be said that the situation is much better on the level of towns and municipalities and if we find any successfully implemented projects in the Czech Republic, then it is on this level.

In Austria, the situation was handled completely differently. In case of big projects, several stable and strong partners joined or a state-owned company was founded (however, the question here is to what extent we can speak of a private partner).

Also, areas in which PPPs are used in both countries are different. In the Czech Republic, on local level, we see projects which are trying to solve urgent needs of a town or municipality. This can be the necessity to increase the number of parking spaces in a town, selection of a new partner for the operation of a school canteen or a sewer system. Only rarely can we see projects which are related to free time of citizens. Unfortunately, in the Czech Republic, the meaning of PPPs was not fully understood, since even from the handful of implemented projects, the majority belong more into the category of outsourcing.

If representatives from Czech municipalities, i.e. elected representatives whose duty is to work in public interest claim, among other things, that PPP projects are not satisfactory due to their transparency and their almost zero corruption potential, it will be very difficult to implement these projects on a bigger scale in the Czech Republic. In the current situation, it would be more suitable to introduce a system similar to the one applied in Austria, i.e. to accept in case of big infrastructure projects a consortium of several big stable companies as a private partner which will be a guarantee of a successful implementation of a project. In the opinion of the authors, Czech public administration has so far not shown the ability to correctly manage big infrastructure projects in which the private partner bears some risks. The contracting authorities are failing not only in negotiation of conditions, but also in safeguarding transparent selection of suppliers. All this confirms the generally known facts concerning the poor quality of public administration in the Czech Republic.

REFERENCES

Austria - PPP Units and Realated Institutional Framework (2009), EIB, Luxembourg.

Guidelines for succesful Public-Private Partnership (2003) [online]. Luxembourg : European Commision, 2003 [cit. 2013-12-21]. Available at WWW: <http://ec.europa.eu/regional_policy/sources/docgener/guides/ppp_en.pdf/>.

Metodika k zákonu 139/2006 Sb. o koncesních smlouvách a koncesním řízení (2006), Ministry of Regional Development of the Czech Republic, Praha.

Mittendorfer, F., Weber, S. (2004), *Public Private Partnerships: Gestaltung aus ökonomischer und juristischer Sicht*, LexisNexis ARD ORAC, Wien.

Nemec, J., Wright, G., Stillman, R. J. (2002), *Public Management in the Central and Eastern European Transition: Concepts and Cases*, NISPAcee Press, Bratislava.

Public private partnership - partnerství soukromého a veřejného sektoru (2003) [online]. Praha : ASPI, 2003 [cit. 2015-01-16]. Available at WWW: <http://www.asociaceppp.cz/cnt/ppp/>.

Zahraniční zkušenosti v oblasti Partnerství veřejného a soukromého sektoru (2004) [online]. Praha : Ministry of Finance of the Czech Republic, 2004 [cit. 2014-10-10]. Available at WWW: <http://www.businessinfo.cz/cs/clanky/zahranicni-zkusenosti-v-oblasti-3729.html>.

Jiří Dušek
College of European and Regional Studies, Ceske Budejovice, Czech Republic

THE PROBLEM AREA OF CZECH REPUBLIC'S USE OF EU STRUCTURAL FUNDS IN THE PROGRAMME PERIOD OF 2007/2013

ABSTRACT

Regional politics only started to develop in the Czech Republic in the second half of 1990s. Until then, the government was more focused on problems related to economic transformation. Moreover, differences between regions were not so big in the Czech Republic. However, the second half of the 1990s brought significant socio-economic differences between individual regions, which manifested themselves e.g. in a different level of employment. Significantly, increased interest in regional politics was not only caused by economic problems, but also by the approaching entry of the Czech Republic into the EU, which brought the possibility of using significant financial means from EU structural funds.
In 2015, the Czech Republic finds itself in the third programme period and it is thus possible to assess not only the impact of EU regional politics on the Czech Republic, but also the degree of success of the Czech Republic in using these funds. In view of the fact that the Czech Republic belongs among the worst performing EU countries in this regard in the programme period of 2007-2013, this contribution focuses on identification of the main causes and barriers. Also dealt with will be examples of "bad" practice, on which systemic failures in drawing EU structural funds can be shown. What we are witnessing is an interesting paradox in which financial means which should have contributed to moving the Czech economy towards advanced European economies are in many cases becoming a problem both for the submitter and the Czech state which due to possible non payment increases its deficit in the range of single and double digit billions of Czech crowns. In its concept, however, the contribution does not "only" focus on assessing the problems related to drawing EU funds in the Czech Republic in the programme period of 2007-2013, it also has the ambition to show on concrete examples selected problems in using EU structural funds, which does not have to be specific to the Czech Republic but can occur any time in any other old or new EU member state. Among the most significant problems of the last programme period are e.g. bureaucracy, insufficient administrative capacity, wrongly set up system of checks, frequent and not systemic changes in legislation, corruption and many other factors. Unfortunately, we are in the year 2015, the second year of the programme period 2014-2020 and instead of really starting the new programme period, drawing of funds from the last period is still not completed, without calls from new operational programmes having been announced. It is obvious that if the Czech Republic was 1.5-2 years behind in using EU structural funds in 2007, the situation is unfortunately repeating, with all the related consequences for all parties involved.

Keys words: Czech Republic, EU funds, operational programme, project, regional policy

JEL classification: R580 Regional Development Policy

1. INTRODUCTION

One of the basic and significant policies of the EU is regional politics. The main objective of this policy is elimination of differences between the levels of development in individual regions of EU member states. The gap in development among individual regions has increased manifold after the accession of new members in 2004 and 2007. The significance of applying these principles within the EU is manifested by the fact that regional politics represents more than 40% of EU budget. Typical for this policy is mainly construction and repair of roads and motorways, railway tracks, airports, mainly connecting remote regions with main centres of economic growth. The policy of solidarity is thus not only an empty word. It helps people in individual countries, regions, towns and municipalities to find work and live better lives.

Regional politics belongs among so-called community or coordinated kinds of politics. This means that its focus and implementation lies in individual member states while EU authorities are responsible for coordination and correct implementation. Objectives and priorities of regional politics of the EU are changing with the development of the European Union and are always newly defined for the next programme period. For the period of 2007-2013, three main objectives were defined for the area of regional politics, which were subsequently implemented with the use of so-called operational programmes. These objectives were common for all EU member states and in the middle-term fiscal budget, 347 billion euro were reserved for these objectives. According to the Ministry of Regional Development of the Czech Republic – National Coordination Authority, 2008, the objectives are as follows:

- Convergence,
- Regional competitiveness and employment,
- European regional cooperation.

Table 1 - Division of EU structural funds among objectives of economic and social cohesion policies in the period of 2007-2013 (Ministry of Regional Development of the Czech Republic, 2006)

Objective	Funds for EU 27		Funds for Czech Republic	
Convergence	283 billion €	81.54 %	25.88 billion €	96.98 %
Regional competitiveness and employment	54.96 billion €	15.95 %	419.09 billion €	1.56 %
European regional cooperation	8.72 billion €	2.52 %	389.05 million €	1.46 %
Total	**347 billion €**	**100 %**	**26.69 billion €**	**100 %**

The funds come from three different sources, based on which area in which country or region is being financed:

- European Fund for Regional Development (EFRD) – innovations, investments and general infrastructure,
- European Social Fund (ESF) – projects helping in the area of employment and programmes for the creation of jobs,
- Cohesion Fund – research of renewable energy production, projects related to protection of the environment and to traffic infrastructure. 15 countries are drawing finances from this fund. A prerequisite is that economic output has to be lower than 90% of EU average (Portugal, Greece plus 12 new EU member states).

Generally speaking, in the last few years, the most investment is taking place into projects situated in the countries of Central and Eastern Europe, including the Czech Republic. The most finances are used for support of innovations, research and sustainable development and to create favourable conditions for small companies which are the backbone of European economy. Part of the funds is also used for cross-border and inter-regional cooperation projects.

Table 2 - Division of EU funds among EU states in the period of 2007-2013 (Dušek, 2011, own adaptation)

Country	Accession	Inhabitants (2012)	Area (km²)	GDP (PPP) per capita (2012) eur / % EU		Allocation of finances 2007-2013 in billion €
Austria	1995	8,443,018	83,871	33,600	131	1.20
Belgium	1952	11,094,850	30,528	30,500	119	2.06
Bulgaria	2007	7,327,224	110,879	12,100	47	6.67
Croatia	2013	4,398,150	56,594	15,600	61	-
Cyprus	2004	862,011	9,251	23,200	91	0.61
Czech Republic	2004	10,236,445	78,867	24,590	96	26.53
Denmark	1973	5,573,894	43,094	32,000	125	0.51
Estonia	2004	1,294,486	45,228	17,500	68	3.40
Finland	1995	5,401,267	338,145	29,400	115	1.60
France	1952	65,327,724	643,801	27,500	108	13.45
Germany	1952	81,843,743	357,022	31,100	121	25.49
Greece	1981	11,290,067	131,957	19,200	75	20.21
Hungary	2004	9,932,000	93,028	16,800	66	24.92
Ireland	1973	4,582,769	70,273	33,100	129	0.75
Italy	1952	59,394,207	301,340	25,200	98	27.96
Latvia	2004	2,041,763	64,589	14,700	62	4.53
Lithuania	2004	3,003,641	65,300	17,800	70	6.78
Luxembourg	1952	524,853	2,586	69,400	271	0.05
Malta	2004	417,520	316	22,000	86	0.84
Netherlands	1952	16,730,348	41,543	32,900	128	1.66
Poland	2004	38,538,447	312,685	16,800	66	67.19
Portugal	1986	10,542,398	92,090	19,200	75	21.41
Romania	2007	21,355,849	238,391	12,600	49	19.21
Slovakia	2004	5,465,311	49,036	25,300	75	11.50
Slovenia	2004	2,055,496	20,273	21,000	82	4.10
Spain	1986	46,196,276	505,370	24,900	97	34.66
Sweden	1995	9,482,855	450,295	32,800	128	1.63
United Kingdom	1973	63,256,141	243,610	28,400	110	9.89
EU total	**28 members**	**506,820,764**	**4,381,376**	**25,600**	**100**	**347 billion €**

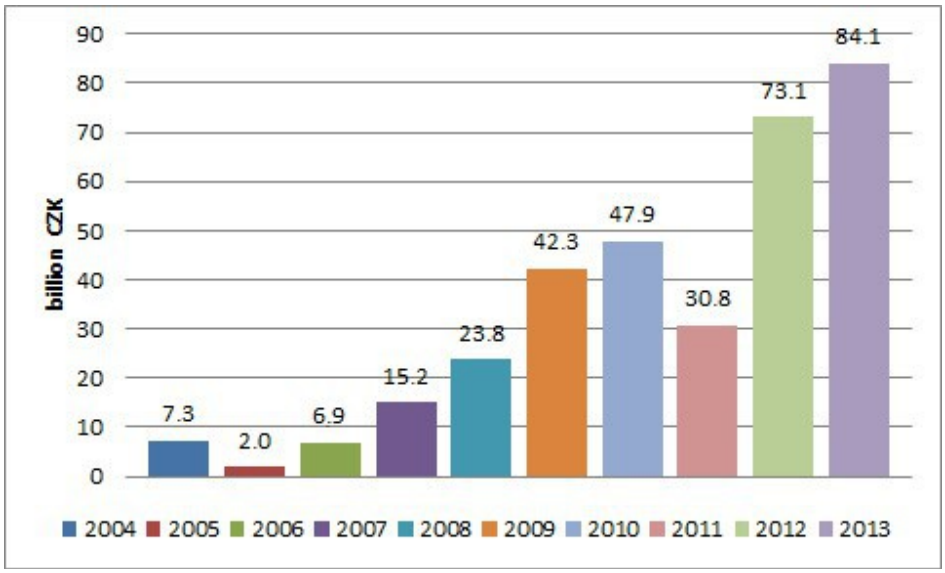
Thanks to accession into the EU, the Czech Republic has the possibility of using EU funds devoted to policies of economic and social cohesion in underdeveloped regions of the EU, with the objective of increasing the competitiveness of these regions. In this context we have to see the EU programme periods of 2007-2013 and 2014-2020 as a wholly unique chance, since the Czech Republic will, for the first and probably also the last time, have a chance to use a huge amount of financial means based on defined objectives and priorities set by the National Development Plan of the Czech Republic for the programme period of 2007-2013, in the framework of which so-called National Strategic Framework has been developed (Blažek, 2006). A New Strategy of Regional Development in the Czech Republic for the period of 2014-2020 was approved on 15th May 2013 by Government of the Czech Republic Resolution No. 344 (see Markl, 2013). However, the key question is whether and how the Czech Republic will be able to effectively use these funds.

In total, since its accession into the EU on 1st May 2004 until 31st December 2013, the Czech Republic paid into the EU CZK 342.8 billion and received CZK 676.2 billion. The total positive balance of the Czech Republic in relation to the EU budget thus reached CZK 333.4 billion. Behind the markedly positive balance of the Czech Republic in the last year lies especially drawing of the Czech Republic from the Cohesion Fund and the EU Common Agricultural Policy, payments of the Czech Republic into the EU budget are growing only gradually (Zeman, 2014).

The difference between income from the EU budget and payments into it, i.e. the net position of the Czech Republic for the year 2007 amounted to CZK 15.2 billion. The Czech Republic reached this positive result even despite the fact that in 2007, it already lost the right to draw finances from so-called budget compensations. In 2008, the net balance of the Czech Republic in relation to EU budget amounted to CZK 23.8 billion and even CZK 42.3 billion in 2009. The balance further improved in 2009 when it reached CZK 47.9 billion. On the other

hand, the situation got significantly worse in 2011 because of problems with drawing funds from the operational programmes Education for competitiveness, Environment and Transport, so there was a drop in the net balance to CZK 30.8 billion. At the end of the programme period there was significant improvement and the net balance reached CZK 73.1 billion in 2012 and CZK 84.1 billion in 2013. However, this did not change the fact that the Czech Republic became one of the worst performing countries in terms of drawing finances from EU funds.

Figure 1 - Development of the net balance of the Czech Republic in relation to EU budget in the years 2004-2013 (Zeman, 2014)



2. MATERIAL & METHODS

The contribution focuses on an analysis of using/drawing of EU financial means in the programme period of 2007-2013 with focus on the Czech Republic and its comparison with other EU countries. In its concept, however, the contribution does not only assess problems related to drawing from EU funds in the Czech Republic in the programme period of 2007-2013, it also has the ambition to show on concrete examples selected problems in using EU structural funds, which does not have to be specific to the Czech Republic but can occur any time in any other old or new EU member state.

The methodology of this contribution is in compliance with methods usually used in scientific research; it is based on the use of the latest theoretical knowledge gained from specialised literature, specialised research and studies, newspapers and materials published by individual participants in regional development. Also, the methodology is based on looking for and assessment of mutual relationships which contribute to the clarification of the problems solved and to a deduction and formulation of adequate conclusions which can be derived from such an analysis. The analysis done in the contribution is based on data from the European Commission, the Ministry of Finances of the Czech Republic and the Ministry of Regional Development of the Czech Republic. The main methods used in the article are analysis, description and comparison.

3. RESULTS AND DISCUSSION

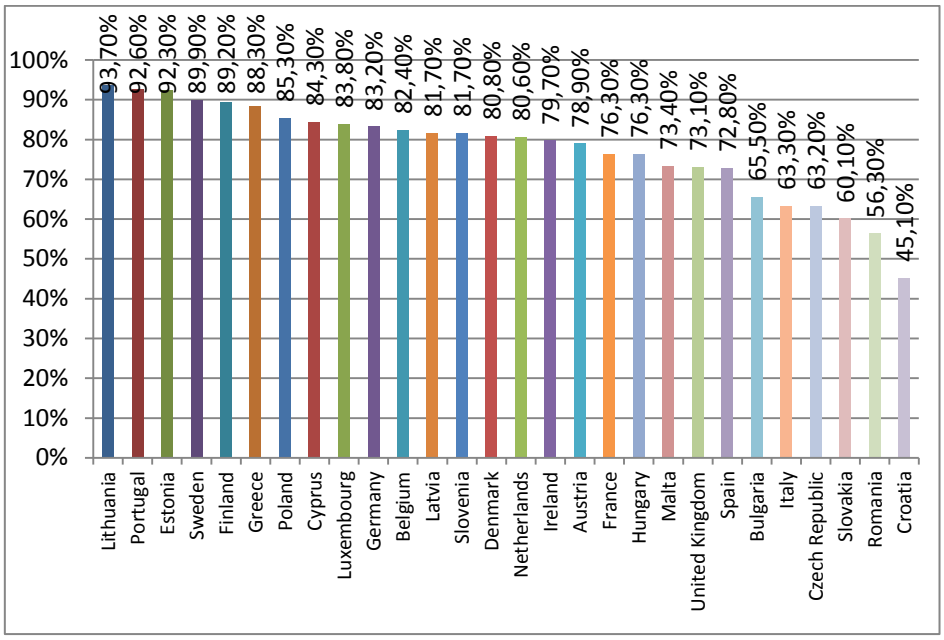
The reasons behind inability to draw finances from EU funds or to draw only slowly are obvious. Excessive fragmentation of supportive programmes markedly increases their costs, both on the side of the providers (costs related to administration – from text of programme announcement to elaboration of request forms and evaluation of received project proposals) and the side of the proposer (especially the necessity to acquire information about the existence of individual programmes and detailed information about conditions that have to be met to be able

file a request for support in a project related to a specific programme). It is a sad fact that these extra costs lower the volume of financial means available for implementation of the actual projects. The low transparency of a whole array of support programmes also leads to a situation where some weaker starting entities do not manage to reach any support at all because they do not have time to study the possibilities on offer or do not possess the specific knowledge necessary to be able to propose a project meeting all formal criteria which are different from programme to programme. It can thus happen that support is given to stronger entities which do not always need it. Another problem (despite increased level of co-financing from the EU budget of up to 85% of legitimate costs) is the necessity to provide the remaining 15% from Czech public sources (Blažek, 2006). In this context, the following risks have been identified (Ministry of Regional Development of the Czech Republic – National Coordination Authority, 2014):

- non-use of allocations due to returning of the finances back to the programme (savings, corrections, decision of beneficiaries not to implement projects etc.). At the same time, time available for implementation of new projects is getting shorter, including timely completion of implemented projects or non-implementation of some projects (e.g. for reasons of delays in public orders)
- insufficient absorption capacity (i.e. inability to find high-quality projects and to manage their implementation by the end of 2015, so-called n+2 rule),
- high error rate resulting from audits carried out (up to double digit percentage points!).

The author has been dealing with the problem area of drawing finances from EU funds for several years and is of the opinion that one of major problems is certain non-transparency with which data regarding absorption capacity of individual countries are presented. For this reason, this area is, at least in the Czech Republic, connected with a whole number of half-truths and myths. One of the most frequently occurring myths in the media is the claim that the Czech Republic is the absolutely worst performing country in the area of drawing finances from EU funds. This claim is disproved by data acquired by the author, according to which the Czech Republic is "only" the 4th worst performing country with 63.2% (see figure 2). However, it is very difficult to acquire up to date data because in the Czech Republic, the Ministry of Regional Development does not publish the data regularly and e.g. DG Regional and Urban Policy prefers to publish data in its annual reports (Annual Activity Report) in blank graphs so it is only possible to guess concrete numbers. This attitude of national and European authorities logically makes any attempts to carry out regular comparative analyses which would increase the pressure on relevant ministries and governing bodies more difficult.

Figure 2 - Level of absorption capability of EU countries as of 31.12.2014 (European Commission, 2015)



In view of the unflattering standing of the Czech Republic in the programme period of 2007-2013, it is striking that at the beginning of 2015, the Czech Republic did not learn a lesson from the previous periods of 2004-2006 and 2007-2013 and again did not even start drawing finances in the new period due to non-approval of operational programmes. Let's characterize the biggest problems related to Czech Republic's drawing of finances from EU funds in the period of 2007-2013:

- political changes – there were changes on government level at the beginning of individual programme periods (2006 – start of conservative government, 2009 – fall of government, 2013 – government resignation, start of interim government, early general elections, 2014 – start of socialist government), which lead to mistakes and slowdown/stop of the process of preparation for a new programme period; it is an interesting fact that during the interim governments, the Czech Republic drew finances the fastest,
- high fluctuation of employees both in control committees and individual operational programmes (connected with political changes),
- big complexity of operational programmes – a total of 26 operational programmes (Goal Convergence – 8 thematic operational programmes and 7 regional operational programmes, Goal Regional Competitiveness and Employment – 2 operational programmes, Goal European Territorial Cooperation – 9 operational programmes),
- bureaucracy → complexity of methodology, which was not even available at the beginning of the programme period, inconsistency of interpretations of controlling committees etc., non sticking to deadlines from the side of controlling authorities, inclusion of appendices to requests which already are available to state administration,
- frequent changes in legislation – especially Law on Public Orders (19 amendments in the period of 2007-2013), e.g. amendment to Law No. 73/2011 Code made conditions for public orders so much stricter that their number dropped by 50% annually. Also, further executive legislative directives are often missing after amendments,
- monitoring system of EU funds → failure of national audit authorities – a check made by the European Court of Auditors in 2012 identified a significant risk that the central audit authority of the Czech republic systematically edits audit results so that in the annual control report the number of errors is reduced under or to a 2% threshold. A good example is report on transport subsidies for the year 2011. The audit authority found out that 1.85 percent of EU subsidies were allocated wrongly. This was a negligible number of under two percent which proved that the system is functioning well. However, an audit from Luxembourg checked the findings of the audit authority and found out that in transport subsidies, 41.82 percent of the total amount were allocated wrongly. In transport subsidies in the year 2010, Czech audit authorities did not find any mistakes whereas the European Court of Auditors found out that almost 5% of subsidies were spent in a breach of law. This number shows that serious mistakes occurred in the control system, although it is a much better result compared with the year 2011 when the Czech audit "oversaw" a mistake of 40%. The control report identifies as the most frequent problem manipulation in public tenders – "concrete lobby" – this term refers to interests of construction companies which, in cooperation with politicians, push through various unnecessary and overpriced construction projects (e.g. the construction of a draw-bridge in Kolín which does not draw, deepening of the Vltava River near Hluboká nad Vltavou as a tourist facility, construction of the D8 motorway from Lovosice to Řehlovice etc.) – for more see e.g. Vlček, 2014 or Hradilek, 2014,
- corrupt environment, methods of projects evaluation, fraud – in case of many implemented projects, the final costs were several times higher than the originally envisaged costs – a good example is a three-kilometre long bicycle path Rokytka in Prague Libeň which cost 5.2 million EUR, which is ten times more than one kilometre of an average bicycle path in the German federal states of North Rhine-Westphalia or Brandenburg where the costs are 180 thousand EUR per kilometre. The most expensive German bicycle path is a luxurious route through the Hamburg neighbourhood Wilhelmsburg where one kilometre cost € 550 thousand. The price of some domestic investments financed by the EU exceeds the German level five to ten times – the most expensive domestic railway track is Votice-Benešov; one kilometre of this fast train track for a speed of 160 km/hour cost 14 million euro, the same

as cheaper tracks for high speed trains, e.g. Madrid-Barcelona, Cologne-Aachen or Rennes-Connerré where the trains reach a speed of over 300 km per hour (Holub, 2014),

- fragmented communication and promotion of structural funds – paradoxically, the most massive investments are taking place at the end of programme periods because of effort to spend money allocated for technical support,
- stopping of funds for operational programmes from the side of the European Commission,
- requirements for co-financing or complete pre-financing of projects etc.

Table 3 - Level of absorption capability of EU countries in the years 2007-2014 (European Commission, 2015, own calculations)

Member state	2007	2008	2009	2010	2011	2012	2013	2014
Austria	2.00%	5.10%	19.00%	28.90%	39.60%	52.80%	67.80%	78.90%
Belgium	1.70%	5.00%	18.10%	23.20%	32.20%	49.20%	68.80%	82.40%
Bulgaria	2.20%	5.50%	9.50%	15.50%	23.60%	36.20%	49.50%	65.50%
Croatia	0.00%	5.00%	5.00%	5.50%	7.40%	10.30%	18.30%	45.10%
Cyprus	2.20%	5.50%	15.20%	26.20%	37.40%	44.30%	61.30%	84.30%
Czech Republic	1.40%	5.50%	12.10%	20.20%	26.50%	38.40%	51.90%	63.20%
Denmark	2.00%	5.00%	11.50%	19.70%	38.30%	45.30%	54.40%	80.80%
Estonia	2.20%	5.50%	19.50%	35.00%	42.00%	61.30%	81.30%	92.30%
Finland	2.00%	5.00%	16.50%	25.80%	40.90%	54.70%	75.70%	89.20%
France	1.60%	5.00%	13.60%	23.60%	34.50%	43.00%	59.90%	76.30%
Germany	2.00%	5.20%	17.40%	28.60%	41.20%	54.10%	70.80%	83.20%
Greece	2.00%	5.00%	10.60%	21.90%	34.90%	49.20%	69.60%	88.30%
Hungary	2.20%	5.60%	13.20%	21.30%	35.30%	44.20%	59.30%	76.30%
Ireland	2.00%	11.10%	23.30%	36.20%	48.30%	60.30%	70.10%	79.70%
Italy	1.70%	5.00%	9.80%	14.90%	21.70%	30.80%	50.10%	63.30%
Latvia	2.20%	5.50%	14.90%	25.10%	36.40%	52.20%	66.00%	81.70%
Lithuania	2.20%	5.50%	21.30%	34.10%	48.00%	62.90%	78.80%	93.70%
Luxembourg	1.00%	5.00%	10.10%	16.10%	40.60%	51.80%	67.80%	83.80%
Malta	2.20%	5.50%	9.70%	17.60%	27.30%	37.20%	50.30%	73.40%
Netherlands	2.00%	5.00%	8.30%	17.40%	33.60%	45.60%	63.80%	80.60%
Poland	2.10%	5.30%	13.00%	23.20%	37.20%	52.30%	67.90%	85.30%
Portugal	2.00%	5.00%	13.00%	25.20%	37.80%	59.20%	78.70%	92.60%
Romania	2.20%	5.60%	10.30%	13.00%	16.60%	22.60%	37.80%	56.30%
Slovakia	2.10%	5.50%	10.00%	18.90%	27.80%	41.10%	52.70%	60.10%
Slovenia	2.20%	5.50%	13.50%	24.80%	37.00%	50.30%	62.90%	81.70%
Spain	2.00%	5.00%	10.60%	22.40%	36.60%	51.70%	62.80%	72.80%
Sweden	2.00%	5.00%	16.20%	26.90%	46.50%	53.30%	68.70%	89.90%
United Kingdom	2.00%	5.00%	13.60%	27.70%	38.80%	50.90%	56.70%	73.10%
EU's absorption capacity								**76.77%**

4. CONCLUSION

According to Postránecký, 2010, regional politics in the Czech Republic was newly constituted after the year 1989 as one of major tools contributing to elimination of regional differences in social and economic development of the Czech Republic. Whereas during the 1990s most policies of regional politics reacted mostly non-systematically to the newly created regional disparities as a consequence of transformation of the Czech economy, in the first decade of the 21st century, all pillars necessary for a systemic attitude to regional politics were created as a consequence of external and internal factors.

Having said that, the current situation is still far from ideal, especially in regard to drawing financial means in individual EU programme periods or the different views of the Ministry of Regional Development and the

individual players of regional development when solving various regional problems. When evaluating the individual programme periods - 2004-2006, 2007-2013, 2014-2020, we can divide problems related to drawing of financial means into three areas:

- recurring problems – e.g. bureaucratic burden, political changes, failure of audit systems, delayed beginnings of drawing from structural funds etc.,
- problems already solved – with small exceptions, the Czech law is compatible with Acquis communautaire (for more see e.g. Pána, 2010), there has also been professionalization of entities involved both on the side of submitters and processors of projects,
- completely new problems – an example is criminal prosecution of several directors of regional programmes → temporary stop in drawing of financial means, sophisticated manipulations with public orders or audit results, devaluation of the Czech crown by the Czech National Bank in the year 2013 → changes in allocations in CZK etc.

Problems related to using EU funds are best demonstrated by the fact that from 6,253 Czech municipalities in the Czech Republic, more than 20% were never involved in any operational programme, which is an alarming number. As is the fact that the EU funds should have increased the GDP of the Czech economy and the standard of living of Czech citizens to Western European level, whereas the reality is that due to breaching conditions related to drawing funds for operational programmes or even pushing through projects not compatible with goals of the operational programmes, the European Commission is not going to pay some implemented projects which leads to an increase in state budget deficit and the follow-up fiscal measures – e.g. the rapid decrease in drawing of funds by the Czech Republic in 2011 (see figure 2) is sometimes called as Řebíček's Tax (minister of transport and hidden owner of a major construction company called Viamont who pushed through several expensive and later not co-financed construction projects). In the long term, however, there is gradual improvement in conditions for drawing and using of EU funds, although not as much due to initiative from the side of the Czech Republic but more due to pressure from the European Commission and other EU authorities (see e.g. the Czech Law on Public Service and the threat of stopping all operational programmes).

REFERENCES

Abeceda fondů Evropské unie 2007-2013 (2008), Ministry of Regional Development of the Czech Republic – National Coordination Authority, Praha.

Analýza čerpání evropských fondů a krizové plány (2014), Ministry of Regional Development of the Czech Republic – National Coordination Authority, Praha.

Annual Activity Report 2012 (2012), DG Regional and Urban Policy, Brussels.

Blažek, J. (2006), Jakou regionální politiku potřebujeme po vstupu do EU? In Dočkal, V., *Šest let regionální politiky v ČR – Šance a limity*, Masarykova univerzita v Brně – Mezinárodní politologický ústav, Brno. ISBN 80-210-3983-3.

Dušek, J. (2011), *Historie a organizace Evropské unie*, College of European and Regional Studies, České Budějovice. ISBN 978-80-86708-95-9.

EU cohesion funding – key statistics (2015) [online]. Brussels : European Commission, 2015 [cit. 2015-01-16]. Available at WWW: <http://ec.europa.eu/regional_policy/thefunds/funding/index_en.cfm>.

Holub, P. (2014), *Proč se zdvihací most postavený z peněz EU nezdvihá, diví se Němci* [online]. Praha : MAFRA, 2014, 2.4.2014 [cit. 2015-01-16]. Available at WWW: <http://zpravy.idnes.cz/televize-ard-natacela-v-cesku-predrazene-stavby-z-penez-eu-pn3-/domaci.aspx?c=A140402_2052275_domaci_jav>.

Hradilek, L. (2014), *Fotogalerie projektů* [online]. Praha : Economia, 2014, 30.4.2014 [cit. 2015-01-16]. Available at WWW: <http://zpravy.aktualne.cz/deset-tucnych-let-dotaci-z-evropskych-fondu/r~e0fbb76ccec811e3b26d002590604f2e/r~b7774508ceca11e3a1ef002590604f2e/>.

Markl, J. (2013), *Strategie regionálního rozvoje ČR 2014-2020* [online]. Praha : Ministry of Regional Development of the Czech Republic, 2013 [cit. 2015-01-16]. Available at WWW: <http://www.mmr.cz/cs/Podpora-regionu-a-cestovni-ruch/Regionalni-politika/Koncepce-Strategie/Strategie-regionalniho-rozvoje-CR-2014-2020>.

Pána, L. (2010), Normotvorná činnost obcí v ČR na příkladu měst České Budějovice a Příbram. In *Decentralizácia a efektívnosť verejnej správy v podmienkach regiónov EÚ*, UMB Banská Bystrica a Univerzita Hradec Králové, Banská Bystrica. ISBN 978-80-557-0088-5.

Postránecký, J. (2010), Regionální politika a regionální rozvoj v České republice. In *Urbanismus a územní rozvoj* [online]. Vol. XIII, 2010, No. 5. ISSN 1212-0855, 10-16 [cit. 2015-01-16]. Available at WWW: <http://www.uur.cz/images/5-publikacni-cinnost-a-knihovna/casopis/2010/2010-05/03_regionalni.pdf>.

Regionální politika EU (2006) [online]. Praha : Ministry of Regional Development of the Czech Republic, 2006 [cit. 2015-01-16]. Available at WWW: <http://www.strukturalni-fondy.cz/getdoc/f35b30a8-c37b-44ec-abe4-ba01ec4294b6/Regionalni-politika-EU>.

Vlček, F. (2014), *Fotogalerie projektů* [online]. Praha : MAFRA, 2014, 2.4.2014 [cit. 2015-01-16]. Available at WWW: <http://zpravy.idnes.cz/foto.aspx?r=domaci&c=A140402_2052275_domaci_jav>.

Zeman, M. (2014), *Čistá pozice České republiky vůči rozpočtu EU za rok 2013* [online]. Praha : Ministry of Finance of the Czech Republic, 2014, 12.2.2014 [cit. 2015-01-16]. Available at WWW: <http://www.mfcr.cz/cs/aktualne/tiskove-zpravy/2014/cista-pozice-ceske-republiky-vuci-rozpoc-16906>.

Andrej Kumar
Faculty of Economics, University of Ljubljana
Sonja Šlander
Faculty of Economics, University of Ljubljana

EU COHESION POLICY AND ABSORPTION IN SLOVENIA

ABSTRACT

The European Union cohesion policy helps to shape and improve the economic performance of member countries from its earliest beginnings. The initial concept and orientation of the cohesion policy were formulated already in the Treaty of Rome (signed 1957) introducing the European Economic Community (EEC) and later the EU by the Maastricht Treaty (signed February 2, 1992). Similar to formal and functional changes of the entire integration, the objectives, methods, terminology, and resources of the cohesion policy were evolving and changing. The past changes of the EU structure and functioning, together with the cohesion policy changes, have evolved from the ongoing EU enlargement and deepening processes. Discussing cohesion policy requires understanding and analyzing of the EU achievements, together with the analyzing and understanding of the cohesion policy specific implementation and impacts on the level of the individual EU member states.

On the EU level, analyzing of the cohesion policy and searching for the new concepts, objectives, resources, and arguments supporting its active use is the most heated before accepting each financial perspective. On member states level, the intensity of debates and arguments about the cohesion policy coincide with that on the EU level. Additionally on member states level, discussions are more continuous because of the linking of cohesion financial resources with the national economic development plans and achievements. The debates on national levels are generally related to the assessments of potentials and realized levels of absorption for the allocated EU cohesion funds. Assessments and analysis investigate the national adequacy of the cohesion funds. The issue is linked to evaluating of the ability and conditions on the side of the member state to actually use the EU cohesion funds successfully for the regional and national economic growth improvements.

The paper discusses a selection of aspects of the EU cohesion policy economic rationale. Some formal and conceptual changes of the cohesion policy from the past are described with the idea to assess potential difficulties in the use of the cohesion policy instruments on the level of eligible subjects. Major focus of the paper is on describing and critical evaluating of the two membership periods of the EU cohesion policy implementation in Slovenia. The analyzing of the specifics in using the cohesion policy instruments in Slovenia is based on the concept of the national absorption capacity and practical obstacles in achieving better economic cohesion development results.

Keywords: *The EU cohesion policy, cohesion, absorption capacity, economic growth, cohesion policy financial instruments, Slovenia, National Strategic Reference Framework*

JEL classification: O52, R10, N94, R58

1. INTRODUCTION

In the EU, different forms of policies and financial instruments are used to support and help regions and member states to realize more even economic development. The background of such policies and instruments dates back to the Treaty of Rome (1957). In the Treaty, the EU founding nations in the preamble decided their aim of *"reducing the differences existing between the various regions and the backwardness of the less favoured regions"*. *Further the* Article 2 specified that the Community has a task to promote a *"harmonious development of economic activities*" and "*a continuous and balanced expansion"*. In the main body of the Treaty, the issue promoting more even level of economic development among member states or their regions was largely addressed indirectly. The issue was linked to a series of provisions concerning *specific sectoral policies* such as agriculture, transport, and state aid. The only financial instrument created to directly promote regional economic development was the European Investment Bank (EIB). EIB got the task of granting loans *"which facilitate the financing of projects for developing less developed regions"*.

From such initial orientation and description of the EU policy, which is today officially called the "EU Cohesion Policy", some useful conclusions might be drawn. The conclusions should lead to a better understanding of different concept, supports and rejections of the policy, terminology related to the policy and some other issues which are especially heated when new financial perspective of the EU is in preparation or when general changing of the members of the EU institutions is relevant. In debates around the EU cohesion policy there are always groups of strong supporters and of strong adversaries. One of the biggest problems for supporters of the EU Cohesion policy is the difficulty in generating a credible economic case for the policy. Proofs of the positive policy results, based on conclusive statistical evidences, are difficult to obtain or create. After more than fifty years of intervention policy focused on reducing regional development differences and increasing economic cohesion, its actual contribution to economic development, growth and economic cohesion remains a constant element of debates and uncertainty (Bachtler J., and Gorzelak G., 2007). Some theoretical and factual results created by the trade liberalization practices and in the economic integration offer at least some additional reasonable arguments to the supporters of the cohesion policy. The Cohesion Policy issues are not relevant only for the assessments of its economic relevance and efficiency, they are strongly affecting political positions and interests of the member states and their representatives. When the European Regional Development Fund (ERDF) was first created in the mid-1970, the German Chancellor Helmut Schmidt commented that there was nothing much of Community interest in the policy and that it "lay firmly in the hands of national governments" (Bulmer S., and Paterson W., (1987), p. 202).

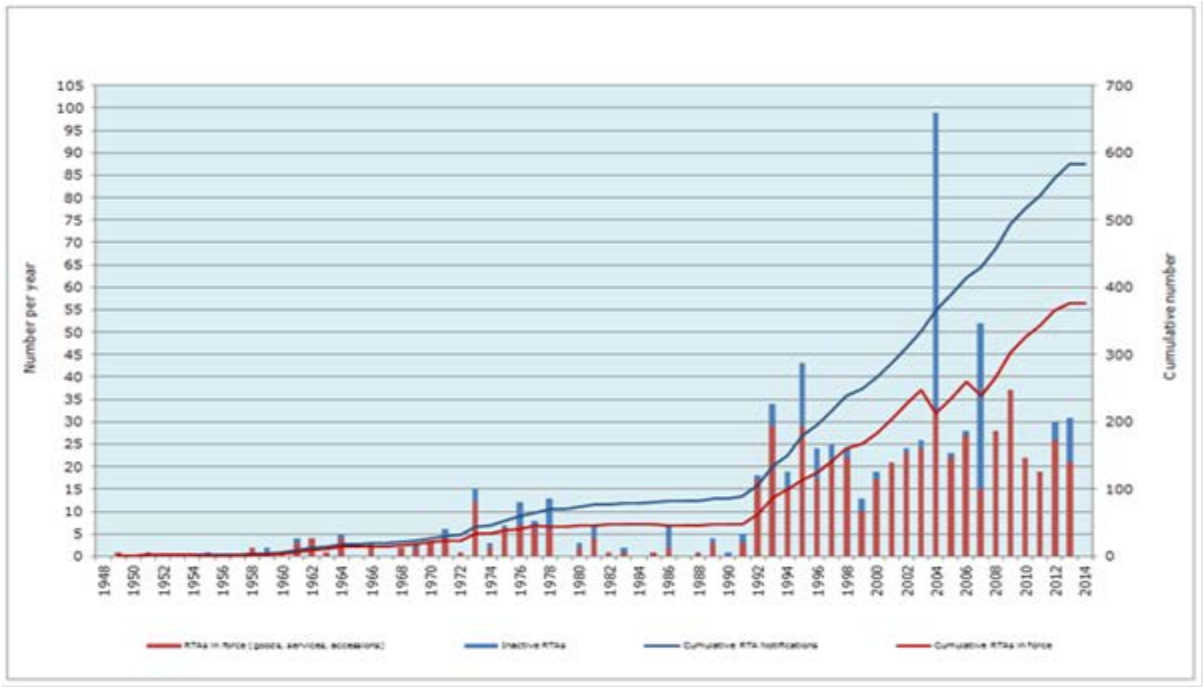
In this paper we will present a theoretical discussion on why cohesion policy in the EU is in fact necessary in spite of some general rejections based on beliefs in the efficiency of unregulated economies and markets. The free trade effects confirm the need for cohesion policy on a theoretical background, with already mentioned difficulty to offer a completely credible statistical proof. As is evident from the content of the Treaty of Rome, the Cohesion policy has to serve different objectives. The objectives range from regional development to structural economic changes and are combined by the task of reducing the economic development differences. A broad specter of the policy objectives created different understanding of the policy nature in the past. That led to different names used to describing the policy and to different financial instruments used in the policy realization. However the Cohesion policy affects the economic structure of the member states, changes the cohesion level, and helps regions to improve economic structure and reduce development level differences. All of these impacts are part of economic development process in each national economy. The EU policy funds used – absorbed – on the member's economy level represent an important support to structural change, general development – growth and improved cohesion with the other EU regions and member states. The case of Slovenia using the EU cohesion funs gives some evidences of the effects and problems related to the EU cohesion policy realization.

2. TRADE LIBERALIZATION, BENEFITS AND STABILITY OF THE ECONOMIC INTEGRATION ENVIRONMENT

The majority of international trade theories prove that international trade in reality does not and cannot create equal size of economic benefits to all nations involved. Furthermore international trade creates uneven distribution of actual welfare benefits among different groups of the economic subjects belonging to each national economy (Leamer, 1995). Let us leave the concept of "welfare trade benefits" unspecified, but accept theoretically backed suggestion that such welfare benefits based on trade actually exist. The actual uneven welfare distribution among nations and among people (subjects) and companies, suggests that those who are "granted" by smaller level of welfare trade benefits, will try to change trade effects into their favour. We know that such reasoning leads to trade regulation, protectionism or some other way of trade limitation.

Traditionally the economic integration agreements (Regional Trade Agreement – RTA - by the WTO terminology), which started to be more used only after the WW II (Fig. 1.), and which "exploded" in their numbers after the last decade of the twentieth century, as a matter of fact increased "selected" trade liberalization, created faster and more visible differentiation of welfare trade benefits distribution among partner nation and within the individual nation.

Figure 1: Evolution of Regional Trade Agreements in the world, 1948-2014



Source: WTO Secretariat; The WTO Chart; — cumulative RTAs notification, — cumulative active RTAs

Too fast and too big differences in the actual creation and distribution of the trade benefits, following the implementation of any economic integration agreement, might lead to the destabilization or even to the destruction of such agreements among the participating states. In the EU enlargement practice, the increasingly long accession periods with asymmetric trade liberalization process are used, to offer possibilities of reducing the problem of too large uneven trade benefits distribution.

In the world economic history the cases where the trade benefits among integration nations were too unequally distributed are evidenced. On one side such situation leads to a relative small size of actual trade among integrated partner. Or on the other side, uneven trade benefits distribution led to breakups of the integration

agreements and in some extreme cases – in Africa for example – to wars among previously integration-partner states. The description of reasons to relative limited success of the economic integrations in Africa (De Melo, J, 2013) supports the reality of uneven trade benefits distribution within the economic integration. Beside general reasons for unequal benefits distribution there are some other specific (as in the case of African states) that can create additional inequalities in the benefits distribution:

- large cost differences among integrated states can result in welfare-decreasing trade diversification,
- low trade complementarity between members of an economic integration (RTA) generally leads to low level of trade among integrated partners,
- prevalence of high non-tariff barriers among the integrated countries create high trade costs and reduce trade volumes and values. Such negative trade impacts are often enhanced by transport infrastructure under development and by related high cost,
- high degree of differences in economic development levels combined with cultural and other diversities among members of economic integration results in strongly diverse interests to trade and cooperation.

Some of the above mentioned specifics which further support uneven trade benefits distribution among integrated states, together with the trade growth limitations, might be seen even in the EU of the 28 member states. It is therefore not the most suitable environment for the efficiency of economic integration economies, which creates different pressures among member states, especially during the periods of non-prosperous economic growth. To prevent negative developments among integrated nations in case of highly uneven distribution of trade and integration effects and benefits, the implementation and use of a specific compensating mechanism might be one of the acceptable solutions.

Among other evidences of recent negative developments in relations among integrated nations is the growing skepticism among EU nations and citizens. The integration efficiency skepticism could be at least partly due to the negative impacts created by unequal distribution of trade benefits. The forecasts for this year's European Parliament elections further show the growth of EU-skepticism. Present developments of EU-skepticism obviously could not be attributed solely to differences and problems created by unequal distribution of the trade benefits. However reality of the uneven trade benefits distribution effectively adds to the general enhancing and visibility of other EU problems and negative economic developments. Combination of uneven trade benefits distribution and of other EU effective functioning problems no doubt negatively affect EU nations and their citizens especially in the last five years of economic crises.

Today the EU is one of the largest and most efficient economic integrations globally. As in the theory, similarly in the case of the EU, the distribution of benefits created by free internal trade among 28 member states is not at all symmetric. Asymmetry of the free trade benefits distribution among member states is at least partially caused by impacts that are explained in the majority of trade theories known today. Indirect proof of such asymmetries existence, at least for a limited period, is shown by the accession period practice where EU opens its market at the start of the process and candidate countries reciprocate only gradually. It is obvious that some part of different trade benefits distribution within the economic integration is based on other and not on trade effects. As shown above, partially differentiated integration benefits realization is based on specifics in national productivity, market size, price and income elasticity, domestic markets supply and demand characteristic, etc. The point however is that a part of the benefits distribution differences is directly created by the trade liberalization. Accession period of the new member, with all asymmetric integration specifics, could not entirely neutralize the actual difference of trade benefits distribution contained in the essence of the new liberalized trade developments. Similarly for the "old" EU members the trade benefits are unequally distributed from the beginning of the economic integration. That is reflected in the Treaty of Rome preamble and some articles referring to the issue of cohesion of the regions.

In the interest of the economic integration stability the following question is relevant. What to do so that the inequalities in benefits distribution generated by trade liberalization within the integration, would not lead to instability or even destruction of the economic integration agreement? The trade benefits are materialized through differentiated achievements like; higher economic growth, additional GDP per capita increase, higher employment level, etc. The solution of the unequal benefits distribution problem, caused by liberalization of trade among integrated nations, is in fact conceptually rather simple. Specific compensation mechanism within the economic integration has to be developed and implemented. Such mechanism should help those with less trade benefits, to improve their economic potential to grow faster and to gain more trade and economic benefits within the economic integration. The compensation mechanism should help in reducing large disparities between trade benefits distribution. The reduced disparities support process of increasingly similar economic growth levels among integrated nations or in other words lead to higher level of cohesion among regions and member nations. In the EU such compensation mechanism has developed in the form of the EU Cohesion Policy. EU Cohesion policy from its early beginnings to today is focused on increasing cohesion. In the essence Cohesion Policy has to compensate, among other, for the integration's impacts, as well for the impacts of the unequal trade benefits distribution.

"The objective of reducing disparities between development levels across the EU's various regions, which is a key characteristic of economic and social cohesion policy, first appeared as early as the Preamble to the Treaty of Rome (1957). Yet it was not until almost thirty years later, in the Single European Act (1986), that economic and social cohesion was finally included as a specific objective in itself along with the objective of achieving the single market. This policy area was formally institutionalized in the Treaty of Maastricht (1992)." (Subsidiarity, p.1)

Economic and social cohesion policy in the EU was and should be the mechanism, which among other integration's impacts, compensates for the trade-based unequal economic distribution of benefits, together with economic development differences from the period before the integration. Economic development differences in fact alone might destabilize the economic integration cooperation and further accelerate uneven distribution of integration-induced trade growth benefits.

The cohesion policy is no doubt necessary for the economic integration sustainability. But in spite of such a firm statement, there are certain dilemmas. One dilemma is how big the EU cohesion support should be that it would not cause negative impacts for competition and efficiency. Further the dilemma is how much and who is going to give up part of the benefits – financial resources – to support those with lower development and benefits levels. And the last big dilemma is how the cohesion supports will be used – absorbed – by member states with less trade benefits and with lower level of economic development. Above all of these issues is a major doctrinal dilemma whether any kind of economic intervention in the market economy could or could not be acceptable. The dilemma in the sense of the EU economic efficiency, stability, and sustainability is the following. Is it better to refrain from intervention to alleviate market's determined unequal distribution of trade benefits and other economic integration's benefits, or it is better to intervene and so to implement the cohesion policy measures.

The dilemma concerning the options of using or not the regulation – compensation – EU mechanism(s) for successful integration's functioning could be solved by comparing the actual and expected national key economic and social objectives realization results. The first objective of the EU is the stability and functioning of the integration agreement in the way that it creates and sustains peaceful relations among nations in Europe. With such accepted political and economic primary objective of the EU, the cohesion policy is acceptable and necessary. It helps to improve the stability of the economic integration, which is endangered by the actual and unavoidable uneven distribution of trade liberalization, and other benefits among member states and within the member states societies. The uneven distribution of benefits within the EU members societies created by trade liberalization and other integration effects, and especially in the periods of economic crisis, similar to the present

one, calls for more solidarity and on the EU level for more intensive and broader use of the cohesion policy attitudes and instruments.

Different implementation and efficiency dilemmas related to the EU cohesion policy could at least partially be described by presenting the cohesion policy implementation specifics and its results in the case of the economic development in Slovenia after 2004. Additionally and overview of some EU cohesion policy implementation specifics might help to enhance the understanding of the concepts and procedures of the EU cohesion policy realization.

3. TERMINOLOGY AND INSTRUMENTS OF THE EU COHESION POLICY – AN OVERVIEW

This paper addresses a selection of arguments for the EU Cohesion Policy implementation with description of the specifics related to the economic and business projects of EU co-financing practice in the member states. The EU co-financing is implemented based on relevant EU policies realization and according to the abilities of the member states, their regions and of other subjects to utilize the potentially available – allocated - EU financial resources. Relation between the amounts of EU allocated financial resources for a members states and its ability to utilize –use – the allocated amounts is often referred as the national „absorption capacity ". Understanding of the concept and results related to the absorption capacity issue requires understanding of the economic and political concepts, together with the sources and terminology used in the process of the EU funds allocation and use. On the other side, the level of absorption in the member states depends on national abilities and specifics to provide required resources and organization necessary to establish the optimal absorption capacity for the EU allocated funds. On the national level, absorption of the EU allocated funds has to be, by the definition, based on the national and regional economic development objectives. Such aspects of the absorption capacity will be linked further to the case of Slovenia as the EU member country from 2004.

The EU funds' support for the regional and national economic development of the member states have long conceptual and practical implementation history. The structure, terminology and all other aspects of the instruments used to support cohesion growth as described in the probable of the Treaty of Rome (1957) had to evolve and change, following the requirements created by the ongoing deepening and enlarging processes of the EU. On such basis it is understandable that one might not always see a clear and consistent use of the terms describing activities that support the EU regional and national cohesion growth. A short overview of the terminology and concepts used in the area of the cohesion policy helps to reduce possible misunderstandings and mistakes important for the nation's absorption capacities of the relevant EU funds. In such perspective the relevant questions are:

1. **Which EU policy (policies)** is (are) constituting the framework that defines the maximal absorption amount for the member state?

2. **Which EU resources – financial instruments** – through the allocation processes create the potential size – financial amount - of a Member state's potential „absorption capacity"?

In relation to the first question we might use the following EU description of the cohesion policy which was created by the European Parliament (EP); "The EU's Cohesion Policy provides the framework for a wide range of programmes aimed at increasing economic growth and social cohesion and reducing disparities among the Member States (MS) and their 270 regions. Perceived weaknesses of the current arrangements include complexity, inadequate integration with other policies, and low absorption rates in many MS." (EU Cohesion Policy 2014-20). Referring to the complexities and inadequate integration with other EU policies when EP speaks about Cohesion policy might be equally observed in some other EU institutions' statements published in different EU information sources. Due to the complexity of the issue, the terminology and explanations describing the EU financial resources and objectives of the cohesion policy could often not be consistently

applied or explained. Inconsistent use of terms and explanations of the cohesion policy could sometimes be observed even in different statement of the same EU institution, as in the case of the EP itself. Such inconsistencies - although understandable due to the complexities of the issues and due to constant changes of the EU - should however be kept to the minimum, otherwise they serve to support further doubts of the positive perception of the EU impacts among member states and among their populations.

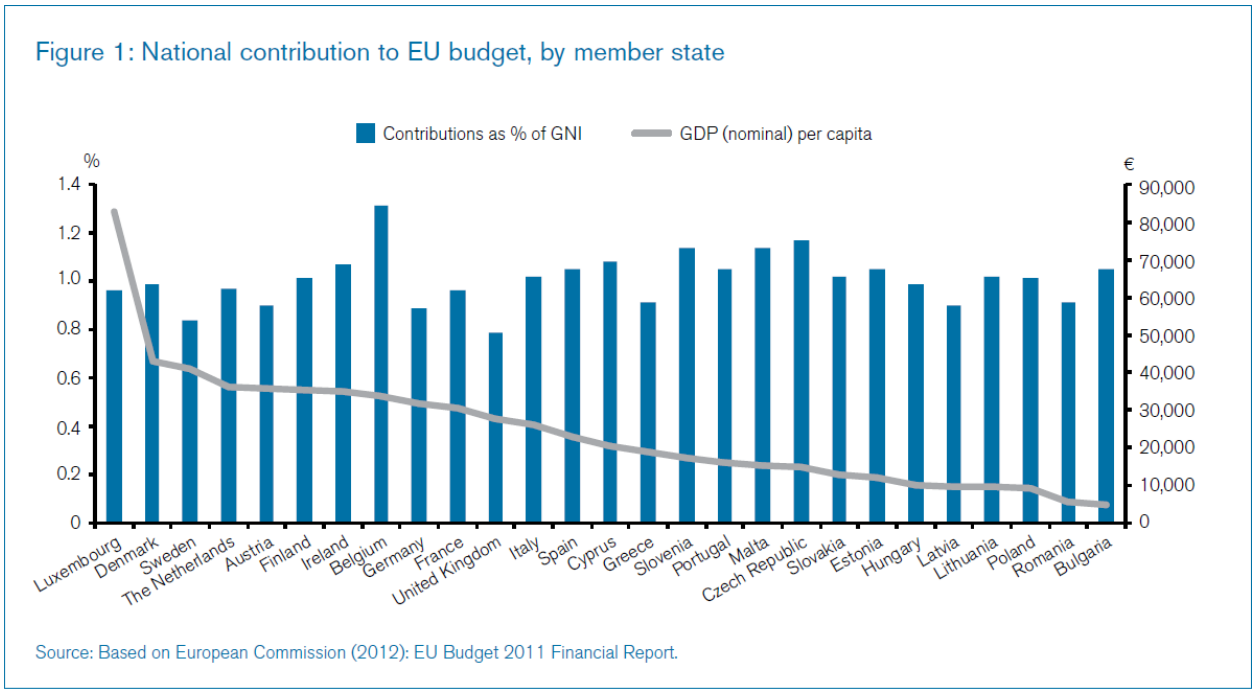
As mentioned above, the concept, terminology, and resources for the EU cohesion policy have been continuously changing. This continues to be true for the period of 2014-2020. In the information on the Cohesion Policy for the period 2014-2020 is the following observation that proofs continuity of the changes in the EU environment defining the framework for the national absorption capacity. “The **new legislative package** (for the EU Cohesion Policy 2014-20 – authors addition) includes a new single overarching regulation setting out common rules for the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund, the European Agricultural Fund for Rural Development, and the European Maritime and Fisheries Fund. In addition, the package has specific regulations for the ERDF, the ESF, the Cohesion Fund, the European Territorial Cooperation Goal, the European Grouping of Territorial Cooperation, the Globalization Adjustment Fund, and the EU Programme for Social Change and Innovation.” (EU Cohesion Policy 2014-20). Although we could understand the numerous changes in the cohesion policy scope, terminology and in its financial resources in the past – based on enlargement and deepening processes - we are a bit confused by looking at the terminology and financial instruments related to the actual cohesion policy description and interpretation based on different EU institutions’ available contemporary information sources. The instruments – resources - used to support the EU cohesion policy in the period of 2014-020 are, following the above EU Parliament listing, different Funds, Goals, and Programs. The problem however is that another EP information source - EP News - defines the cohesion policy differently and narrower in the sense of its resources. According to EP News the cohesion policy can be described in the following form. “Cohesion policy is the EU's main common investment policy tool. Often referred to as "regional policy" it provides vital basic financial support for investing in regions of the EU, thus helping to create jobs and boost economic growth”. (Cohesion policy background note, p.1) After stating that the cohesion policy is the EU investment policy the same document states that EU cohesion policy is simultaneously the EU regional policy. Eventual confusion made by using the same instruments as part of the two different policies is eventually reduced by using a quote. But further the EP News information reduces the number of financial instruments that are – or can be used to realize the cohesion policy according to the above quoted description of the new EU legislative package covering the resources to be used in that scope. Opposite to a broad definition of the cohesion policy resources the EP News information reduces the scope of the potential resources. “The money for cohesion policy projects comes from three funds, also called "European Structural and Investment Funds" (ESIF). These are the European Regional Development Fund (ERDF), the European Social Fund (ESF) and the Cohesion Fund.” (Cohesion policy background note, p.1). The finances contained in only three EU funds, as suggested by the EP News information statement, thus in reality constitute the total amount for the potential member state’s absorption capacity of the EU allocated cohesion resources. The finances available to the Member States in Funds like Agriculture or Maritime and Fisheries Fund, together with some other EU resources mentioned above, and including the European Investment Bank (EIB) loans, are not part of the available finical resources that can be used for the cohesion policy realization. Only the funds allocated to member states through the mentioned three EU Funds are creating the potential for the absorption capacity realization. In the further text absorption capacity will be based on utilizing the allocated financial resources through the mentioned three EU Funds, which are, based on definitions the only available finances for the cohesion policy realization on the national bases.

The three EU Funds providing the financial resources for cohesion policy and the framework for the maximal potential level of absorption, are related to another development issue. The three Funds together are called European Structural and Investment Funds (ESFI). The idea within such description of the Funds is related to the change of the economic structure in the member states based on investments coming from the three cohesion EU funds. Analyzing absorption capacity of member states in Section 4, specifically for Slovenia, is going to leave

aside the confusion created by the fact that the same EU Funds, according to the quoted EP News information, could serve for three different EU Policies – the cohesion policy, the regional policy and the structural policy. The absorption capacity of the EU nations is depending on the EU conditions, allocation, and rules, and additionally on a number of national economic, financial, and organizational specifics. National specifics make the relations between available EU funds and effective increase of cohesion following the absorption of the EU funds, somehow more complex and not so straightforward.

Among the issues relevant for absorption complexities is the dilemma about the adequate size of the EU resources available for individual member's absorption. Simple suggestion could be that more EU resources could lead to higher absorption and to increased cohesion. Discussing the absorption abilities and effects of absorbing the EU Funds on the member state's level so often leads to ideas that increased levels of available financial amounts will automatically lead to higher level of the absorption and further again automatically to the higher cohesion. Further such ideas suggest that with more of financial resources available through the EU Funds could support the member state's structural changes, based on realized regional and general cohesion policy objectives, more effectively. In reality utilization of finances available through the three EU Structural and Cohesion funds as a whole, shows that more funds do not always mean more growth. „For EU Structural Funds as a whole, more funds do not mean more growth. A point is reached where returns begin to decline and additional funds do not lead to higher growth. Transfers to regions should therefore not exceed maximum desirable levels if inefficiency and misuse are to be avoided"(Becker, 2012, p. 1). The question related to the issue of adequate levels of financial resources for cohesion policy objectives realization obviously is not easy to be answered. Except for the theoretical knowledge, the data on absorption capacities are not an indicative to where available amounts of cohesion resources reach the growth efficiency turning point. Due to big differences among the GDP per capita levels of EU member states, the issue of adequate amounts of cohesion resources is further complicated. Relatively high national contribution to the EU budget in relation to the GDP per capita especially in less developed EU member states (Figure 2) create an environment where in fact it is impossible to judge what could be the appropriate absorption level to create optimal growth rates.

Figure 2: The uneven GDP per capita "burden" of the national EU budget contributions in 2011



Source: Becker, 2012, p.3

On the EU budget revenue side, contributions of the member states are non-progressive, i.e. poorer, and richer member states alike contribute roughly 1% of their GNI to the EU budget, as shown in Figure 2 for the budget year 2011. The idea of the "burden" is that 1% of contribution from a low level of the GDP per capita is a bigger burden for the economy as 1% in the case of a state with higher GDP per capita level. On the EU budget expenditure side, poorer countries overall receive more – have relative more allocated funds - than richer countries. However there are two problems. Firstly, contributions to the EU budget although roughly on the 1 % levels of GNI represent a relatively bigger "burden" in relation to the GNI per capita level of the poorer member states. Poorer nation receive overall more allocated EU funds, which should probably compensate for the non-proportional "burden" created by budget contributions and as well for unequal distribution of the benefits within the integration. The second problem of the poorer nations is related to actual ability of utilizing the allocated EU funds. The larger amount of EU funds allocated in cases of poorer nations in practice directly does not provide equally higher actual funds' utilization level. The absorption – utilization of the allocated resources - depends on the ability of a member state to create proper absorption conditions.

The national absorption conditions for the allocated EU funds depend on a number of elements and only a part of them is in the member state's control. Among those out of the member's control are the national co-financing ratios, the allocation of the EU funds and decisions about the EU general cohesion policy objectives. Formally it is true that all member states participate in the process of deciding about the EU general cohesion objectives, about the procedures to be followed for the allocated funds absorption realization, and about other issues of the EU cohesion policy realization framework. In the reality the smaller member states have a limited impact in the process of accepting the decisions shaping the objectives, procedures, and allocation of the financial amounts within the EU cohesion policy and are forced to form alliances with other countries to increase their bargaining power. A limited influence on the external elements of the EU funds national absorption conditions creates certain difficulties in the actual absorption of the cohesion funds at the national level. Absorption capacity conditions for the cohesion funds on the national level are further limited by the impacts of the national economic, political, and other internal specifics. Some of such specifics, which reduce the level of the cohesion funds national absorption capacity, are explained and documented for the EU cohesion funds absorption realization in the next section for the case of Slovenia.

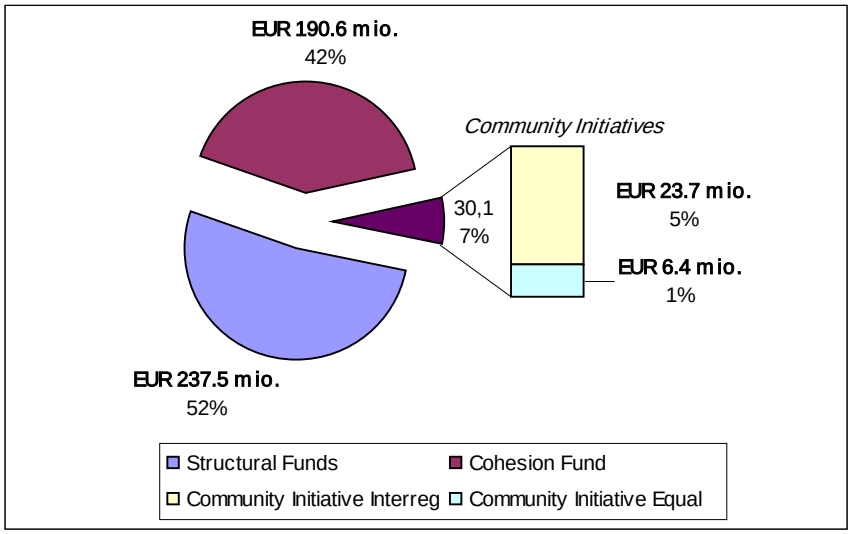
4. COHESION POLICY IN SLOVENIA

Slovenia has been the recipient of pre-accession assistance from as early as 1992, while full access to cohesion policy was gained after full membership, first in the 2004-2006 period and later in 2007- 2013 financial perspective.

4.1. The 2004–2006 programming period

Slovenia became eligible for cohesion policy programmes with full EU membership in 2004, when the amount of cohesion funds, negotiated for the 2004-2006 period, was €458 million - annually €136 million, of which 52% was allocated to the Structural funds, 42% to the Cohesion Fund and 6% on the two Community initiatives, INTERREG and EQUAL. Figure 3 gives allocation of funds.

Figure 3: EU cohesion funds in Slovenia for the period 2004-2006 in current EUR and in % of total value



Source: Wostner, 2004.

The result was not entirely satisfactory since the allocated funds represented only 0.6% GDP, which was the lowest share among all EU member states (the average per year share of allocations in GDP among the new member states was 1.93%) and it has also received the lowest per capita aid intensity in objective one – the convergence regions. Such unfavorable division of assets was the result of separate financial negotiations for the new Member States whose total available amount of funds has been identified in advance and was therefore fixed. Among the new Member States, Slovenia was the most developed and consequently it was allocated comparatively lower aid intensity, which was particularly evident in relation to the EU15 countries.

The eligible use of the Structural Funds in the amount of €237.5 million was determined in the **Single Programming Document 2004-2006**, which contained three priorities: (1) promoting entrepreneurship and competitiveness (52% of funds; intended for facilitating the development of innovative environment, tourism and entrepreneurship as well as business zones and associated infrastructure); (2) knowledge, human resource development and employment (29% of funds; to the development of education and training of adults, the unemployed and employed individuals, to the promotion of social inclusion and also to the improvement of education and training system), and (3) the restructuring of agriculture, forestry and fisheries (15% of funds; for the investments in the food processing industry, farms and forests, as well as for rural development in the context of alternative income sources, healthy diet, and fisheries and aquaculture).

Compared to convergence (Objective 1) regions in other countries, Slovenia's investment in human resource development was above average (30.6% compared to an average of 23.1% and 20.5% in the old Member States and new Member States, respectively) and quite comparable with Ireland's (35%), where the focus on human capital was considered the key to their economic successs at that time. Above average was also the investment share in the productive sector without basic infrastructure (35% compared to an average of 20.1% and 17.6%), but below average investment in basic infrastructure (approximately 19% compared to an average of 41.3% and 19.4%) and agriculture (10 7% compared with an average of 13.7% and. 16.2%). Cohesion Fund resources were used for co-financing of projects in the fields of environment and trans-European networks, with the ratio 50:50 between the two areas already set by the EC.

Despite the relatively limited resources, in absolute terms cohesion funds represented more than 18% of the total Slovenian budget expenditures for subsidies to businesses and private individuals, including investment expenditures and transfers. Taking into account the national public co-financing (on average 25%), cohesion

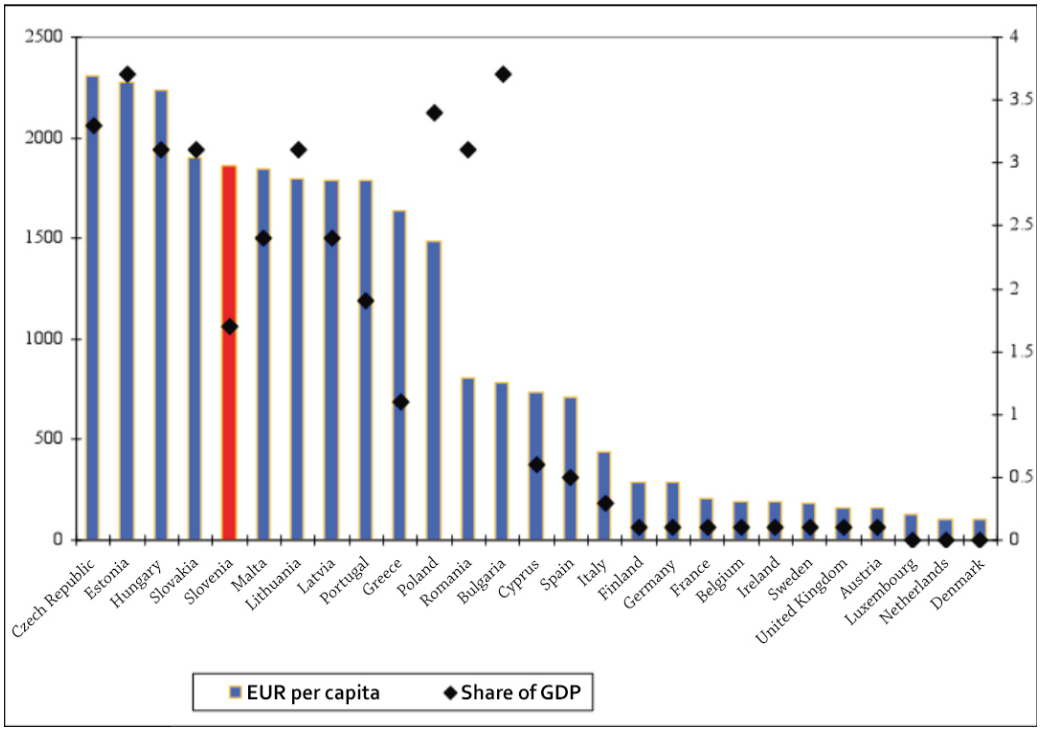
funds represented roughly a quarter of »development« expenditures of the national budget, which means that cohesion policy has actually constituted an important part of development policy in Slovenia at that time.

4.2. The 2007–2013 programming period

In December 2005, the European Council passed the agreement on the Financial Perspective 2007-2013. Slovenia was still considered as one region and since its development level (GNI per capita) was just below the 75% of EU average, it managed to negotiate €4.2 billion of cohesion funds, which was a substantial increase relative to the 2004-06 period (even on comparable terms). This meant an average allocation of €600 million a year or rather between 1.6 and 1.7% of Slovenia's GDP, which represents 5.5% of total gross investment into fixed assets of Slovenia, by adding the own participation this is further increased by one percentage point. From the perspective of the national budget, cohesion funds represent between 6.2 and 6.7% of total revenues, but the true relevance becomes evident on the expenditure side. With regards to public investments, capital transfers and subsidies, cohesion policy funding accounted for somewhere between 30 and 33% of total expenditures in the 2008 and 2009 budgets and even increased to 50% by 2012, which means that the cohesion policy actually became a key actor in the development policy in the Republic of Slovenia.

The comparison of national allocations of cohesion funds is presented in Figure 4. Although with regards to the share of GDP, the amount of allocations in Slovenia is strictly speaking relatively low (the twelfth highest share), aid intensity per capita (based on purchasing power parity) is actually the fifth-highest. This difference occurs due to the relatively high levels of GDP in Slovenia, which means that despite its high intensity the aid it is not so high in terms of share in GDP. In absolute terms, the biggest recipients of cohesion policy funds are Poland with €67 billion, next are Spain (€35 billion), Italy (€29 billion), Czech Republic (€27 billion), Germany (€26 billion), Hungary (€25 billion) followed by Portugal and Greece with the €22 and €20 billion of eligible spending. In terms of absolute amounts, Slovenia ranks as 16th regarding the largest amount of resources.

Figure 4: National allocations of cohesion policy funds for the period 2007-2013, in EUR (in purchasing power parity for 2004) per capita and. as a share of GDP



Source: OECD, 2007, p.144

In the 2007-2013 period the eligible use of funds is set by the *National Strategic Reference Framework* (hereinafter NSRF) which is prepared by Member States and confirmed by the Commission. The more thematic operational programs (hereinafter OPs) were then prepared which are used as a basis for direct use of the cohesion funds. Slovenian NSRF targets to "improve the welfare of the Republic of Slovenia by facilitating economic growth, creating jobs and strengthening human capital as well as ensuring a balanced and harmonious development, particularly between regions" (Government Office for Local and Regional Development, 2007, p. 72). Special attention is therefore given to promoting growth and job creation (which are also the two key objectives of the Lisbon Strategy) and to sustainable development.

The commitment to Lisbon expenditures thus represent more than 60% of all available cohesion funds in Slovenia, which is one of the highest shares among the cohesion policy recipients. Specific objectives of NSRF are: (1) to encourage entrepreneurship, innovation and technological development; (2) improve the quality of education and also research and development activities; (3) improve labor market flexibility while ensuring job security, in particular by creating jobs and promoting social inclusion; (4) to provide conditions for growth by providing sustainable mobility, to improve the quality of the environment and adequate infrastructure, and (5) balanced regional development. The basis for the implementation of these objectives are three operational programs (OPs), the Operational Programme for Strengthening Regional and Development Potentials, the Operational Programme for Human Resource Development and the Operational Programme for Environmental and Transport Infrastructure Development. Breakdown of available cohesion funds to individual OP is presented in Table 1.

Table 1: Breakdown of 2007-2013 cohesion policy funds in Slovenia, by Operational Programme for the Convergence and European Territorial Cooperation objectives

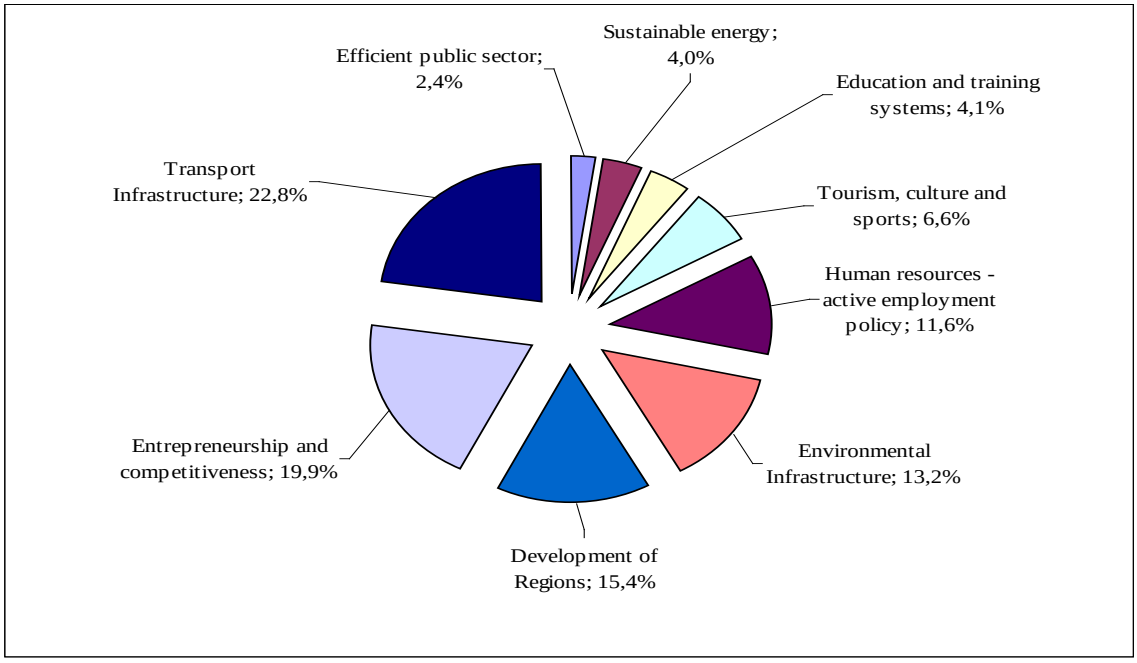
Operational Programme	Fund	Amount in EUR (current prices)	%	%	%
OP for Strenghthening Regional and Development Potentials	ERDF	1,709,749,522	40.7	41.7	63.6
OP for Human Resource Development	ESF	755,699,370	18.0	18.4	28.1
OP for the Development of Environmental and Transport Infrastructure	CF	1,411,569,858	33.6	34.4	
	ERDF	224,029,886	5.3	5.5	8.3
Trans-border and inter-regional OPs	ERDF	96,941,042	2.3		
Transnational OPs	ERDF	7,315,278	0.2		
Total		4,205,304,956	100.0	100.0	100.0

Legend: ERDF - European Regional Development Fund; ESF – European Social Fund; CF – Cohesion Fund

Source: Government Office for Local and Regional Development,, 2007, p. 74.

One third of the total cohesion policy funds (€1412 million) is provided by the Cohesion Fund, the remaining part is financed by the European Regional Development Fund (€2038 million or 48%) and by the European Social Fund (€756 million or 18%). The aggregate use of funds by theme for the Convergence objective is presented in Figure 5. €104 million is intended for cross-border, transnational and interregional cooperation, 51% of the remaining €4.1 billion is allocated to infrastructure development (including economic infrastructure), around 30% to productive investments and 18% allocated to human resource development.

Figure 5: Thematic breakdown of the convergence objective in Slovenia (as % of all allocated cohesion resources)



Source: Wostner, 2013.

Below we briefly present the basic logic of Objective 1 Operational Programmes in Slovenia.

Operational Programme for Strengthening Regional Development Potentials (OP RD) aims to create an »innovative, dynamic and open Slovenia, with developed regions and competitive, knowledge-based economy« (NSRF, 2007, p. 84) by financing investments in several priority areas (»thematic concentration«): promotion of entrepreneurship, innovation and technological development as well as balanced regional development. It is particularly focused on increasing and improving investments in R&D activities as well as the education system. OP RD finances mainly the productive investments, in particular to enhance the competitiveness of the Slovenian economy in terms of achieving the Lisbon goals - the promotion of entrepreneurship, innovation and technological development that would translate into job creation, one of the key goals of the OP. The planned activities of the OP RD include developmental investment projects, centers of excellence, subsidies and other forms of financial assistance for small and medium-sized enterprises, in particular the purchase of technological equipment (€402 million or more than 23.5% of funds allocated to OP RD was planned for the priority »competitiveness and research excellence), development of economic, information and developmental-educational infrastructure (23% or €397 million), for priority »integration of natural and cultural resources«, which were mainly the development of tourism, cultural and sports infrastructure (15.4% or €263 million) and regional development, to which 36% (€619 million) was allocated. The latter refers particularly to the construction of infrastructure (economic, transport, educational, environmental, tourism and partly also to social infrastructure and urban development) on regional level based on the "bottom-up" initiative.

The aim of the **Operational Programme for Human Resource Development (OP HR)** is to "invest in people whose capital will secure a higher level of innovation, employability and economic growth, which is the best way to ensure high employment, social inclusion, reduction of regional differences and high living standard" (NSRF, 2007, p.93). The programme is focused on strenghthening human capital, creating jobs, encouraging employment and employability, promoting innovation and thus the competitiveness of the economy by investing

into research and other personnel, life-long learning, promoting social inclusion and equal opportunities and also to increase the effectiveness of the public sector (through projects such as e-government, e-justice and e-health).

The biggest share of resources, almost €262 million (35% of resources for OP HR) aim at promoting entrepreneurship and adaptability (e.g. young researchers, scholarship schemes, self-employment, co-financing of company training), followed by human resource development and life-long learning which aims to modernize the educational system and training (22% or €165 million of OP HR funds), while the promotion of employability of job seekers and inactive have been allocated 18.5% (140 million). Additional €64 million were dedicated to the promotion of equal opportunities and reinforcing social inclusion and 13% (€97 million) to enhancing institutional and administrative capacity, especially in public, but also in the non-governmental sector.

The aim of the **Operational Programme of the Environmental and Transport Infrastructure Development** (OP ETID) is "to ensure conditions for growth by providing sustainable mobility, improving environment quality and appropriate infrastructure." (NSRF) OP ETID almost exclusively finances the construction of infrastructure in the field of environment and transport, which is related to the promotion of sustainable development and job creation as well as ensuring high quality of living. The transport part has €915 million (56% of funds for OP ETID) at its disposal for the purposes of constructing railway and port infrastructure, highways and state roads. A small part of the funding is reserved for the aviation and airport infrastructure and also for the public transport. As for the the environmental section, projects with a clear benefit for the environment are supported: €531 million (33%) is forseen for projects related to municipal waste management, disposal and treatment of municipal waste water, drinking water supply and reducing the water damages. Sustainable use of energy is the sixth priority of OP ETID, with €160 million (10% of resources) assigned, intended for energy rehabilitation and sustainable construction of buildings, efficient electricity use, innovative measures for local energy supply and demonstration projects.

4.3. Absorption capacity in Slovenia

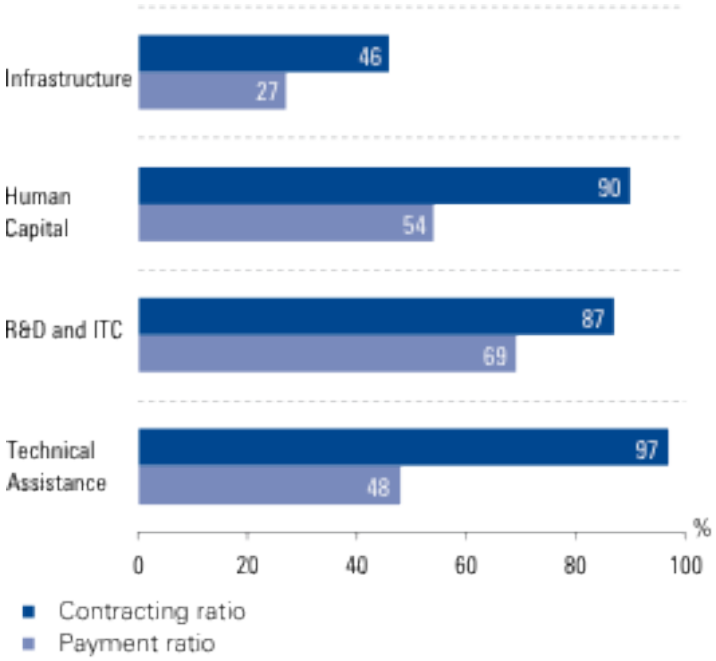
Absorption capacity can be defined as »the extent to which a Member State and its regions are able to spend the financial resources allocated from the Structural and Cohesion Funds in an effective and efficient manner" (Theurer, 2011).

Similar to other new member state, Slovenia performed well with regards to absorption in the **2004-06** programming period, achieving practically full absorption with average absorption rate of 99.3% for the Structural funds and 104% for Cohesion fund at the end of the period (cumulative payment execution of the 2004-2006 allocations reached 100% in 2012). In part, the success was due to the government decision to overcommit in 2006, which means that contracted grants exceeded the funds allocated to Slovenia, thus providing "reserve" projects to ensure utilization of all funds in case implementation of some projects fails.

For the **2007-2013** programming period, the budgetary execution data is provided by the managing authority, Government Office for Development and European Cohesion Policy (2014): on 31.3.2014, approved instruments in Slovenia reached 119.26% of available funds while the share of signed contracts was 95,42 % of available funding. €2.75 billion (95.98% of available funds) were payed out to beneficiaries from the national budget while the EC-certified expenditures amounted to €2.55 billion (62.2 % of allocated funds). The absorption performance varies substantially among the funds, with 77.5% of funds claimed back from the Commission from ERDF, 70% ESF and 41% from CF.

Figure 6 presents the progress in absorption by intervention type at the end of 2012. As reported by KPMG (2013, p.43), with the exception of the technical assistance–related operations, the contracting ratio (ratio between the signed contracts and allocated funds) for Slovenia ranks above the CEE[1] average in human capital (at 90%) and also in R&D and ITC (at 87%). The share of signed contracts is lowest for infrastructural operations (46%) but was still slightly above half of the CEE average. Although absorption for infrastructural projects seems to the main cause of concern both in Slovenia and in the entire region, Slovene payment rate of 27% for infrastructure-related operations ranks only second-to-last among the CEE countries. A brighter picture emerges in R&D and ITC operations, where Slovenia has the highest payment ratio in the entire CEE region.

Figure 6: Contracted grants by intervention type (in %) in Slovenia for the 2007-2013 programming period



Source: KPMG, 2013, p.48.

4.4. Absorption problems

Absorption of structural and cohesion funds seems to be a long-standing concern among the member states, translating in the pre-2007-accession period to a fear that the new member states will lack both the required administrative capacities as well as enough high-quality projects to be able to use much of the allocated funds. In practice, however, it turned out that new member states fared relatively well in terms of absorbing cohesion funds during the **2004-06** period. Some »teething problems« were recognized at the beginning but countries were quick in adapting to the more successful practices, learning, according to Rosenberg and Sierhej, 2007, p.11, that initial frameworks were over-regulated, often to prevent the misuse of EU funds and also that absorption seemed to be faster in countries with a strong central managing authority. By the end of 2012, the cumulative allocation for EU-10 at the global level reached 99.3% of their 2004-06 allocation while the EU-15 rate stood at 97.4% of their 2000-2006 allocation (European Commission, DG Budget, 2013, p.5).

[1] For the purposes of the report, CEE region refers to countries which are both part of Central and Eastern European region and EU members states: Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia.

During the **2007-13** period, member states continue to strive at absorbing as much financial support as possible, where the absorption capacity can be determined by (Theurer, 2011, p.14):

1. Ability by project applicants to generate acceptable projects (the demand side);
2. Macroeconomic absorption capacity in terms of GDP;
3. National financial absorption capacity to co-finance the programs suppported by the EU
4. National administrative capacity of central and local authoroties.

By April 2014, Slovenia's share in 2007-13 allocations payed by the Commission rose to 63.8%, which puts Slovenia in the 14th place among the Member States (with best performers being Estonia, Portugal and Lithuania (European Commission, DG Regio, 2014), nevertheless, the gap between the expenditures from the national budget and the amount claimed from the Commission is still a big concern and it is not difficult to relate, at least to some extent, to most, if not all, reasons behind the absorption problems on Theurer's list (2011, p.14-16):

1. *Initial problems at the beginning the programming period* applied to all member states due to: i) parallel implementation of two programming periods and ii) member states having difficulties over completing the compliance assessment procedures concerning the new management and control system. Slovenia was no exception with low expenditures from the national budget and practically no intermediate payments from the Commission during 2007 and 2008. This problem was especially felt in policy areas where there were implementation difficulties in the first period, leaving larger amounts of funds to be spent at the end of the period – in case of Slovenia ESF was such an example.
2. *Financial problems* were in many member states caused or at least exaggerated by the global economic recession. It became not only more difficult for countries to find resources to co-finance projects due to budgetary restraint measures applied to many public budgets, but also for firms to find liquidity financing. A far as the former is concerned Slovenia needed to introduce new flexibility instruments in the national budget to accommodate for the increased cofinancing pressure, while for the latter advance payments were newly allowed after the outbreak of the crisis.
3. *Regulatory requirements* present an important burden for member states due to incompatibility of EC requirements with the existing national arrangements as well as in coping with the changes and interpretations of the regulations.
4. *Organisational requirements* can cause difficulties for the member states in the sense of hierarchy, cooperation and communication problems between institutions, difficulties over the allocation of tasks and responsibilities, the need to establish new institutions. Slovenia has, from the beginning, adopted a centralised approach for the implementation of cohesion policy, with a central managing authority to coordinate between the ministries involved in the implementation system (implementing instruments in their specific fields), but level and quality of coordination varies with the political cycle. As reported in Wostner (2013, p.8), Slovenia has failed to develop a strong managing authority due to staff turnover as well as weak political positioning within the government, which often prevented effective intervention. The frequent moving of the coordinating body within the government was certainly not helpful in improving the efficiency of CP management but rather increased costs in terms of time and resources.
5. *Human resources.* Theurer (2011, p.7) reports limited staff numbers, inadequately trained staff at the national and regional level, and difficulties with staff retention as one of key reasons for absorption problems in member states. Slovenia is no exception with relatively high staff turnover, limited staff numbers, frequent changes of the responsible ministers. The staff turnover was even shown to be directly assotiated with the absorption rate by Wostner, 2013, p.12-13.
6. *Information technology systems* pose problems in many member states, including Slovenia. In 2012, the Court of Auditors of the Republic of Slovenia assessed the information system introduced by the managing authority as one of the key problems in the implementation of the Cohesion Policy. The data, which the managing authority retrieved from the information system, were not complete and sometimes

also incorrect. The court concluded that such data cannot represent adequate basis for sound management and monitoring of the Cohesion Policy implementation.

7. *Control requirements* represent a significant burden, especially taking into account scale of the projects with smaller ones being disproportionately affected. Due to risk-aversion, national procedures tend to be over-complicated and over-strict and thus "deflect attention from content and impact". Beneficiaries can even be deterred by control requirements, which can be very time-consuming, especially when they are considered as being unnecessarily introduced due to national considerations. On the other hand Slovenia has experienced interruption of payments from the Commission, which points to problems in ensuring legality and regularity of cohesion policy implementation, in turn resulting in an even higher administrative burden for the beneficiaries, with a wide-ranging system of supervision and control.

5. CONCLUSION

With 28 member states, today European Union is one of the largest and most efficient economic integrations globally. As in the theory, similarly in the case of the EU, the distribution of benefits created by free internal trade among 28 member states is not at all symmetric. Indirect proof of such asymmetries existence, at least for a limited period, is shown by the accession period practice where EU opens its market at the start of the process and candidate countries reciprocate only gradually. But this could not entirely neutralize the actual difference of trade benefits distribution contained in the essence of the liberalized trade developments. Specific compensation mechanisms must therefore be in place to help those with less trade benefits, to improve their economic potential to grow faster and to reap more trade and economic benefits within the economic integration. In the EU such compensation mechanism has developed in the form of the EU Cohesion Policy. In the essence Cohesion Policy has to compensate, among other, for the integration's impacts, as well for the impacts of the unequal trade benefits distribution.

"The objective of reducing disparities between development levels across the EU's various regions, which is a key characteristic of economic and social cohesion policy, first appeared as early as the Preamble to the Treaty of Rome (1957). Yet it was not until almost thirty years later, in the Single European Act (1986), that economic and social cohesion was finally included as a specific objective in itself along with the objective of achieving the single market. This policy area was formally institutionalized in the Treaty of Maastricht (1992)." (Subsidiarity, p.1).

Slovenia has been the recipient of pre-accession assistance from as early as 1992, while full access to cohesion policy was gained after full membership, first in the 2004-2006 period and later in 2007- 2013 financial perspective.

For the **2004-06** perspective, Slovenia was allocated €458 million, which was, with the ratio of 0.6% GDP per annum, the lowest share among all EU member states. Compared to convergence regions in other countries, with 30.6% Slovenia's investment in human resource development was above average and quite comparable with that of Ireland, where the focus on human capital was considered the key to their economic successs at that time. Regarding absorption capacity, Slovenia achieved practically full absorption with average absorption rate of 99.3% for the Structural funds and 104% for Cohesion fund at the end of the programming period.

For the **2007-2013** programming period, Slovenia managed to negotiate €4.2 billion of cohesion funds, which meant an average allocation of €600 million a year or rather between 1.6 and 1.7% of Slovenia's GDP. Compared to other member states, aid intensity per capita was the fifth-highest. With regards to public investments, capital transfers and subsidies, cohesion policy funding accounted for around 50% by 2012, which means that the cohesion policy actually became a key actor in the development policy in the Republic of Slovenia. The current absorption rate (data for 15.4.2014) regarding payments from the Commision is 63.8%,

which puts Slovenia in the 14th place amongh the EU member states. The absorption performance varies substantially among the Funds with the Cohesion fund performing the worst. For example, compared to countries of the Central and Eastern European region, Slovene payment rate of 27% for infrastructure-related operations ranks only second-to-last. A brighter picture emerges in R&D and ITC operations, where Slovenia has the highest payment ratio in the entire CEE region.

A big concern regarding Slovenian absorption rate is the gap between the expenditures from the national budget and the amount claimed from the Commission and it is not difficult to relate to the reasons behind the **absorption problems** identified by Theurer (2011) fo the 2007-13 financial perspective: *initial problems at the beginning the programming period, financial problems, regulatory requirements, organisational requirements, human resources, information technology systems, and control requirements.* And even though the Court of Auditors of the Republic of Slovenia, in its 2012 report, assessed the information system as one of the key problems in the implementation of cohesion policy in Slovenia, we argue further that a stable implementation system as well as stable staff structure are the two missing key elements to a cohesion policy success story of Slovenia.

REFERENCES

Bachtler, J., and Gorzelak, G., (2007), *Reforming EU Cohesion Policy*, in *Policy Studies*, Vol. 28:4, p309.

Becker, Sascha O.; *EU Structural Funds: Do They Generate More Growth?* The CAGE–Chatham House Series, No. 3, December 2012, http://www.chathamhouse.org/sites/default/files/public/Research/International%20Economics/1212bp_becker.pdf

Bulmer, S., and Paterson, W.; *The Federal Republic of Germany and the European Community*, London, Allen and Unwin, (1987)

Cohesion policy background note; Regional policy − 08-07-2013 - 16:13, http://www.europarl.europa.eu/news/en/news-room/content/20130708BKG16812/html/Cohesion-policy-background-note

Court of Audit of the Republic of Slovenia (2012). Audit of European Cohesion Policy implementation system in the Republic of Slovenia for the programming period 2007-2013. Ljubljana: Court of Audit of the Republic of Slovenia

De Melo, Jaime; *Regional trade agreements in Africa: Success or failure?* http://www.ideasforafrica.net/articles/regional-trade-agreements-africa-success-or-failure#sthash.3AnWrCZ2.dpuf , 9th December 2013

EU Cohesion Policy 2014-20; Posted by EP Library · November 15, 2013, http://epthinktank.eu/2013/11/15/eu-cohesion-policy-2014-20/

European Commission, DG Budget (2013). Analysis of the budgetary implementation of the Structural and Cohesion Funds in 2012. Brussels: European Commission.

European Commission, DG Regio (2014): EU Cohesion Funding – Key Statistics [http://ec.europa.eu/regional_policy/thefunds/funding/index_en.cfm]

Government Office for Development and European Cohesion Policy (2014): Poročilo o črpanju sredstev evropske kohezijske politike 2007-2013. Ljubljana, april 2014

Government Office for Local and Regional Development (2007): Nacionalni strateški referenčni okvir 2007–2013. Ljubljana: SVLR.

KPMG (2013): EU Funds in Central and Eastern Europe. [http://www.kpmg.com/CEE/en/IssuesAndInsights/ArticlesPublications/Documents/eu-funds-in-central-and-eastern-europe-2012.pdf]

Leamer, E.E.; *The H-O Model in Theory and Practice*, Princeton Studies in International finance, No. 77, Feb. 1995.

OECD (2007): Economic Surveys of the European Union 2007. Paris: OECD.

Rosenberg, C.B., Sierhej, R.(2007). Interpreting EU Funds Data for Macroeconomic Analysis in the New Member States. IMF Working Paper no. 07/77.

Subsidiarity monitoring in the area of economic, social, and territorial cohesion; https://portal.cor.europa.eu/subsidiarity/policyareas/Pages/EconomicandSocialCohesion.aspx

The WTO chart of the RTAs growth; http://www.wto.org/english/tratop_e/region_e/regfac_e.htm

Theurer, M. (2011). Report on absorption of Structural and Cohesio Funds: lessons learnt for the future cohesion policy of the EU. Brussels: European Parliament.

Wostner, P. (2009). Potrebnost in uspešnost kohezijske politike EU. Ljubljana: Ekonomska fakulteta.

Wostner, P. (2013). Cohesion policy in Slovenia over the last 20 years. [http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2261803]

Wostner, P. (ed.), Aljančič, M., Klužer, F., Juvančič, L., Medved, E., Kušer, N. (2004). *Kako do denarja EU*. Ljubljana: GV Založba.

Sonja Šlander[1]
Faculty of Economics, University of Ljubljana
Tej Gonza[2]
Erasmus University of Rotterdam
Katja Zajc Kejžar[3]
Faculty of Economics, University of Ljubljana

EVALUATION OF EU COHESION POLICY: LESSONS FROM SLOVENIAN CASE

ABSTRACT

The impact of Cohesion policy is being regularly evaluated by the European Commission, responsibility for evaluation, however, also lies with the Member States. We present Slovenia as a successful case of such triangulation-based Cohesion policy evaluation following a recommendation from the Commission that "Whenever possible, evaluation questions should be looked at from different viewpoints and by different methods". Based on Slovenian CP evaluation experiences we argue further that the basic triangulation-based process should be modified with an additional feed-in mechanism. For an exposition, results are presented from the Slovenian case where the estimates on R&D spillover elasticities are obtained with microeconometric, counterfactual methods and fed directly into DG Regio's Slovenian model within CSHM system to obtain more accurate CP impacts on macroeconomic variables.

Keywords: European cohesion policy, evaluation, triangulation, counterfactual methods, HERMIN

JEL classification: R10, C54, O52, R58

1. INTRODUCTION

Cohesion policy represents financially the second strongest policy area in the EU budget. Its objective is to contribute to reduced development disparities and at the same time to promote growth across the European Union. The impact of cohesion policy (CP, hereafter) is being regularly evaluated by the European Commission, responsibility for evaluation, however, according to Council Regulation 1083/2006, also lies with the Member States. As suggested in Barca & Bachtler (2008), "Cohesion policy has become one of the most widely reported and evaluated policies in Europe", yet Barca (2009, p. XV) reports that the state of its empirical results is »very unsatisfactory«. Batterbury (2006) sees a narrow focus of CP evaluation framework which is restricted to three core purposes: accountability, improved planning, and quality and performance as one of the reasons for limited usefulness of evaluation outputs. Further, she identifies the lack of data comparability, rigidity of time-scales and a focus on performance approaches as major obstacles to effective evaluation. On the other hand, Polverari, Mendez, Gross, & Bachtler (2007) report favourable trend in the evolution of monitoring and evaluation of CP since evaluation design is becoming more and more systematic and rigorous and availability of data has been considerably improving. Recognising several deficiencies, the European Commission concludes its last Cohesion Report by noting that "the monitoring and evaluation systems need to be improved across the EU to track

[1] sonja.slander@ef.uni-lj.si
[2] PhD Student. gonza.tej@gmail.com
[3] katja.zajc@ef.uni-lj.si

performance and to help redirect efforts as necessary to ensure that objectives are attained." (European Commission, 2010, p. 257).

Among the important changes in the understanding and organization of CP evaluation planned for the programming period 2014-2020, European Commission stresses first a need for clearer articulation of the policy objectives to move away from an excessive focus on the absorption of funding towards a results oriented policy. And secondly, calls for more methodological rigour in capturing the effects of CP interventions. Furthermore, European Commission strongly encourages CP evaluation to follow principle of triangulation by explicitly stating "*Whenever possible, evaluation questions should be looked at from different viewpoints and by different methods*".

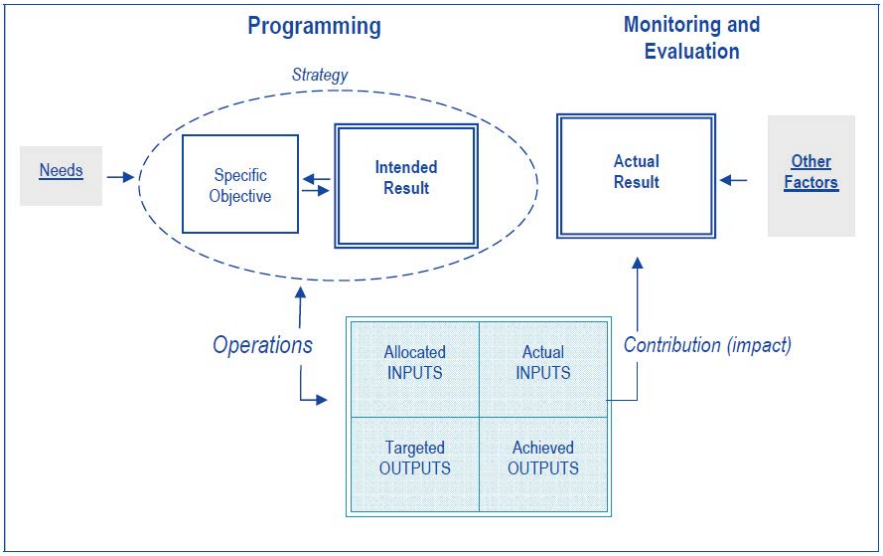
This chapter deals with the choice of methods and approaches as a crucial part of CP evaluation process following the triangulation principle and summarizes the resulting evidence on impacts of the European Cohesion Policy. Based on the case of Slovenian CP evaluation practices, we aim to discuss the usefulness of triangulation based approach as suggested by the European Commission and argue further that there is a need to integrate more systematically different micro and macro methodological approaches in order to obtain more accurate evaluation of aggregate CP impacts. We demonstrate in the case of Slovenia that basic triangulation-based process may be enriched with an additional feed-in mechanism, i.e where the estimates on R&D spillover elasticities are obtained with microeconometric, counterfactual methods and fed directly into DG Regio's Hermin model.

The rest of the chapter is organised as follows. The next section sets the evaluation framework with outputs, results and impacts for the purposes of programming, monitoring and evaluation of CP. In section 3 we discuss the choice of methods and approaches following the triangulation principle and summarize the evidence on impacts of the European Cohesion policy. Section 4 critically assesses Slovenian CP evaluation practices and evidences and proposes refinements of the CP evaluation, while the last section concludes.

2. EVALUATION FRAMEWORK: OUTPUTS, RESULTS AND IMPACTS

In the latest guidance document on monitoring and evaluation of European regional development fund and Cohesion fund in the programming period 2014-2020 European commission defines a simplified logical framework for the purposes of programming, monitoring and evaluation of CP (see Graph 1). Monitoring and evaluation serve the management purpose of delivering the programme in an efficient manner, while evaluation contributes also to the assessment whether a programme has produced the desired effects. This logical framework has been changed from former guidance provided by DG Regional Policy to facilitate some important changes in the understanding and organization of CP evaluation. First, a move away from an excessive focus on the absorption of funding towards a results oriented policy based on a clearer articulation of the policy objectives is proposed. Second, Commission sets out more clearly the different types of evaluation and calls for more methodological rigour in capturing the effects of our interventions.

Graph 1: Outputs, results and impact in relation to programming, monitoring and evaluation



Source: European Commission (2014).

According to the European Commission's 2014 guidance document, there are two key tasks of impact evaluation: (i) to disentangle the effects of the intervention/policy measure from the contribution of other factors, and (ii) to understand the functioning of a programme. The former task is addressed with **counterfactual impact evaluations** while the latter with **theory-based impact evaluations**.

Theory-based evaluations can provide insights into why things work, or don't and under what circumstances. They mainly produce a narrative estimate of the impact rather than quantified. The main focus is thus not a counterfactual ("how things would have been without") rather a theory of change ("did things work as expected to produce the desired change"). Typical methods include literature reviews, administrative data analysis, case studies, interviews and surveys in order to reconstruct and verify the intervention logic. Often mentioned approaches are realist evaluation, general elimination methodology, contribution analysis and participatory evaluation. The ex-ante evaluation of programmes can be understood also as a theory-based analysis, assessing the strength of the theory of change and the logical framework before the programme is implemented.

On the other hand, counterfactual impact evaluation aims to provide a credible answer to the question "Does it work?". The central question of counterfactual evaluations is rather narrow — how much difference does a treatment make. Is the difference observed in the outcome after the implementation of the intervention caused by the intervention itself, or by something else? Evaluations of this type are based on models of cause and effect and require a credible and rigorously defined counterfactual to control for factors other than the intervention that might account for the observed change. The existence of baseline data and information on the situation of supported and non-supported beneficiaries at a certain point in time after the public intervention is a critical precondition for the applicability of counterfactual methods. Typical methods are difference-in-difference, discontinuity design, propensity score matching, instrumental variables and randomised controlled trials.

3. COHESION POLICY EVALUATION

The impact of cohesion policy is being regularly evaluated by the European Commission, responsibility for evaluation however, according to Council Regulation 1083/2006, also lies with the Member States. As suggested in Barca & Bachtler (2008), "cohesion policy has become one of the most widely reported and evaluated policies in Europe". Nevertheless, the European Commission concludes its last Cohesion Report by noting that "the

monitoring and evaluation systems need to be improved across the EU to track performance and to help redirect efforts as necessary to ensure that objectives are attained." (European Commission, 2010, p. 257).

3.1. Evaluation approaches and methods

The decision on the choice of methods and approaches is one of the crucial steps in CP evaluation. A range of methods and approaches is available but they all have their strengths and weaknesses. Since there is no ideal CP evaluation approach guaranteeing valid answers for all circumstances, a choice and combination of methods need to be decided on a case-by-case base.

However, when dealing with such complexity and multidimensionality of evaluation process as it is the case of CP evaluation, usually the triangulation principle is called for. Triangulation, i.e. use of multiple methods mainly qualitative and quantitative in studying the same phenomenon (Jick, 1979), has been increasingly recognised and used among scholars and researchers in social sciences in recent years. One of advantages from the combination of quantitate and qualitative methodological approaches usually stressed in the literature is increasing study credibility and reliability by focusing on convergent information from different methods. By combining multiple observers, theories, methods, and data, several intrinsic biases and the problems that come from single method, single-observer and single-theory studies may be overcome by triangulation. Further, Bechara and Van de Ven (2011) accentuate validity by discussing how divergent information from different methods reveals important aspects and values of a complex phenomenon that often go unrecognized without triangulation. The principle of triangulation is emphasized also in the above mentioned European Commission's (2014) guide by specifying "*Whenever possible, evaluation questions should be looked at from different viewpoints and by different methods"*.

Following Fay (1996) and Alecke, Blien, Frieg, Otto and Untiedt (2010) a comprehensive, triangulation-based evaluation process consists of:

a) estimation of the impacts of the measures on the individual firm (microeconometric evaluation);
b) examination whether this is the best outcome that could have been achieved for the money spent (efficiency, e.g. case study based cost-benefit analysis);
c) examination whether the impacts are large enough to yield net social gains if all spillover effects and side-effects are taken into account (macroeconomic evaluation).

These approaches and the resulting evidence on the impacts of CP are summarized in the following sections. In this section we focus on quantitative evaluation studies and will therefore omit the discussion on the more qualitative case studies (see for example Davies et al., 2007, for an overview).

3.2. Macroeconomic evaluation

Cohesion policy aims to promote productivity and economic growth, stimulate the creation of jobs and promote investment in regions. Because the desired region- and economy-wide effects are mainly focused on enhancing the long-run, supply side growth potential of the economy, it is important to be able to model them in a macroeconomic setting.

3.2.1 Single-equation approach: The impact of cohesion policy funds on growth and convergence

Macroeconomic, single-equation approach has mostly been used to assess the impact of CP on economic growth and real convergence. Most studies are set in the context of new (endogenous) growth theory (Romer, 1994) employing time series, cross-section or preferably panel data estimators on structural funds dataset of NUT2/NUTS 3 regions. However, the results are mixed and no general conclusion regarding the growth effects of CP funds can be drawn. On one hand, some studies find evidence for a positive relation between SF and

economic growth (Beugelsdijk and Eijffinger, 2005; Pellegrini, Terribile, Tarola, Muccigrosso, & Busillo, 2013), while on the other hand others failed to find significant positive impact (Dall'erba and Le Gallo, 2007).

As summarized by Hagen and Mohl (2009, 2010), the differences in the impact of SF on economic growth can be attributed to several factors: (i) to differences in the choice of units (countries versus regions), (ii) methodological approaches (panel versus cross-section; endogeneity problems), (iii) time horizons, and (iv) to the lack of high quality SF data (e.g., some authors use SF commitments instead of payments). They conclude European structural funds are only conditionally effective provided a good quality of the institutional setup (Ederveen, de Groot, and Nahuis, 2006), decentralized governmental structures (Bähr, 2008) or conditionally on which Objective is analysed (Mohl and Hagen 2008, 2010).

With regard to the convergence effects, Becker, Egger & Von Ehrlich (2012) analyse not only whether CP funds contribute to fostering growth in the target regions but also whether or not more transfers generate stronger growth effects. They show that EU transfers enable faster growth in the recipient regions as intended, but some reallocation of the funds across target regions would lead to higher aggregate growth in the EU and could generate even faster convergence than the current scheme does. Namely, in 36% of the recipient regions the transfer intensity exceeds the aggregate efficiency maximizing level and in 18% of the regions a reduction of transfers would not even reduce their growth.

3.2.2. Macroeconomic simulation models for cohesion policy impact evaluation

Macroeconomic models allow us to take account of spillovers in the economy, and also provide the counterfactual, baseline (no-cohesion-funds) development of the economy against which we can compare the economic development in the presence of cohesion policy.

The first macroeconomic models to simulate the impact of cohesion policy date back to the 1990s: a macro-econometric model, based on the complex, multi-sectoral HERMES was applied to Ireland (Bradley et al., 1992) and then evolved into HERMIN model (i.e. Bradley et al., 1995); a two-sector endogenous growth model was applied to Greece, Ireland and Portugal (Gaspar and Pereira, 1995, Pereira, 1997); a CGE model was applied to simulate the effects of cohesion funds in Greece by Lolos et al. (1995); an input-output model by was applied to Objective 1 regions by Beutel (1993), and Goybet and Bertoldi (1994) applied a dynamic general equilibrium model to the same group of regions.

The European Commission puts a strong emphasis on macroeconomic simulations to estimate the cohesion policy impacts[4] and presents them in the Report on economic and social cohesion every three years. The last report (DG Regio, 2010) includes results from two models[5]:

1. ***QUEST II*** is a micro-founded neo-Keynesian dynamic stochastic general equilibrium model with endogenous growth, developed by DG-ECFIN (Varga, J., In't Veld, J. (2010)). The QUEST model has been used to estimate the net effects of Cohesion funds. The cumulative net effect on the GDP of the EU-25 of the 2000–2006 programmes expenditure is estimated at 0.7% in 2009 (i.e. GDP was higher to this extent as a result of policy), this was estimated to rise to 4% by 2020. In the EU-15 alone, the numbers show a cumulative net effect on GDP of just over 3% by 2020 and in the EU-10, the effect of cohesion funds on GDP is estimated to be 15.9%,compared to non-cohesion policy baseline (DG Regio, 2010, p254).

2. ***HERMIN*** is a macroeconometric model with neoclassical features on the supply side and is now the most

[4] It should be noted that these models do not measure the impact/ or effectiveness of cohesion policy - rather, they *model* it, and the differences in their results arise from their different theoretical underpinnings about the workings of the economy.
[5] The 4th Report on economic and social cohesion also reported the results from a CGE model EcoMod, developed by the EcoMod Network/Free University of Brussels (for a basic presentation of the model see Bayar, 2007), but the results diverged widely from those of the other two macroeconomic models (see Bradley, Untiedt, 2008 for a discussion).

widely applied framework to Structural Fund analysis at the national and macro-regional level. It has been developed in Ireland in to the late 1980s to specifically to evaluate the medium- to long-run macroeconomic impacts of structural funds and taking into account the limited data availability in the less-developed EU Member States and regions (i.e. Greece, Ireland, Portugal, Spain, the Italian Mezzogiorno, East Germany and Northern Ireland). The design of HERMIN model is based on a small open economy model and incorporates mechanisms which ar based on the endogenous growth literature which allow it to capture the long-run supply side impacts of Structural Funds along with the short-run Keynesian impacts.
Currently, the European Commission is using a Cohesion System of HERMIN Models (CSHM), which was developed for DG Regio[6] to be, in the first instance, applied to the sixteen Objective 1 member states[7], regions of the former East Germany and the Mezzoiorno region of southern Italy, to permit inter-country and interregional comparisons. The newest, 2012 revision of the CSHM system now includes models for the 27 EU member states (as of yet without Croatia but plus Turkey) in order to study the spillover impacts of Structural Funds on the so-called "net donor" states.

The HERMIN framework includes five key production sectors: manufacturing (a largely traded sector), market services (a mainly non-traded sector), building and construction, agriculture, and government (non-market) services. The total of cohesion funds is disaggregated into three main economic categories: physical infrastructure, human resources, and direct aid to the productive sector. The impact of cohesion policy on the economy is then modelled through a mix of supply- and demand-side factors. The short-run, multiplier (Keynesian) demand effects come directly from the increased CP expenditures, but these are not its *raison d'être*. The essence of CP is to improve the economy's competitiveness – its long-run supply-side potentials, by providing finance for the access to better infrastructure, more educated workforce and research aid for firms. While the structure and scope of the majority of macroeconomic models emphasize the short-run effects of economic shocks on the demand side of the economy, the model to evaluate CP must also be able to focus on its ability to support the development on the supply-side.

HERMIN captures the supply-side effects of cohesion policy through spillover (externality) mechanisms. Parameters of 'externality elasticities[8]' are used, which are positive when the programmes of education, infrastructural investments and direct aid to firms have been carefully planned and successfully executed. The model includes two types of spillovers-externalities:

1. *Production externalities*: directly increase the economy's output – any rise (relative to the no-cohesion policy baseline) in the stock of infrastructure, human capital and direct aid to productive sector will induce in a direct rise in output of manufacturing and market services (for given inputs), where the responsiveness depends on the size assumed for the spillover elasticity;
2. *Externalities of factor productivity*: are the increase in total factor productivity in the manufacturing and market services sectors due to cohesion policy investment in human capital, infrastructure and R&D[9]. The model handles them by endogenizing the Hicks neutral technological progress (A) in the CES production function and thereby making it dependent on the changes in the stock of physical and human capital as well as R&D. This type of externalities also brings along a negative side-effect where an improvement in TFP can induce a decrease in jobs unless output is increased enough to offset the loss.

The estimates of macroeconomic impact of cohesion funds (2000-2006 programmes) produced by the HERMIN system of models show an increase in GDP of 11% by 2009 in the main recipient Member States (compared to the counterfactual of no cohesion policy), while the number of employed is estimated to be higher by 5.6 million (European Commission, 2010, p 250-253).

[6] Bradley, Untiedt, 2007.
[7] Member states that are recipients of development assistance under the »convergence« criterion: Greece, Ireland, Portugal, Spain, Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia, Hungary, Slovenia, Cyprus, Malta, Bulgaria, and Romania.
[8] Values of spillover elasticities are usually calibrated based on literature review but can be estimated empirically (see the case of Slovenia below).
[9] Only the R&D part of direct aid to productive sector is assumed to have a long term effect on the economy.

3.3. Microeconometric approach

In contrast to the contribution of macroeconomic studies to understanding of aggregate effects, micro-level studies are used to estimate the impacts of interventions on the individual firm. The appeal of micro studies is the flexibility to address the specific goals of the projects and programmes. This is particularly valuable since such approach reduces the mismatch between operational logic of the evaluation system and the project/programme logic. Most importantly, micro-econometric studies exploiting the rich firm-level datasets allow counterfactual impact assessment of CP funds on various firm performance measures, e.g. employment, investment, R&D activity, productivity, etc.

Despite widely recognised advantages of micro-econometric counterfactual impact evaluation the attempts at evaluating CP impacts based on this approach are relatively rare and have started to appear only recently. The summary of studies based on this approach is presented in Table 1 below.

Table 1: Summary of a counterfactual impact evaluation studies based on micro data

Study	Region/ Country	Programme/ Measure	Impact	Methodology	Findings
Bondonio and Greenbaum (2006)	northern and central and Italy	"Objective 2" area business incentives	employment impact	difference in difference model	Business incentives promoted employment growth in the target areas. They were most effective when targeting production in province-industry pairs that had the least severe declines during the years prior to the program intervention.
Alecke, Blien, Frieg, Otto & Untiedt (2010)	East German Länder, 2000-2006	direct investment and R&D grants via the ERDF Obj. 1	investment and R&D behaviour	propensity score matching, difference in difference, IV	Grants induced both strong investment and R&D effects: (i) an average support of 8,000 EUR per employee led to 11,000-12,000 EUR of extra investment per employee, and (ii) R&D grants of roughly 8,000 EUR led to an additional 8,000 EUR of investment. A rough calculation of the direct employment effect from investment grants was some 27,000 extra jobs.
Hart and Bonner (2011)	Northern Ireland, 2001 -2008	public sector financial assistance to private firms	Firm performance (productivity, employment, sales)	2-stage Heckman model (robustness checks DiD and PSM)	A significant positive impact on productivity and turnover, but insignificant on employment. Employment in non-assisted manufacturing firms fell by 3.9% per annum - for assisted firms the drop was only 1.9%. While in the business service sector non-assisted firms grew by about 4.9% per annum, while assisted firms grew by 6.9%.
Czarnitzki, Lopes Bento and Doherr (2011)	Czech republic and Germany	innovation support	impact on innovation activity (patents, R&D investment, innovative behaviour)	difference-in-difference estimator, nearest neighbor matching	In Czech republic the treated firms suffered less from a reduction in patenting during the financial crisis than the non-recipients. In Germany the representative firm would have had R&D expenditure of 213,000 EUR without ERDF. The treatment effect in terms of EUR amounts to 87,000 EUR, on average, for a typical grant size of up to 51,000 EUR. CP recipients also score higher on a range of innovation indicators.
ASVAPP (2012)	Italy and region of Piemonte	enterprise support: investment grant and various SME schemes	employment impact (cost per job, job quality)	Conditional difference in difference, control group selected by matching using a stratification & reweighting approach	Smaller grants proved to be much more cost-effective than larger ones: cost per jobs averaged €79,000 for the smallest grants (less than €125,000), rising to €489,000 for the largest grants (above €500,000). The loans had a cost per job around half that of grants plus a surprisingly high impact on investment – EUR 5 per euro of gross grant equivalent. The quality of the jobs created is usually similar to average jobs in the enterprises concerned.

All of the studies presented in Table 1 deal with the direct impacts of the selected business incentive schemes on performance of the incentive recipients. In most cases the studies find more or less pronounced positive impacts on various aspects of recipient's performance. Furthermore, this approach can be also used to assess indirect effects, i.e spillover effects on other non-recipient firms. For instance, Basile, Castellani and Zanfei (2008) examined one of such indirect impacts of CP funds on attracting multinationals. They find evidence that Structural and Cohesion funds allocated by the EU to laggard regions have contributed to attracting foreign investors from both within and outside Europe.

It can be established based on comparison of different evaluation approaches and the resulting evidence on the impacts of CP that there are strong complementarities among different approaches contributing to the better fulfilment of the two essential tasks of managing authorities when running a programme, i.e. to deliver the programme in an efficient manner and guarantee that programme has produced the desired effects. In the following chapter we deal with the concrete evaluation of CP in Slovenia.

4. COHESION POLICY EVALUATION IN SLOVENIA

Slovenia has been the recipient of pre-accession assistance from as early as 1992, while full access to cohesion policy has been possible after full membership, first in 2004-2006 and later in 2007- 2013 period. In this financial perspective, Slovenia has €4.2 billion of available commitment appropriation at its disposal until 2015, which, given its size, puts the question of the effects of resources at the forefront of our research interest. In the following sections, we present the current state of cohesion policy evaluation in Slovenia.

4.1. Microeconomic evidence

4.1.1 Survey of cohesion policy evaluations in Slovenia for the 2007-2013 financial perspective

We begin with an exposition of case-study evaluations of the three Slovenian Operational programmes for 2007-2013 financial perspective.

4.1.1.1. Evaluations within the Operational Programme for Human Resource Development for the Period 2007 – 2013 (OP HR)

Evaluation of the instrument financed under OP HR, Priority Axis »Equal opportunities and reinforcing social inclusion«, Activity Field »Increased employability of vulnerable groups in the field of culture and support to their social inclusion« (Pitija, 2009b)

> The evaluation assessed 17 operations (involving 500 participants), focused on two main activities: (i) training and (ii) employment of members of vulnerable groups. The biggest share of the subsidies (36.6%) were approved for operations for disabled people, 21.35% of the funds were allocated to projects for »other ethnic groups and immigrants«, 15.8% were allocated for the Roma community. The report concluded that the instrument was useful in both increasing the employability of vulnerable groups in the field of culture and in supporting their social inclusion. The great majority (above 80%) of participants agreed that inclusion in the projects helped them to re-establish social contacts, improved their self-esteem and gain new knowledge and skills. Around 20 % of the participants reported that the programme helped them with employment and improved their financial status. The report nevertheless argues that despite identifying specific social groups (unemployable youth, elderly and women) as vulnerable groups, they have not been included in the programme.

Evaluation of the public tender for co-financing horizontal NGO networks and regional centres for the year 2008 (Pitija, 2009c)

The subjects to evaluation were eight projects co-financed under the Operational Programme Development of Human Resources 2007-2013, Priority »Encouraging development of non- government organizations, social and civil dialogue.« The evaluation report confirms that the initiative for a more co-ordinated NGO action was relevant and adequate, and the pro-active role of the Ministry (for public services) was effective and positive. The projects carried out were strategic projects helping to form a new infrastructure for the operations of the non-government sector, but a lack of a stable funding for NGOs (after the project has ended) is defined as a major threat for activities which are to be performed by the regional centres and horizontal NGO networks.

Mid-term evaluation of the OP HR

Oikos (2011) reports that Slovenia has failed to define the details of objectives and necessary instruments for the human resource development strategy. Slovenia has not properly specified priority economic sectors to be stimulated. Lack of coordination of instruments to fulfil the priority axis and the inability to include monitoring of the long-term needs of government, employers and employees were also pointed out.

Evaluation of labour market priority themes within OP HR, managed by the Ministry for labour, family, social affairs and equal opportunities (Oikos, 2012)

The subject of evaluation were 37 instruments co-financed under priority theme "Training and education for competitiveness and employability", "Scholarship schemes", "Enhancing the development of new employment opportunities", " Encouraging the employability of job seekers and inactive", "The reform of job market institutions".

The report finds the instruments suitable for a changing environment, and education and training of employees have yielded positive effects on competitiveness of the companies. New job opportunities were not created, however effects were present on sustaining existing jobs and improving competitive advantage of participants. The self-employment support sufficiently facilitated self-employed. Graduates in the sample strengthened their theoretical knowledge and added dynamics and mobility into organization. On the other side, the report points out that 86% of all the funds targeted unemployed and failed to address the roots of the problem, and the process of preparation of any instrument still does not include all target groups (cooperation of employers and employees). Also, the implementation of instruments has to be linked institutionally and content-wise, and procedures should be simplified.

4.1.1.2. Evaluations within the Operational Programme for Environmental and Transport Infrastructure Development for the Period 2007 – 2013 (OP HRD),

Mid-term evaluation of OP ETID 2007 – 2013 (Oikos, 2010)

The evaluation of the projects within OP ETID 2007 – 2013 assessed the majority of them (66 out of 111) as feasible. The potential issues were recognized in the implementation process itself (procurements, permits, etc.).

The focus of OP ETID 2007 – 2013 is primarily on the Slovenian highways, which are seen as enhancing the gravitational role of the larger urban areas while neglecting the regional development centres. They have also failed to provide a permanent connection between regional and municipal centres. With the exception of the second railway track between Koper and Divača, further improvements of railway

system were not predicted by the OP ETID 2007-2013, yet it needs further attention. The main airport, Jože Pučnik, continues to be insufficiently connected by public transportation. Overall, the objectives of improving Slovenian public transportation were not met, on contrary, Oikos reported of a step backwards.

The waste management system, planned in this OP is consistent with the needs of different municipalities. All projects addressing the dangers of flooding are deemed unfeasible. Investments in buildings' energy renovation are meaningful. Actions on lowering the greenhouse gases need to be directed towards both, the consumers of the energy, and the suppliers and energy producers (both small and larger investments in energy systems).

4.1.1.3. Evaluations within the Operational Programme for Strenghthening Regional and Development potentials for the period 2007 – 2013 (OP RD)

Evaluation of the fourth priority axis »Regional development« within OP RD 2007 – 2013 (Pitija, 2009a).

The report targeted 487 of approved operations (in total of €311,763,271), where 35.5% of funds were used for transport infrastructure, 31.63 % for environmental infrastructure, 16.44 % for tourism development, while remaining was put in economic and social infrastructure and the development of urban settlements. In general, operations were relatively successful, with two goals (number of people with access to safer and higher quality water system, number of communally equipped agglomerations) already been surpassed in 2009. Three objectives reached 50% and two reached 30% of their targets. Many projects within Natura 2000 were assessed as unachievable, as majority of the instruments focused on infrastructure and neglected biodiversity preservation and establishment of managerial structures. Achieving the planned goal for large development projects, renovation and remedy of urban areas, which was set above two million EUR, will be also difficult, where only 10 % was reached until 2009. The goal of raising the number of people using public transportation was underachieved, with 0 % increase. The number of newly created gross vacancies nearly met the targets (90 %). Business zones were on the rise with the complementary infrastructure as well. The development of regional urban areas was sufficient with the investments in the renovation of town centres and municipal infrastructure. The least efficient efforts were made in the area of the development potential of regions. Operations that were financed were assessed as beneficial for a sustainable development of the regions with opportunity to improve economic, social and environmental elements. Operations did not have a negative effect on providing equal opportunities to marginal groups and were beneficial for all inhabitants.

Midterm report on evaluation of key activities of innovation policy in Slovenia for the period 2007-2013 (MK Projekt, 2012)

The objects of evaluation were the following priorities within two Operational programmes: "Competitiveness and research excellence" (OP RD); "Experts and researchers for competitive enterprises" (OP HR); "Scholarship schemes" (OP HR), "Quality, competitiveness and responsiveness of higher-education" (OP HR).

The report suggests that innovation policy has achieved considerable improvements in innovation activity with the particular contribution to strengthening cooperation between science, research and technological development. Partnership is in particular improved between academic field and businesses. Indicators of effects and results are exhibiting successful mid-term achievement of results and in some cases even realisation of goals for the entire period (some crucial project results have been correlated with external statistical data which confirms overall positive impact of the innovation policy). Institutional weaknesses of innovation policy are seen as the main factor of lower efficiency, where administrative management is too often seen as more important than substantive goals of innovation policy. Evaluation results also revealed there are still considerable unused potentials for innovation which are not addressed by the current innovation policy. For their

activation they suggest intensifying inter-ministry coordination as well as exchange of knowledge between responsible decision-makers and beneficiaries in preparation of future instruments.

4.1.2. Evaluating cohesion policy for firm-level R&D in Slovenia: counterfactual methods

Although case studies can provide an important and useful feedback about the workings of cohesion policy, they tend to be highly qualitative (answering mainly the question "why does it work") and focus on spending and outputs (e.g. number of people trained) and/or results (number of people getting a job after training) rather than impacts (the effects of a better trained workforce on firm performance) and answering the question "what works". But with growing importance of cohesion policy, the concerns about the effective use of funds have also grown and the European Commission evaluation guidance documents have become more decisive, for example:
"In DG Regio we see a potential role for the use of counterfactual evaluation. Throughout 2007-13, together with Member States and regions, DG Regional Policy will test the merits and limits of counterfactual evaluations through pilot studies. We believe that this method can become a powerful additional tool that will need to be complemented by others, including qualitative approaches." (Stryczynski, 2008)

"In the programming period 2014 - 2020 performance and results will receive increased attention. This will require a review of current monitoring and evaluation systems and capacities, including data collection arrangements. Moreover, evaluation plans will become obligatory, and more emphasis is to be placed on impact evaluation. This shift in focus towards a performance and results orientation is important. High-quality evaluation strategies and techniques are essential for generating knowledge useful to all member states about which interventions 'work' and which do not. Strengthening the quality of evaluations and developing reliable evidence of value added is essential." (European Commission, DG Employment, 2012, p.6)

Following this line of thought, Slovenia is one of a few cases where microeconometric counterfactual analysis was used for cohesion policy evaluation (see Section 3.3 for a presentation of similar studies). It is based on firm-level data and thoroughly presented in Šlander (2010). Below we outline the estimated model and discuss the conclusions.
The study considered the effects of cohesion funds (subsidies, guarantees, credits) for *R&D* in Slovenia in the amount of €128 mio, given directly to 969 firms between 2004 and 2008, and analysed firm-level performance of cohesion funds recipients relative to non-recipients.

The *preliminary analysis*[10] found that the recipient firms of cohesion funds in Slovenia are on average more productive (by 25%), have higher capital-labour ratio, are larger, have above average investment- and export-intensity, higher labour costs per unit (which is also indicator of a higher level of human capital) and better energy efficiency even before receiving cohesion funding. This suggests that the firms winning the cohesion funds (hereafter CF) tenders have not been chosen randomly which is a causality issue and needs to be taken into account to get unbiased estimates of the effect of cohesion funds on the performance of recipient firms[11].

The effect of cohesion R&D funds on firm-level performance of the recipients was first estimated using the *Heckman two-step selection model* (following the procedure for panel data as suggested in Wooldridge, 1995). In the first step, the non-randomness property of the cohesion funds selection process was modelled where tender conditions were used as covariates. In the second step, an augmented Cobb-Douglas production function in logarithms was estimated:

$$Output_{it} = \alpha * \beta_l labour_{it} + \beta_k capital_{it} + \beta_m material_{it} + \gamma Cohesion\ policy_{it} + \mu Control\_variables_{it} + \varepsilon_{it}$$

[10] The preliminary analysis compared the characteristics of cohesion funds' recipients to both the entire population of Slovenian firms and to the average of their respective 2- and 3-digit NACE class.
[11] The non-random selection of cohesion funds recipients was also confirmed with the binary probit selection model.

and the results suggest that the growth in total factor productivity (TFP) was on average higher by 1.8 percentage points in firms receiving cohesion R&D funds during 2004 and 2008, compared to the population of Slovenian firms. The impact is higher in the services sector than industry sector where the estimated difference in TFP growth was 0.9 percentage points on average.

Next, the impact of cohesion R&D funds on firm-level performance was evaluated using the *matching estimator* (e.g. Rubin, 1972-1979; Heckman, Ichimura, Smith, & Todd, 1998) which allows us to form a control group of firms, similar to the cohesion R&D funds recipients (the treated firms) in all (observable) characteristics but the fact that they did not receive cohesion R&D funds. Comparing the results of the treated group (CF recipients) with their matched counterparts gives us unbiased estimates of the treatment effect (which is receiving CF for R&D).

The matching of the CF recipients with their control group of similar firms was based on numerous firm characteristics, which were reduced to a single-dimensional index (containing all the relevant information) with the propensity score technique (i.e. Hahn, 1998, Rosenbaum & Rubin, 1983; Donald B., Rubin, 1992), where the treated units are linked to their control units based on the propensity - probability to be selected into the cohesion policy programmes. The selection propensity can therefore be defined as conditional probability that a firm will be selected into programme (D), conditional on its characteristics before the programme (**X**):

$$(1)\ p(X) = Pr\{D = 1|X\} = E\{D|X\}$$

This means that we can link each CF recipients to a firm or firms which have not received funds, but are the most similar based on the probability of selection. When the control group is formed in this manner, the average impact of cohesion funds (average treatment effect, ATT) is calculated as the difference between the average results of both groups (CF recipients and control group of non-recipients):

$$(2)\ ATT = E(Y_{1i} - Y_{0i}|D_i = 1) = E\{E\{\ Y_{1i}|\ D_i = 1, p(X_i)\} - E\{E\{\ Y_{0i}|\ D_i = 0, p(X_i)\}|\ D_i = 1\}$$

where the external parentheses relates to the distribution $(p(X_i)\ |D_i = 1)$ and Y_{1i} , Y_{0i} to the potential results of both groups – the treated firms (CF recipients) and the control group.

Following the procedure outlined above (equation 1) to estimate the effects of cohesion funds on firm-level performance of recipients, a pooled probit selection model was estimated for the propensity of firms to be selected into CP funding (propensity score). The period of estimation was 2004-2008 and one-year lags of independent variables were used to avoid endogeneity.

The results of the model reveal that the selection was positively related to labour productivity, export intensity, capital intensity and investment intensity, meaning that the probability to apply for cohesion policy tenders (and the selection into funding) was higher in firms which were above-average investors even before being selected to receive cohesion funds. Due to the specific tender conditions, the probability for selection was lower in firms with a higher capital loss, while the size of firms was linked to selection in a quadratic function, where the selection was positively affected by size only up to a certain size, followed by a negative correlation (this is the direct effect of tender conditions, where a part of funds were dedicated only to micro, small and medium-sized firms).

In general, the average effect of CF on the group of recipients can be defined for all matching algorithms following Morgan, Winship (2009, p.106):

(3) $™ATTmatch = 1/n1\ \Sigma[(y_i/d_i = 1) - \Sigma j \omega_{ij}(y_i/d_i = 1)]$

where $n1$ is the number of treated units, index i denotes the treated units, j denotes the control units, while ω_{ij} are weights measuring the distance of each control unit to its treated unit.

We report the results on the average treatment effect based on the nearest neighbour matching procedure. The average effect of cohesion R&D funds on recipient firm labour productivity is estimated at 0.64 in the year of receiving funds, which means that the productivity of firms, receiving cohesion R&D funds between 2004 and 2008 was higher by 6.4% in the year when funds were received (which was after the end of the project/investment) compared to the control group of otherwise similar firms. A year later, the effect is estimated at 7.2% (but significant only at 10% level due to loss of observations). Receiving cohesion R&D funds has also positively (and significantly) affected firm export intensity (by 10% in the year of receiving funds and 23% a year after) and capital intensity (higher by 19% in the year of receiving funds, compared to the control group). Employment wasn't significantly affected in the year of receiving funds, but it was higher by 5.3% in the year after (relative to the control firms). Energy intensity does not seem to affected by the cohesion funding in the year of receiving funds (even though this was stated as one of the goals of cohesion R&D funds) while the effect was wagely positive (not significant) a year after. Summa summarum, the empirical analysis suggests that the cohesion policy for firm-level R&D in Slovenia was mostly successful in achieving the goals set out by the National Strategic Reference Framework (Government Office for Local and Regional Development, 2007).

4.2. Macroeconomic evidence

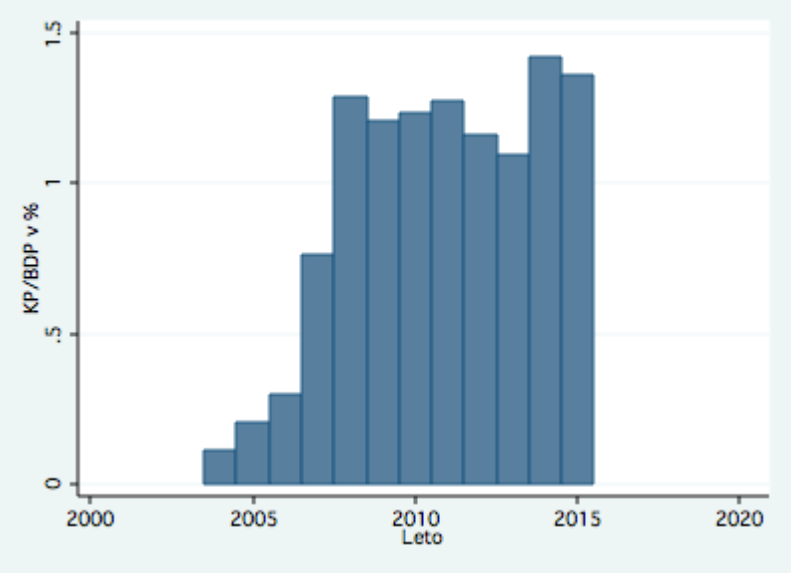
The first models to estimate the macroeconomic impacts of cohesion funds in Slovenia date back to 1999, when basic versions of the ***HERMIN*** models (Simončič et al., 1999) were estimated. The competitive model, a computable general equilibrium model SloMod (which was part of the EcoMod modelling framework) was used first as part of ex-ante CP evaluation of the 2004-06 period (Kavaš et al., 2003) and later to measure the macroeconomic impacts in the context of ex-ante Cohesion policy evaluations for the 2007-13 financial framework (as part of the NSRF and operative programmes preparation). It was estimated that cohesion funds in Slovenia would result in an average of 0.75 percentage points higher economic growth and 33,900 gross (27,500 net) additional jobs, leading to an increase in national employment of 1.7 percentage points and decrease in registered unemployment of 2.2 percentage points.

Currently, macroeconomic impacts of cohesion policy in Slovenia are estimated by DG Regio, with the Slovenian model within ***Cohesion System of HERMIN Models*** (CSHM, presented in Section 3.2.2). The model works as an integrated system of cca 250 inter-dependent equations, 20 of which are stochastic and their parameters are calibrated empirically based on economic theory. While the parameters of spillover elasticities (parameters that allow for the long-run, supply-side impacts of cohesion funds in the model) within the CSHM are chosen on the basis of a substantial international literature review (see Bradley, Untied, 2007, for an exposition), we have modified slightly the Slovenian HERMIN model to use an empirically estimated parameter of R&D factor productivity spillover (based on a microeconometric, firm-level model which is presented in section 4.1 above).

The macroeconomic impacts of cohesion funds in Slovenia (for the total of 2004-06 period and 2007-13 financial perspective), estimated with the DG Regio's Slovenian HERMIN model and presented below, are based on the actual payment profiles until 2009 and planned annual allocations afterwards, for the period 2010-15 (taking account of the 'N+2' rule).

Figure 2 presents the share of cohesion (public) funds[12] in Slovenian GDP for the period 2004-15 as incorporated in the HERMIN model. Cohesion funds were relatively scarce during the 2004-06 period (€458 mio, which was below 0.4% GDP annually) but have increased significantly in the financial period 2007—13 (with the planned average allocations of cca. € 600 mio per annum). As in Figure 2, average yearly cohesion funds allocations for the 2007-15 period is about 1.2% GDP.

Figure 2: Cohesion policy funds in Slovenia during the period 2004-15 as share of GDP (actual payments during 2004-09, planned annual allocations in 2010-15)



Source: European Commission, authors' calculations

Below we present the impact of cohesion policy in Slovenia on key macroeconomic variables. The total impact comes from both short-run (Keynesian) effect of increased demand (with a multiplied impact due to inter-sectoral linkages that spill over the entire economy) and the supply-side effect that accumulates over the years into a long-run effects. The impact of cohesion funds is calculated as a percent-difference between the baseline simulation (Slovenian economy without cohesion funds) and the cohesion policy simulation.

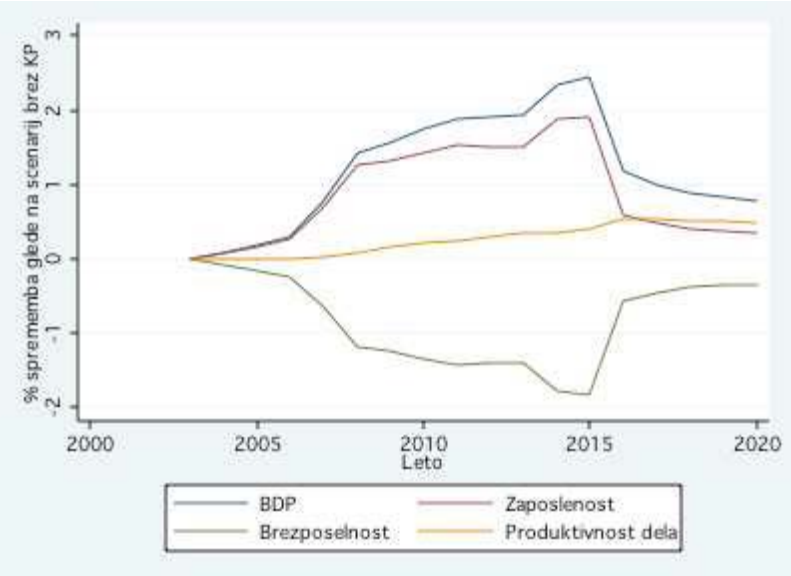
To sum up the macroeconomic impacts of cohesion policy, estimated with the Slovenian model within CSHM and presented in Figure 3, cohesion funds are expected to cause a 1.18% increase in GDP on average for the entire period 2004-2020, while the figure for the period 2007-2015 is 1.78% (compared to the baseline scenario of no cohesion funds). The employment effect (the % increase relative to the no-cohesion funds scenario) is on average 0.87% for the entire period while it was 0.17% during 2004 and 2006 and 1.15% between 2007 and 2015. The employment effect stays positive (on average 0.44% above the baseline of no cohesion funds) even after 2015, when the Keynesian demand effect fades out. The national unemployment rate is on average lower by 0.87% due to cohesion policy programmes (2004-20 period), the difference is even -1.36% on average between 2007-15, but even after the cohesion policy induced inflated demand phase is over in 2015, the effect is still evident (between 2016-20, the number of unemployed is on average lower by 0.42%, compared to the baseline scenario of no cohesion funds).

The estimated effect of cohesion policy on labour productivity comes not only from the demand side - increased stock of capital (infrastructural, research and human capital) but also from technological spillovers, tied to some of the cohesion expense categories (presented in Section 2.2). This effect is positive and increasing during the entire 2004-20 period, when the average effect of cohesion funds on value added per employee, relative to the

[12] Funds from the EU + Slovenian budget

baseline (no cohesion policy), is 0.28%. Over time, this effect is enhanced by the impact of cohesion policy on increased competitiveness of the supply side of the economy and reaches the maximum in 2015, when labour productivity is higher by 0.4% relative to the baseline scenario.

Figure 3: Macroeconomic impacts of cohesion policy in Slovenia (impact on GDP, employment, unemployment and labour productivity) during 2004–2020 (%-increase relative to the no-cohesion policy baseline simulation)



Source: authors' calculations based on DG Regio's Slovenian model within CSHM

To sum up the Slovenian CP evaluations presented above, we argue that the Slovenian model, by using both case studies, microeconometric counterfactual methods as well as macroeconomic simulation model, not only represents a successful case of triangulation in CP evaluation but modifies the basic triangulation scheme with an addition of a feed-in mechanism where the results of the microeconometric CP evaluation model are fed directly into the macroeconomic HERMIN model. In this, we support the European Commission's view that a move towards microeconometric, firm-level research based on counterfactual methods is needed to gain insight into what works and what doesn't in Cohesion Policy and argue further for an integration of micro- and macroeconometric evaluation models for more accurate estimates of CP impact on macroeconomic variables.

5. CONCLUSIONS

Cohesion policy is financially the second strongest policy area in the EU budget, accounting for 36% of funds in the period 2007-2013. Its objective is to contribute to reduced regional development disparities and at the same time to promote growth across the European union. The impact of cohesion policy is being regularly evaluated by the European Commission, responsibility for evaluation however, according to Council Regulation 1083/2006, also lies with the Member States. Cohesion policy has become one of the most widely reported and evaluated policies in Europe (Barca & Bachtler, 2008) yet the European Commission concludes its last Cohesion Report by noting that "the monitoring and evaluation systems need to be improved across the EU to track performance and to help redirect efforts as necessary to ensure that objectives are attained." (European Commission, 2010, p. 257). It also emphasizes that this "requires a greater recourse to rigorous evaluation methods, including counterfactual impact evaluation …" (ibid, p.257) striving to disentangle the effects of the intervention/policy measure from the contribution of other factors.

A range of methods and approaches is available but they all have their strengths and weaknesses, leading to the European Commission's (2014) recommendation "*Whenever possible, evaluation questions should be looked at from different viewpoints and by different methods"*. Following Fay (1996) and Alecke, Blien, Frieg, Otto and Untiedt (2010) a comprehensive, triangulation-based evaluation process consists of: (i) estimation of the impacts of the measures on the individual firm (microeconometric evaluation); (ii) examination whether this is the best outcome that could have been achieved for the money spent (efficiency, e.g. case study based cost-benefit analysis); (iii) examination whether the impacts are large enough to yield net social gains if all spillover effects and side-effects are taken into account (macroeconomic evaluation).

Even though the European Commission lately emprises the need for counterfactual evaluations, studies using microeconometric models are still relatively scarce, since they tend to be data- and methodological knowledge-demanding. Historically, quantitative, case- studies are the preferred mode of CP evaluation. The European Commission, DG Regio, also uses two macroeconomic models (QUEST, HERMIN) in its regular Report on economic and social cohesion to report on longer-term, economy wide impacts of cohesion funds.

We present Slovenia as a successful case of triangulation in CP evaluation, with an additional improvement in the form of a feed-in mechanism. In the 2007-2013 financial perspective, Slovenia has 4.2 billion EUR of available commitment appropriation at its disposal, which, given its size, puts the question of the effects of resources at the forefront of our research interest. Although case studies of programmes, priorities and instruments have been well established and preferred in CP evaluation, efforts have also been put into the other two dimensions. For the microeconomic evaluation, matching and difference-in-difference were used to evaluate the effects of CP direct aid for R&D to Slovenian firms based on firm-level data for 2004-2008 period. The fact that the recipient firms were on average more productive, had higher capital-labour ratio, were larger, had above average investment- and export-intensity, higher labour costs per unit and better energy efficiency even before receiving cohesion funding was a motivation for the selection of the counterfactual approach. The results confirm a positive and significant impact of cohesion policy R&D funds on the selected firm-level performance indicators, compared to the (matched) control group of otherwise similar firms: labour productivity in recipient firms is estimated to be higher (by 6.4 % on average) in the year of receiving funds (after the project is completed) and the year after, and the same for export- and capital intensity. Employment was estimated to be higher a year after receiving funds, while no significant effect of cohesion funds on energy efficiency was found.

Because microeconomic results do not include effects such as spillovers, feedbacks and externalities, and therefore lack the ability to represent the economy-wide effects on macroeconomic variables, they must be complemented by a fully-specified macroeconomic model. The DG Regio's Slovenian model within CSHM has therefore been used as the third model to complete the comprehensive CP evaluation in Slovenia, but it has been improved slightely to include the empirically estimated parameter of R&D factor productivity spillover (rather than use the choice made on literature review which is the mode of action in other countries's models) obtained from the model explained above. In this way, we have modified the original triangulation process in CP evaluation with a feed-in mechanism from the results of the microeconometric model directly into the macroeconomic HERMIN model to get more accurate estimates of CP impact on macroeconomic variables. So not only we confer with the European Commission's view that a move towards microeconometric, firm-level research is needed to gain insight into what works and what doesn't in Cohesion Policy, we argue further for an integrated micro- and macroeconometric approach as well as a modification of the basic triangulation procedure where microeconometric results could be fed into a macroeconomic model as much as possible to improve the accuracy of the estimates of CP economy-wide effects.

REFERENCES

Alecke, Blien, Frieg, Otto and Untiedt (2010). Ex post evaluation of Cohesion Policy programmes 2000-2006, Final report. [http://ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/expost2006/wp6c_final_report_en.pdf]

ASVAPP (2012). Counterfactual impact evaluation of Cohesion policy: impact and cost-effectiveness of investment subsidies in Italy. Final report. [http://ec.europa.eu/regional_policy/information/evaluations/impact_evaluation_en.cfm#1]

Bähr, Cornelius (2008). How does Sub-National Autonomy Affect the Effectiveness of Structural Funds? Kyklos. 61: 3-18.

Barca, F. (2009). *An Agenda For A Reformed Cohesion Policy. A Place- Based Approach to Meeting European Union Challenges and Expectations*, Independent Report prepared at the request of Danuta Hübner, Commissioner for Regional Policy, 244 pp.

Basile, R., Castellani, D., & Zanfei, A. (2008). Location choices of multinational firms in Europe: The role of EU cohesion policy. *Journal of International Economics*, *74*(2), 328-340.

Batterbury, S. C. (2006). Principles and purposes of European Union cohesion policy evaluation. *Regional Studies*, *40*(02), 179-188.

Bayar, A. (2007), Study on the Impact of Convergence Interventions2007-2013, Working paper, ULB/EcoMOD, May.

Bayar, A. (2007), Study on the Impact of Convergence Interventions 2007-2013, Working paper, ULB/EcoMOD, May.

Bechara, J., & Van de Ven, A. H. (2011). Triangulating philosophies of science to understand complex organizational and managerial problems. *Research in the Sociology of Organizations*, *32*, 343-364.

Becker, S. O., Egger, P. H., & Von Ehrlich, M. (2012). Too much of a good thing? On the growth effects of the EU's regional policy. *European Economic Review*, *56*(4), 648-668.

Beugelsdijk, M. and S. C. W. Eijffinger (2005). The Effectiveness of Structural Policy in the European Union: An Empirical Analysis for the EU-15 in 1995-2001, Journal of Common Market Studies. 43: 37-51.

Beutel, J. (1993) 'The Economic Impacts of the Community Support Frameworks for the Objective 1 Regions 1989–93', Report prepared for DG XVI, Brussels: Commission of the European Communities, April.

Bondonio, D., & Greenbaum, R. T. (2006). Do business investment incentives promote employment in declining areas? Evidence from EU Objective-2 regions. European Urban and Regional Studies, 13(3), 225-244.

Bradley, J. & Untiedt, G. (2007). The *COHESION System of HERMIN country and regional models: Version 2*. Muenster: report for European Commission, 1–258.

Bradley, J. & Untiedt, G. (2009). Analysis of EU Cohesion Policy 2000–2006 using the CSHM: Aggregate impacts and inter-country comparisons. [http:// ec.europa.eu/regional_policy/sources/docgener/evaluation/pdf/expost2006/wp3_hermin_aggregate.pdf]

Bradley, J., Fitzgerald, J. and Kearney, I. (1992). *The Role of the Structural Funds: Analysis of Consequences for Ireland in the Context of 1992*, Policy Research Series No. 13, The Economic and Social Research Institute, Dublin.

Bradley, J., Modesto, L. & Sosvilla-Rivero, S. (1995). HERMIN A macroeconometric modelling framework for the EU periphery. *Economic Modelling, 12*, 221–247.

Bradley, J., Untiedt, G. (2008). Do economic models tell us anything useful about Cohesion Policy impacts?, in *Regional Economic Policy in Europe: New Challenges for Theory, Empirics and Normative Interventions*, (eds.) U. Stierle-von Schutz, M. Stierle, F. Jennings and A. Kuah, Edward Elgar, Cheltenham, UK, pp. 159-180.

Czarnitzki D., Lopes Bento C. and T. Doherr (2011). Counterfactual impact evaluation of cohesion policy. Final report. [http://ec.europa.eu/regional_policy/information/evaluations/pdf/impact/ciewp2_final.pdf]

Dall'erba Sandy and Julie Le Gallo J. (2007). The Impact of EU Regional Support on Growth and Employment, Czech Journal of Economics and Finance. 57(7): 325-340.

Ederveen, Sjef, Henri L.F. de Groot and Richard Nahuis (2006). Fertile Soil for Structural Funds? A Panel Data Analysis of the Conditional Effectiveness of European Cohesion Policy. Kyklos. 59: 17-42.

European Commission (2007). *Growing Regions, Growing Europe. Forth Report on the Economic and Social Cohesion*. Brussels: European Commission. 226 pp.

European Commission (2010*). Investing in Europe's future. Fifth Report on the Economic andSocial Cohesion*. Brussels: European Commission. 266 pp.

European Commission (2014). Guidance Document on Monitoring and Evaluation − European Regional Development Fund and Cohesion Fund, Concepts and Recommendations. The Programming Period 2014-2020.

European Commission, DG Employment (2012): The Design and Commissioning of Counterfactual Impact Evaluations. A Practical Guidance for ESF Managing Authorities. Brussels: European Commission.

Fay, R. (1996). Enhancing the Effectiveness of Active Labor Market Policies: Evidence from Programme Evaluations in OECD Countries, Labour Market and Social Policy Occasional Papers, OECD.

Gaspar V., and Pereira A. (1995). The Impact of Financial Integration and Unilateral Public Transfers on Investment and Growth in EC capital-importing countries. Journal of Development Economics, 48 (1), pp.43-66.

Government Office for Local and Regional Development (2007): Nacionalni strateški referenčni okvir 2007–2013. Ljubljana: SVLR.

Goybet, P. and M. Bertold, 1994, "The Efficiency of the Structural Funds," in *Improving Economic and Social Cohesion in the European Community*, J. Mortensen, editor, New York: St Martin's Press, pp. 229–40

Hagen, T., & Mohl, P. (2009). How does EU Cohesion Policy Work? Evaluating its Effects on Various Outcome Variables. [http://www.socialpolitik.ovgu.de/sozialpolitik_media/papers/Hagen_Tobias_uid645_pid580.pdf]

Hahn, J. (1998). On the role of the propensity score in efficient semiparametric estimation of average treatment effects. *Review of Economic Studies, 64*, 605–654.

Hart M. and K. Bonner (2011). Data-Linking and Impact Evaluation in Northern Ireland. Final report. [http://ec.europa.eu/regional_policy/information/evaluations/impact_evaluation_en.cfm#3]

Heckman, J., Ichimura, H. & Todd, P. (1998). Matching as an econometric evaluation estimator. *The Review of Economic Studies, 65*(2), 261–294.

Jick, T. D. (1979). Mixing qualitative and quantitative methods: Triangulation in action. *Administrative science quarterly*, 602-611.

Kavaš, D., Majcen, B., Stanovnik, P., Stropnik, N., Bevc, M., Koren, M., et al. (2003). *Predhodno vrednotenje Enotnega programskega dokumenta RS 2004-2006*. Ljubljana: Institute for economic research, Research voor Beleid International, Institute Jožef Stefan.

Lolos, Suwa-Eisenmann, Zonzilo, Bourgignon (1995) "Evaluating the CSF With an Extended Computable General Equilibrium Model: The Case of Greece (1988–1995)" in *Journal of Policy Modeling* 17(2) pp. 177–197.

MK Projekt (2012): *Vrednotenje ukrepov za spodbujenje raziskovalno razvojnih aktivnosti v gospodarstvu in institucijah znanja*. Ljubljana, oktober 2012.

Mohl, P., & Hagen, T. (2008). Does EU cohesion policy promote growth? Evidence from regional data and alternative econometric approaches. Evidence from Regional Data and Alternative Econometric Approaches, 08-086.

Mohl, P., & Hagen, T. (2010). Do EU structural funds promote regional growth? New evidence from various panel data approaches. Regional Science and Urban Economics, 40(5), 353-365.

Morgan, S. L. & Winship, C. (2009). *Counterfactuals and Causal Inference: Methods and Principles for Social Research*. New York: Cambridge University Press.

Oikos (2010): *Vmesno vrednotenje Operativnega programa razvoja okoljske in prometne infrastrukture 2007-2013.* Domžale, 19.oktober 2010.

Oikos (2011): *Končno poročilo vmesnega vrednotenja 1. in 2. Prednostne usmeritve izboljšanja kakovosti in učinkovitosti sistemov izobraževanja in usposabljanja ter izboljšanje posameznika za delo in življenje v družbi, temelječi na znanju 3. Razvojne prioritete OP RČV Razvoj človeških virov in vseživljenjskega učenja.* Kamnik, avgust 2011.

Oikos (2012): *Vrednotenje prednostnih usmeritev s področja trga dela, ki jih v okviru OP rČV izvaja Ministrstvo za delo, družino in socialne zadeve*. Kamnik, julij 2012.

Pellegrini, G., Terribile, F., Tarola, O., Muccigrosso, T., & Busillo, F. (2013). Measuring the effects of European Regional Policy on economic growth: A regression discontinuity approach. *Papers in Regional Science*, *92*(1), 217-233.

Pitija (2009a): *Vrednotenje instrumenta Javni razpis za izbor razvojnih projektov za dvig zaposljivosti ranljivih družbenih skupin na področju kulture in podporo njihovi socialni vključenosti v letih 2008–2009 s pripravo priporočil za nadaljnje izvajanje aktivnosti za doseganje ciljev prednostne usmeritve 4.3 v OP RCV*. Ljubljana, 14. december 2009.

Pitija (2009b): *Vrednotenje javnega razpisa za sofinanciranje projektov horizontalnih NVO mrež in regionalnih stičišč za leto 2008.* Ljubljana, 6. Januar 2009.

Pitija (2009c): *Vrednotenje četrte razvojne prioritete »Razvoj regij« Operativnega programa krepitve regionalnih razvojnih potencialnov za obdobje 2007-2013.* Ljubljana, 23. April 2009.
Polverari, L., Mendez, C., Gross, F., & Bachtler, J. (2007). Making Sense of European Cohesion Policy 2007–13: On-Going Evaluation And Monitoring Arrangements.

Romer, P. M. (1994). The origins of endogenous growth. *The journal of economic perspectives*, 3-22.

Rosenbaum, P. & Rubin, D. B. (1983). The Central Role of the Propensity Score in Observational Studies for Causal Effects. *Biometrica, 70*(1), 41–55.

Rubin, D. B. (1972). Assignment to treatment group on the basis of a covariate. *Journal of Educational Statistics, 2*, 1–26. 146.

Rubin, D. B. (1973a). Matching to Remove Bias in Observational Studies. *Biometrics, 29*, 159–83.

Rubin, D. B. (1974). Estimating Causal Effects of Treatments in Randomized and Non-Randomized Studies. *Journal of Educational Psychology, 66*, 688–701.

Rubin, D. B. (1976). Multivariate matching methods that are equal pecent bias reducing, I: some examples. *Biometrics, 32*, 109–120.

Rubin, D. B. (1992). Characterizing the Effect of Matching Using Linear Propensity Score Methods with Normal Covariates. *Biometrica, 79*, 797–809.

Simončič. M., Kuzmin, F., Pfajfar, L. and J. Potočnik (1999). *The HERMIN macromodel of Slovenia*, Working Paper 3, Ace-Phare project P96-6242-R, IER, Ljubljana.

Šlander, S. (2010): Ocena ekonomskega vpliva kohezijske politika v Sloveniji z uporabo kombiniranega mikro- in makroekonometričnega modela. Ljubljana: Ekonomska fakulteta.

Stryczynski, Kai (2008): Rigorous impact evaluation: the magic bullet for evaluation of Cohesion Policy? [http://www.alt.degeval.de/calimero/tools/proxy.php?id=20232]

Varga, J., in 't Veld, J. (2010), The Potential Impact of EU Cohesion Policy Spending in the 2007–2013 Programming Period: A Model-Based Analysis. ECFIN European Economy Economic Paper, no. 422.

Wooldridge, J. (1995). Selection corrections for panel data models under conditional mean independence assumptions. *Journal of Econometrics, 68*, 115–132.

Ernest Dautović
Université de Lausanne, Switzerland
Lucia Orszaghova
Národná banka Slovenska, Slovakia
Willem Schudel
De Nederlandsche Bank, The Netherlands

CONVERGING IN DIVERGENT WAYS: EXPLAINING TRADE INTEGRATION BETWEEN CESEE COUNTRIES AND THE EU-15[1]

ABSTRACT

The period since the end of the Cold War has seen a rapid increase of two-way trade in similar products, or intra-industry trade (IIT), between the EU15 and Central, Eastern and South-Eastern European (CESEE) countries. IIT is an important mean to achieve real convergence towards the EU through trade specialisation, and reduce the costs of an economic and monetary union. This paper assesses real, nominal and institutional determinants of intra-industry trade between new EU member states, EU candidates and potential candidates and the EU15 by using a product-level trade flow database and employing linear and non-linear panel data specifications. Although the determinants of IIT for new EU member states deviate considerably from those of candidate and potential candidate countries, the evidence suggests that there exist common factors promoting IIT across the CESEE region, such as the corporate tax competitiveness, the flexibility of exchange rate regimes and lower levels of corruption.

Keywords: economic integration, European Monetary Union, institutions, intra-industry trade, real convergence, fractional response panel data.

JEL Classification: F14 (empirical studies of trade), F15 (trade-Economic Integration), F10 (Trade-general)

1. INTRODUCTION

One of the most profound economic developments of the past quarter of a century in Europe has been the transformation of formerly centrally planned economies in Central, Eastern and South-Eastern Europe (henceforth CESEE) towards open market-based economies and their closer economic integration and convergence with the European Union. Trade has been an important aspect of this process: due to their relatively closed economies, CESEE countries had only limited trade relations with the EU15[2] at the beginning of the transition process, whereas by 2010, the EU15 had become the destination of over 50 percent of these countries' exports.

[1] We would like to thank Letizia Montinari, Gilles Noblet, Leslie Papke, Mara Pirovano, Livio Stracca, Michael Sturm and Benjamin Vonessen as well as an anonymous referee for their valuable inputs on previous drafts of the paper. Mistakes and errors remain the sole responsibility of the authors.
[2] The EU15 includes all countries which joined the EU before 1 May 2004, namely Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

One possible way to assess trade integration with the EU15 is by focusing on intra- industry trade between individual CESEE countries and the EU15. Intra industry trade between countries entails a bilateral exchange of the same type of goods and thus is regarded as a necessary pre-condition for real economic convergence, external balance sustainability and trade competitiveness. Furthermore, the optimal currency area theory suggests that it leads to more synchronised business cycles (Mundell, 1961, Frankel and Rose, 1998), a necessary condition for the stability of a monetary union. In order to take stock of how far CESEE countries have come with regard to trade integration with the EU, this paper focuses on factors which help determining IIT between these countries and the EU15. Given the considerable differences between individual CESEE countries in terms of convergence and integration with the EU15, this study distinguishes two groups of countries eight EU candidate countries and potential candidates (CCPC)[3] and eleven 'new' EU member states (NMS).[4] Analysing a period from 1998 to 2010 and employing variants of ordinary least square (OLS) models, generalised method of moments (GMM) and fractional response models (FRM), we quantify the effects of various macroeconomic and institutional variables on an aggregated country-level IIT measure.

The paper seeks to contribute to the literature in the following ways. First, it is the first study aimed at analysing variables related to the quality of political institutions in combination with economic determinants of IIT. Second, the analysis sheds a new light on efficient integration policies for CESEE countries, in view of the importance of intra-industry trade in terms of achieving external competitiveness and real convergence which in turn reduce the costs of a monetary union. As emphasised by Fidrmuc (2004) and the optimal currency area literature, an increase in the share of IIT strengthens the synchronisation of business cycles within a monetary union, reducing the costs of forsaking an autonomous monetary and exchange rate policy. Third, our results show that the flexibility of the exchange rate regime is a significant factor that is conducive to higher IIT with the EU15. This implies that on the convergence path toward a monetary integration a flexible exchange rate seems to promote faster trade integration, a conclusion that is seemingly at odds with the recommendations of the EU convergence criteria.

From a more technical standpoint, the main contribution of this study is the adoption of IIT indicators based on highly disaggregated product-level bilateral trade data (at the 6-digit level) and the application of a comprehensive econometric modelling approach which takes account of the structure and truncation of the dependent variable (IIT). As such, this is the first study that tries to estimate the quantitative impact of CESEE economic policies on IIT with EU15, not only by controlling for the sector and aggregation biases arising from low levels of disaggregation, but also by taking the non-linear feature of our dependent variable appropriately into account.

The structure of the paper is as follows: Section 2 provides a brief summary of the related literature on IIT and Section 3 describes the data and the measurement of intra industry trade. Section 4 illustrates recent trends of intra industry trade between the CESEE countries and the EU15. Section 5 describes our explanatory variables and hypothesis, followed by the econometric analysis and results in section 6. Section 7 concludes.

2. RELATED LITERATURE

Intra-industry trade (IIT) first received scholarly attention in the 1960s, when it appeared to contradict prevailing theories of international trade, which were based on the concept of comparative advantage and specialisation of economies in particular types of goods.[5] The first vintages of IIT trade theory models predict that IIT would

[3] The CCPC includes the following countries: Croatia (now a member of the EU, but a candidate country during the time span of the empirical analysis), Albania, FYR Macedonia, Montenegro, Serbia and Turkey (currently all EU candidate countries) and Bosnia-Herzegovina (EU potential candidate). Iceland, an EU candidate country, is also included, although it is not strictly referred to as CESEE country, whereas Kosovo*, an EU potential candidate, was excluded from the sample due to data constraints.

[4] The NMS includes the following countries that acceded to the EU on 1 May 2004 or 1 January 2007 respectively: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, Bulgaria and Romania. Cyprus was also covered by this paper, although is not strictly referred to as the CESEE country, but Malta was excluded due to data availability.

[5] See Verdoorn (1960); Balassa (1966) or Grubel (1967).

develop between countries which have a similar level of economic development and where specialisation would be transferred at the firm level, whereas inter-industry trade (one-way trade) would prevail between partners with differences in relative factor endowments.[6]

One of the important contributions of this strand of theory is the distinction between horizontally and vertically differentiated goods in intra-industry trade (HIIT and VIIT, henceforth), where the division is based on the notion of product unit values (or 'quality').

Horizontal IIT (HIIT) is defined as a two-way trade in products of *homogeneous* quality, costs and technology employed, but with different characteristics of attributes. The theoretical basis for this type of trade was developed by Dixit and Stiglitz (1977), Lancaster (1980), Krugman (1979, 1981). It is associated with imperfect competition or consumer preferences, but also with market structure (Brander and Krugman, 1983). It leads to efficiency through economies of scale in production and welfare gains through a greater variety for consumers, including producers' gains in a variety of intermediate goods. The standard theoretical models suggest that the share of horizontal IIT increases with a higher level of country similarity in terms of capital endowments.

Vertical intra-industry trade (VIIT) involves simultaneous imports and exports of same type of goods that are differentiated by *heterogeneous* quality, technology or costs. The theoretical basis for this type of trade was proposed by Falvey (1981), Shaked and Sutton (1984), Falvey and Kierzkowski (1987) and Flam and Helpman (1987). These models entail a positive relationship between the level of vertical IIT and differences in capital factor endowments. Countries specialise along the quality spectrum of a specific product, based on the assumption that development of human or physical capital intensities are associated with higher product qualities. Within this literature, economic distance between the countries, that is the distance in the accumulation of physical or human capital, is hence a crucial determinant of VIIT and is not associated with inter-industry trade as in the case of the pioneering contributions of Verdoon (1960) and Balassa (1966).[7]

The link between regional integration and IIT has been under particular scrutiny since the beginning of the European integration process and the abundant literature on trade patterns among EU15 countries provided the base for the theoretical understanding of this phenomenon. There is a relatively ample literature on IIT in the context of EU enlargement, in particular in the period around the accession of Central and Eastern European countries in 200,[8] while a similar analysis for Western Balkan countries is almost non-existent.[9]

This study emphasises the importance of studying IIT in the European context for two main reasons. First, the evolution of trade patterns is an indicator of real convergence across countries: a higher degree of intra-industry trade corresponds to an advanced level of economic integration, diversification of the economy and convergence to EU15 industrial development levels. Second, as authors of the optimal currency areas suggest, a higher share of *intra*-industry trade leads to a synchronisation of business cycles and a lower frequency of asymmetric shocks between trading partners, the latter being a pivotal characteristic for the macroeconomic stability of a monetary union.[10]

[6] See notably Helpman and Krugman (1985).

[7] Fontagné and Freudenberg (1997) point out that *intra*-industry trade is not exclusively based on perfect competition and constant returns to scale and can occur without product differentiation, for instance in highly concentrated market structures and *inter*-industry trade can occur without comparative advantages (due to agglomeration effects or country size), . See also Balassa (1986) or Flam and Helpman (1987).

[8] See among others Aturupane et al. (1997); Hoekman and Djankov (1996); Caetano and Galego (2007); Jensen and Lüthje (2009); Fidrmuc et al. (1999); Gabrisch (2006).

[9] There are a few exceptions, namely Botrić (2012, 2013) and Mardas and Nikas (2008a and 2008b), however these authors use a lower disaggregation of data, which makes it rather difficult to compare their findings with ours.

[10] For more details on the correlation between IIT and business cycles synchronisation see Frankel et al. (1998), Fidrmuc (2004), or Shin et al. (2003)

3. DATA AND MEASUREMENT OF INTRA-INDUSTRY TRADE

In order to quantify intra-industry trade we use a bilateral trade database at a 6-digit HS product level of disaggregation (HS1996), which allows us to address any geographic or sector aggregation bias.[11] The data for this study were obtained from BACI, a detailed international trade database constructed by CEPII. Besides using one of the finest product classifications available for international trade, BACI database also removes discrepancies between import and export values providing comparable harmonised quantities. In addition, it contains also data on the quantity of traded goods, allowing for the computation of goods' unit product values.

Our initial product-level dataset spans the period 1998-2010, containing bilateral annual data for quantities, imports and exports trade values for each traded product between each of the 15 EU members and every of 19 CESEE countries. The dataset provides an initial panel of approximately 18 million observations of bilateral trade flows.

The dependent variable is intra-industry trade which is obtained by computing the Grubel-Lloyd Index (GLI) and is based on the intensity (degree) of trade overlap for each individual product and partner. For each traded product between two countries, a GLI is calculated based on the following formula, representing the intensity of trade overlap:

$$GLI_{ii',k,t} = 100 * \left(1 - \frac{\left|X_{ii',k,t} - M_{ii',k,t}\right|}{X_{ii',k,t} + M_{ii',k,t}}\right) \qquad (1)$$

where *k* represents a specific traded product, *i* the country in question and *i'* the partner country, *X* represents exports, *M* imports and *t* stands for the year. Calculated in this way, the GLI takes a value between 0 and 100, where 100 indicates that all trade is *intra*-industry trade (two-way trade) and 0 that all trade is *inter*-industry (one-way trade). As a result, higher values of the index correspond to a larger involvement of a country in intra-industry trade with the EU15. The indices have been calculated according to equation (1) for each pair of trading partners and for each product class.

Subsequently, the bilateral product-level GLI is aggregated to a country-level GLI, computing IIT between each country in the sample of 19 CESEE countries and each partner country in the EU15. The GLI for a single CESEE country vis-à-vis a country in the EU15 is a weighted average of the products GLIs, with weights given by the share of product *k* in total trade with the partner country in the EU15.

$$GLI_{ii',t} = \sum_{k=1}^{\approx 5000} w_{k,t} * GLI_{ii',k,t} = 1 - \frac{\sum_{k=1}^{\approx 5000}\left|x_{ii',k,t} - M_{ii',k,t}\right|}{\sum_{k=1}^{\approx 5000}\left(X_{ii',k,t} + M_{ii',k,t}\right)} \qquad (2)$$

in which weights are given by:

$$w_{k,t} = \frac{x_{ii',k,t} - M_{ii',k,t}}{\sum_{k=1}^{\approx 5000}\left(X_{ii',k,t} + M_{ii',k,t}\right)} \qquad (3)$$

Following a similar weighting procedure, in which the weights correspond to the trade shares of partner countries in the EU15, the data are grouped across partner countries in order to obtain a country-level GLI defining IIT between every country in the CESEE region and the EU15 as one trading partner. Therefore, the GLI index used for the following analysis explains a share of IIT in total trade with respect to the EU15.

[11] A caveat in the calculation of the GLI is the geographic and the sector aggregation bias arising from a low level of data disaggregation. The BACI database helps us to deal with this bias by providing a detailed product-partner trade database. On the BACI database see Gaulier and Zignago (2012). On the aggregation effect, see Grubel and Lloyd (1975), Greenaway and Milner (1986) or Fontagné and Freudenberg (1997). The HS stands for 'Harmonised System', which distinguishes about 5,000 product items.

In addition, we follow the procedure suggested by Fontagné and Freudenberg (1997), where only trade overlap above a threshold of 10 percent is considered to be structural and hence of intra-industry nature, below this threshold bilateral trade is considered to be one-way trade. Formally:

$$\frac{Min\left(X_{ii',k,t}M_{ii',k,t}\right)}{Max\left(X_{ii',k,t}M_{ii',k,t}\right)} > 0.1 \qquad (4)$$

Finally, all product classes have been further divided into horizontally and vertically differentiated products (HIIT and VIIT, respectively) using the unit values, which are understood as proxies for quality. IIT is considered of a horizontal nature if unit values satisfy the following equation:

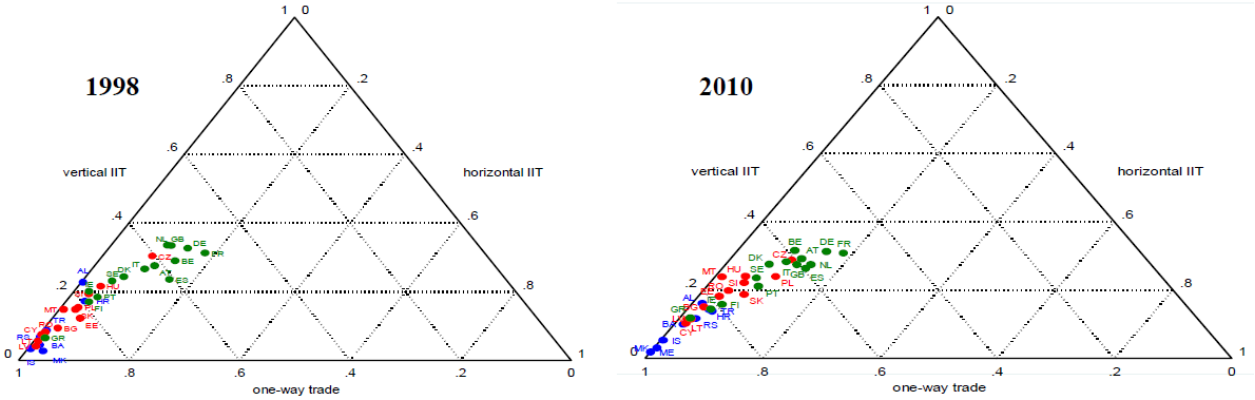
$$\frac{1}{1+d} \leq \frac{UV_k^x}{UV_k^m} \leq 1 + d \qquad (5)$$

in which UV_k^x and UV_k^m represent unit values of exports and imports of product *k*, and *d* is a chosen dispersion factor. If this condition is not fulfilled, IIT is considered to be vertically differentiated. Following most of the studies, a dispersion factor of 15 percentage points is applied here.[12] Finally, lower and higher-quality vertical IIT are distinguished based on this dispersion factor, where lower quality VIIT is defined as the share of bilaterally traded product classes of which the unit export value of CESEE countries is at least 15 percent lower than that of the EU15, the opposite (greater than 15 percent) holds for high-quality VIIT.

4. RECENT TRENDS IN TRADE PATTERNS BETWEEN CESEE AND EU15

Figure 1a illustrates the evolution in IIT in Europe from 1998 to 2010 and Table 1 reports the average GLI index over this period. Figure 1a is a triangular chart depicting the 'ideal' convergence path in terms of the overall trade structure. At the beginning of the development trajectory, a country starts from the bottom left angle of the triangle characterised by exclusively one-way trade. As it begins to integrate in a trade area, it increases its IIT share. It reaches convergence when it is located at the centroid of the isosceles triangle. This point consists of balanced proportions of one-way trade (25 percent) and horizontal IIT (25 percent) but a competitive edge in vertical IIT (50 percent).

Figure 1a - Evolution of IIT in EU15 and CESEE countries with respect to the EU15.



Note: Blue dots indicate candidate countries and potential candidates, red dots belong to the new EU member states and the green dots represent the EU15 countries. The horizontal lines intersecting the triangles indicate the level of vertical IIT (for example France (FR) in 1998 had around one-third of its trade in vertical IIT with the EU15). The one-way trade is revealed drawing a negatively sloping parallel line from the base of the triangles (hence, France in 1998 had half of its trade with the EU15 of this nature). Similarly, for the horizontal IIT, parallel lines have to be drawn from the right hand side to the dot representing a country (almost 20 percent of total trade of France in 1998 was two-way trade of similar quality).

[12] For a discussion about the different dispersion factors, see Fontagné and Freudenberg (1997) and Aturupane et al. (1997). We perform our analysis with the dispersion factor of 25 percent, our results do not change qualitatively.

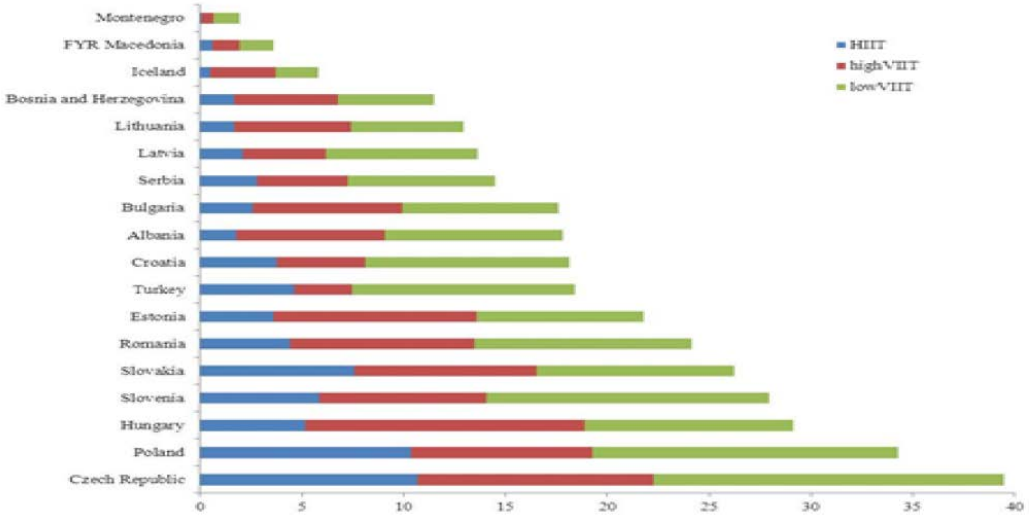
As indicated by an increase over time in the IIT share in total trade, the transition and integration process of many CESEE countries has been accompanied with profound changes in the composition of trade patterns with the EU15. The figures for IIT differ substantially among individual countries, spanning from less than 2 percentage points in the case of Montenegro to almost 40 percentage points in the case of the Czech Republic. Most new member states have higher GLI levels than candidate and potential candidate countries, indicating their higher integration and convergence with trade patterns in EU15. As Figure 1a illustrates, some new member states have reached IIT levels of EU15 countries by 2010. This is in particular true for the Czech Republic, Hungary, Poland and Slovenia.

Table 1. IIT average 1998-2010 with EU15

		Mean	S.E.	Minimum	Maximum
EU12	Bulgaria	13.5	1.9	11.4	17.6
	Cyprus	11.8	2.6	8.3	16.5
	Czech Republic	39.2	0.6	38.4	40.5
	Estonia	18.4	2.2	14.4	21.8
	Hungary	27.8	1.4	25.7	29.6
	Latvia	8.2	2.9	5.3	14.4
	Lithuania	9.7	2.3	6.4	13.5
	Malta	19.3	5.3	11.2	26.8
	Poland	27.3	4.8	18.7	34.2
	Romania	15.7	4.7	9.1	24.1
	Slovakia	22.0	2.4	17.8	26.2
	Slovenia	26.0	1.7	22.6	28.2
CCPC	Albania	20.9	2.4	16.2	24.2
	Bosnia-Herzegovina	9.8	2.9	5.9	13.6
	Croatia	19.8	1.4	17.3	21.4
	FYR Macedonia	5.2	2.6	2.8	11.1
	Montenegro	1.8	0.4	1.3	2.4
	Serbia	10.4	2.4	7.4	14.6
	Turkey	15.5	3.4	9.6	20.2

The divergence between NMS and CCPC can also be observed with respect to development of IIT shares over the period of 12 years. Some CCPC have been losing their positions in IIT while increasing the share of one-way trade with EU15. Most prominently, Albania and Croatia have lost IIT shares despite still enjoying relatively high GLI, but also Montenegro and FYR Macedonia, where IIT levels in 2010 constituted less than 5 percent of total trade, have witnessed falling shares (Figure 1b).

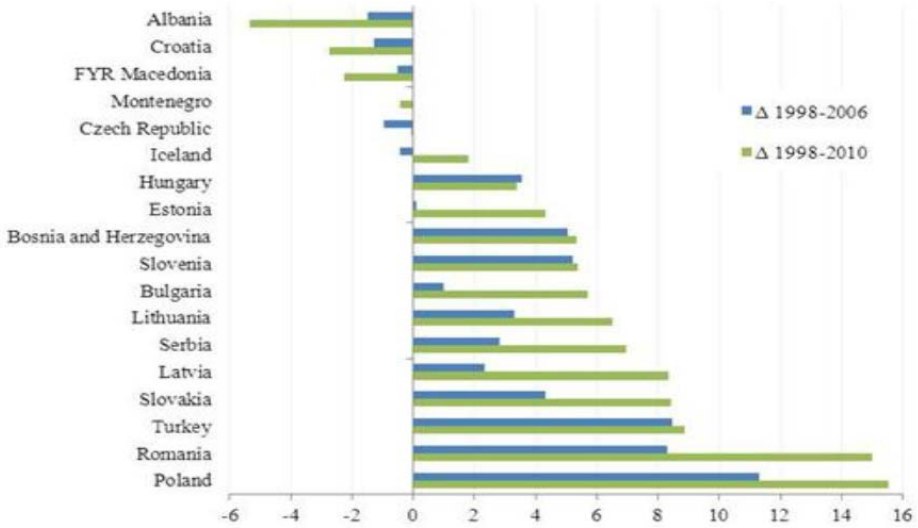
Figure 1b. Horizontal and Vertical IIT levels in CESEE countries in 2010



When looking at different components of IIT in Figure 1b, it shows that vertical IIT continues to dominate two-way trade, pointing to a specialisation along quality range between CESEE and EU15 countries. Between 1998 and 2010 most of CESEE have increased their share of higher-quality vertical IIT as well as the share of horizontal IIT in total IIT, indicating a continued convergence toward the EU15 industrial structures. This could point to a relative improvement in the quality of goods produced by CESEE countries. NMS from Central Europe, but also Romania, Turkey and Serbia are worth highlighting in this respect as countries with the highest improvements in the quality of their products (in both relative and absolute terms).

The downward trend of IIT for these countries is persistent over the whole period, also when analysed separately for the pre-crisis and crisis period, (Figure 1c). This is rather surprising, since the closer integration appears to have led to IIT divergence between them and EU15. Most of the other countries have recorded convergence of IIT patterns, which does not seem to be weakened even during 2008-2010 crisis period.

Figure 1c. Overall changes in IIT levels in CESEE countries



Note: Simple differences between first and last year of the two periods are showed. The difference between these two periods could be used as a proxy for the change since the crisis.

5. EXPLANATORY VARIABLES AND HYPOTHESIS

5.1. Unit Labour Cost

The cost of labour is one of the most frequently tested determinants of a country's external competitiveness, but to our knowledge no other paper has included labour cost differences as a determinant for IIT development.[13] ULC differences can promote IIT by increasing competitiveness through lower wage dynamics.[14] For instance, in the recent debate on competitiveness within the euro area, adjustment is considered to pertain exclusively to the wage side of this relationship (ECB, 2012).

ULC with the EU15 is computed as the *difference* between the average unit labour costs in EU15 and the ULC in a CESEE country. In addition, following Felipe and Kumar (2011), ULC is disentangled into the *wage share of labour* in total production and a *price deflator*. From an estimation point of view, the split of ULC into two components allows relaxing the common parameter restriction, so as to assess the relative effects of wage and general price dynamics on IIT.

The data for ULC come from the IMF's International Financial Statistics and Eurostat, the ULC is specifically measured as follows:

$$\mathrm{ULC} = \frac{w}{ALP} = \frac{\mathrm{w}}{(GDP/P)/L} = \frac{wL}{GDP} * P = Labour\ Share * P \qquad (6)$$

Where *w* is the average money wage rate, *ALP* represents average labour productivity, *P* represents the price deflator index, *GDP/P* is the real GDP, *L* is the number of employed persons in a country. This distinction is primarily aimed at disentangling the specific impact on IIT of wage share vis-à-vis general price inflation in the economy.

5.2. Capital Endowments

Capital endowment differences play an important role in international trade theory, both for the pattern and the volume of trade.[15] IIT is viewed as a consequence of vertical product differentiation based on quality, driven by initial differences in endowments, labour productivity and technological possibilities. Ceteris paribus, a larger stock of physical capital is assumed to increase productivity as well as the comparative advantage in endowments and, thereby, country competitiveness. Two measures of capital in the economy are included: the domestic stock of capital (stock of physical capital) and foreign direct investment inflow (investment capital, FDI).

The computation of the stock of capital is performed via the perpetual inventory method, assuming an annual depreciation rate of 15 percent and an annual output growth rate of 3 percent.[16] For the analysis, the natural logarithm of the *difference* in capital stock between the EU15 average and the country in question is used. We expect a negative relationship between the domestic stock of capital and IIT.

FDI has been a major source of capital investment and technology transfer in CESEE countries. These long-term investments have accelerated productivity convergence as well as convergence of trade patterns towards the trade structures of advanced EU15 countries.[17] Due to countries' proximity to the EU15 and a relatively lower wage costs, foreign companies have found it attractive to delocalise their production processes into CESEE

[13] The cost of labour has been considered in the IIT literature only implicitly, where differences in labour endowment were assumed to include different labour costs.
[14] See Marin (2006).
[15] See Helpman et al. (1985), Falvey et al. (1987) and Falvey (1981).
[16] For details on the methodology, see Dhareshwar and Nehru (1993). Data come from the World Bank Development Index.
[17] See Bijsterbosch and Kolasa (2009).

countries. A measure of *net* FDI inflows as a percentage of GDP is included in the analysis so as to account for the foreign long-term investment channel. Following the standard new-trade theory argument of capacity building and product differentiation, we expect a positive impact of FDI on IIT for CESEE countries.

Moreover, FDI is linked to the fragmentation of production processes in Europe, with parent companies specialising in capital intensive activities, whereas labour-intensive activities have been entrusted to their foreign affiliates (efficiency-seeking FDI). The interaction of FDI and labour-intensive technologies can have inflationary effects on the share of wages in GDP and promotes economies of scale; the latter can in turn increase IIT (Helpman and Krugman 1985).

At the same time, Markusen (1984, 2002) shows how the story can be exactly opposite as FDI can substitute for trade (domestic market-oriented FDI) on a global production scale, which would have a negative impact on IIT. Similarly, Gaulier et al. (2012) explain how FDI inflows can have a direct demand effect on both tradable goods and non-tradable goods in the domestic economy and tend to increase price levels in the tradable sector, appreciating the real exchange rate and making the tradable goods less competitive. In our specifications we control for this relation, by including an interaction terms between FDI and the deflator component of ULC.

5.3. Trade Agreements

The pioneering theories on IIT were developed in relation to the signing of the first regional trade agreements, in particular between countries of the European Economic Community. Most of the early empirical studies found some evidence that regional trade agreements stimulate intra-industry trade.[18] However, there appears to be some disagreement in the literature when it comes to the effect of trade agreements on trade patterns between economically and geographically diverse countries. Some empirical studies suggest that the elimination of trade barriers contributes to an increase in IIT, linked to the re-export to a richer country of goods assembled in the lower-income country (Foster et al., 2010). Other empirical studies (Rodas-Martini, 1998) show that the impact of trade agreements on IIT is statistically not significant, suggesting that the increased competition among local and foreign firms due to the removal of trade barriers can imply that a relatively less developed country will not be capable of exploiting the benefits of the opening towards a new market. In other terms, the opening of markets can induce specialisation based on revealed comparative advantages and hence promote one-way trade. It follows that the overall impact of trade agreements can either be positive or negative, depending in particular on the quality of goods the two countries are able to supply.[19]

Since CESEE countries have been partners in different trade agreements with the EU15, these agreements are controlled for separately by means of including dummy variables for preferential trade agreements (PTA), free trade agreements (FTA) and EU membership.

5.4. Exchange Rate Regime

Most of the empirical literature investigates the effects of the exchange rate *regime* and exchange rate *volatility* on the volume of bilateral trade, testing the underlying assumption that uncertainty about the final prices of traded goods reduces the value of bilateral trade flows.[20] This is in line with the notion that a monetary union eliminates any exchange risk from transactions and thus promotes trade. The effect of exchange rate regime on IIT has been studied in connection with the introduction of the Euro in 1999 and creation of the European Monetary Union.[21]

[18] See Grubel and Lloyd (1975) and Balassa and Bauwens (1987).
[19] Related to the increased competition argument see Herderschee and Qiao (2007) on the importance of sequencing in opening up domestic markets to foreign trade.
[20] See Baldwin et al. (2005).
[21] See Fontagné et al. (1999).

It has been argued by Fontagné et al. (2005) that different trade types are not affected in the same way by exchange rate *volatility*. The authors argue that if the perceived elasticity of demand is very high, small variations in exchange rates may have a large impact on IIT, with particular influence on horizontal IIT where the products are differentiated by some minor attributes. Despite not directly addressing the issue of exchange rate *regimes*, following this argument the elimination of exchange rate volatility would benefit IIT by reducing trade transaction costs and related financial uncertainties.

However, a floating regime can serve as an absorber of external shocks, nominal depreciation vis-à-vis trading partners can make the tradable sector more competitive and thus increase export volumes. In particular of the low quality and horizontal type of traded goods since high quality vertical goods are intrinsically competitive. A nominal depreciation can provide a cost efficiency mechanism to firms in developing countries trying to enter and export their goods in more developed markets.

Therefore, the overall effect of the exchange rate regime on IIT for the group of CESEE countries is an empirical issue. To estimate this effect, we included the Reinhart and Rogoff (2004) index on the exchange rate regime in each country in a particular year. The index varies from 1 to 14 where number 1 represents a country with no separate legal tender (for instance Montenegro) and 14 represents a country with a freely floating currency.[22]

5.5. Institutional variables

In addition, three novel institutional variables are included in the analysis and used as *differences* from the EU15 average.

First, we account for the extent to which corruption is perceived in a country. The main rationale is that corruption serves as an invisible tax on business and has been shown to reduce investment and growth.[23] We use data from Transparency International's Corruption Perception Index, which run from 1 (very corrupt) to 10 (free from corruption).

Furthermore, a discrete variable measuring the level of democracy is included in order to control for the broad political environment. The data are sourced from the Polity IV database and they range between minus 10 (low level of democracy) and 10 (high level of democracy).

Third, we include a variable on corporate taxation rates, collected from KPMG Global Corporate Tax Data, and test whether differences in corporate tax rates can explain IIT. The corporate tax policy can be used by governments to increase price competitiveness among domestic exporters which can facilitate trade integration of CESEE countries with the EU15.

6. IDENTIFICATION STRATEGY AND ESTIMATION RESULTS

As indicated above, the database contains an annual panel dataset covering the period from 1998 up to 2010 for 19 CESEE countries, namely eleven NMS and eight CCPC.[24] The identification strategy is based on a set of dynamic panel regressions,[25] they account for endogeneity by exploiting IV-GMM estimators.

[22] In line with the literature, our choice to study the exchange rate regime (as opposed to exchange rate variability) is motivated by an interest in monetary policy analysis and policy choices of monetary authorities. We included in separate regressions the exchange rate variability with respect to the Euro without finding statistically significant effects on IIT shares. Results are available from authors.
[23] See for instance Barro (1996) and Shleifer and Vishny (1993).
[24] For Montenegro and Serbia, the sample period is limited to 2006-2010, due to data availability.
[25] In order to account for unobserved heterogeneity, we use fixed-effect panel estimations and employ robust standard errors to account for heteroscedasticity and serial correlation in the pooled residuals. We perform a Hausman test to see if a random effect model is more appropriate to use here. Yet, the test rejects this hypothesis. Nevertheless, we run several random effect specifications in order to allow for the effects of geographic and cultural time invariant variables. The results of these models are available upon request.

As noted previously, the GLI index explains a percentage share of IIT in total trade with respect to the EU15, and is truncated at 0 and 100 percentage values by construction. A caveat is that the linear dynamic panel regression cannot provide meaningful quantitative effects for the covariates due to the truncated nature of the dependent variable: linear panel estimation would predict values outside of the specified boundaries, an outcome that would be hard to reconcile with a meaningful economic interpretation. Therefore, a non-linear model able to account for the continuous (yet bounded) nature of the dependent variable is needed. As such, two methodologies are applied in this paper: a logistic transformation on the response variable and a fractional response model methodology developed by Papke and Wooldridge (2008).

Given the longitudinal structure of the data, a series of pooled ordinary least squares (OLS) models is estimated. The panel baseline regression specification takes the following functional form:

$$\mathrm{LN}\left(\frac{IIT_{it}}{1-IIT_{it}}\right) = \alpha_i^g + \gamma_t^g + \beta_1 LN\left(\frac{IIT_{it-1}}{1-IIT_{it-1}}\right) + \beta_2 Ln\left(\frac{K}{GDP}\right)_{it}^g + \beta_3 ULC_{it}^g + \beta_4 FDI_{it}^g + +\beta_5 TA_{it}^g + \beta_6 EXR_{it}^g + \beta_7 INST_{it}^g + \varepsilon_{it}^g$$

where *i* and *t* are the usual subscripts indicating respectively an i-th country and a t-th year. The superscript *g* is an index for a group of countries and represents either NMS or CCPC, *αi* and *γt* represent respectively the cross-section fixed effect.

ULC is the unit labour cost variable, *FDI* represents the share of foreign direct investments in the economy over the GDP. The row vector *Ln(K/GDP)* captures the effect of the natural logarithm of the capital stock (K) on IIT. The variable *TA* is a row vector of dummy indicators aimed at capturing the effect of trade agreements between the EU15 and the *i*-th country. The variable *EXR* is a discrete variable explaining the exchange rate arrangements for monetary policy. The indicator *INST* is a row vector capturing the effect of institutional variables on IIT, in particular three discrete variables, namely the Corruption Perception Index (CPI), an aggregate indicator of the level of democracy process in a country and the differences of the corporate tax rate from the EU15 average. It is important to recall that most explanatory variables, namely ULC, capital stock, wage share, corruption and democracy indexes, enter the equation as the difference with respect to the EU15 average, to better capture the (economic) distance from this 'benchmark' region. Intuitively, the difference with respect to the EU15 represents the distance from the *desired level* of economic integration.

Table 2 illustrates the main descriptive statistical properties of our group of explanatory variables as well as of IIT. Except for the inflow of FDI scaled by the GDP, the means between the NMS and the CCPC deviate substantially. These differences render it likely that the effects of explanatory variables are heterogeneous in these two groups. Therefore, in what follows two sets of specifications are presented: one for new member states and one for the candidate and potential candidates. In addition, the motivation for a separate set of regressions is also policy-driven: NMS and CCPC are subject to different trade agreements and institutional arrangements with the EU15 and require different dummy variables capturing the effect on IIT.

Table 2. Descriptive statistics for CCPC and NMS countries

Candidates & Potential Candidates	Obs.	Mean	*Std. Dev.*	Min	Max
IIT with EU15 (%)	96	11.84	*6.73*	1.30	24.17
ULC (diff with EU15)	104	0.15	*0.12*	-0.27	0.33
Wage Share (diff EU15)	104	0.13	*0.45*	-3.73	0.33
Inflation (%)	104	12.69	*22.46*	-1.58	137.96
Net FDI inflow (% GDP)	88	6.21	*7.28*	0.31	36.88
Ln(Capital stock/ GDP) (diff EU15)	102	0.29	*0.32*	-0.41	1.53
Corporate taxation (diff EU15)	104	11.28	*6.55*	-6.05	21.41
PTA	104	0.63	*0.48*	0	1
FTA	104	0.42	*0.50*	0	1
FX regime	104	8.07	*4.29*	1	14
Corruption perception (diff EU15)	104	3.70	*2.16*	-2	6.30
Democracy (diff EU15)	83	3.15	*2.93*	0.92	15.92

New Member States	Obs.	Mean	*Std. Dev.*	Min	Max
IIT with EU15 (%)	156	19.91	*9.18*	5.28	40.47
ULC (diff with EU15)	143	0.04	*0.06*	-0.12	0.13
Wage Share (diff EU15)	143	0.05	*0.05*	-0.09	0.15
Inflation (%)	156	5.96	*8.11*	-3.71	55.22
Net FDI inflow (% GDP)	142	6.20	*7.65*	-32.88	52.05
Ln(Capital stock /GDP) (diff EU15)	156	0.07	*0.16*	-0.55	0.48
Corporate taxation (diff EU15)	156	7.79	*6.06*	-8.46	19.70
EU Member	156	0.5	*0.50*	0	1
FTA	156	0.42	*0.50*	0	1
FX regime	156	6.83	*3.55*	1	14
Corruption perception (diff EU15)	143	2.85	*1.09*	0.69	4.93
Democracy (diff EU15)	143	0.63	*0.84*	-0.08	3.92

6.1. Logistic Transformation Dynamic Panel Estimates

The results of the dynamic panel regressions are presented in Table 3, with first three columns covering CCPC and the second part covering NMS. Standard diagnostic tests and regression statistics are shown at the bottom of the table. Following the results of the Monte-Carlo experiment by Judson and Owen (2001) on macro dynamic panels, the estimates are run with the one-step Arellano-Bond-GMM estimator. Four lags are implemented for all GMM-type instruments, namely the lagged dependent variable and all other our covariates except the time dummies and the unobserved cross-country heterogeneity.[26] All specifications have exogenous instruments, as confirmed by the Sargan test, and there is no sign of second or higher order correlation between the lagged dependent variable and the error term.

[26] The choice of four lags warrants an appropriate degree of balance between the bias-efficiency trade-off, see by Judson and Owen (2001). We adopt the one-step GMM estimator which performs better than the two-step GMM estimator as reported in Arellano-Bond (1991) and Kiviet (1995). We include time-variant fixed effects in all our reported specifications.

Table 3. Determinants of IIT Central Europe and South Eastern European Countries

	CCPC			*New Member States*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
LT(IIT) Lag(-1)	0.461***	0.516***	0.435***	0.411**	0.411**	0.414**	0.494**
	(0.125)	(0.133)	(0.056)	(0.203)	(0.206)	(0.202)	(0.202)
ULC, diff EU15	0.951			-0.114			
	(0.641)			(0.698)			
FDI/GDP	-0.013**	0.226***	0.294***	0.002	-0.099*	-0.072	-0.084
	(0.005)	(0.085)	(0.076)	(0.006)	(0.058)	(0.060)	(0.056)
FDI*ULC, diff EU15	-0.005			-0.007			
	(0.119)			(0.047)			
Ln(K.Stk/GDP)diffEU15	-0.373*	-0.569***		0.007	0.169		
	(0.222)	(0.158)		(0.273)	(0.265)		
FDI*Ln(K.Stk/GDP)	0.018*	0.053**		-0.005	-0.024		
	(0.010)	(0.025)		(0.034)	(0.033)		
Corp.Tax, diff EU15	0.013**	0.013**	0.023**	0.004	0.005*	0.008**	0.009**
	(0.007)	(0.007)	(0.011)	(0.003)	(0.003)	(0.004)	(0.004)
W/GDP, diff EU15		1.467	0.708		-0.339	-0.843	-0.896
		(1.173)	(0.566)		(0.930)	(0.807)	(0.835)
Deflator		-0.327***	0.947***		-1.021**	-1.155*	-1.22**
		(0.119)	(0.308)		(0.513)	(0.622)	(0.591)
FDI*W/GDP,diff EU15		0.046	0.053*		0.017	0.003	0.009
		(0.060)	(0.032)		(0.025)	(0.015)	(0.018)
FDI*Deflator		-0.196**	-0.252***		0.109	0.071	0.087
		(0.077)	(0.061)		(0.068)	(0.061)	(0.058)
FTA (EU member)			-0.199***			-0.128**	0.060*
			(0.073)			(0.062)	(0.033)
XR Regime			0.115***			0.015***	0.015***
			(0.034)			(0.004)	(0.004)
Corruption, diff EU15			-0.208***			-0.006	-0.009
			(0.038)			(0.027)	(0.022)
Democracy, diff EU15			0.014			-0.024	-0.024
			(0.019)			(0.039)	(0.039)
Intercept	-1.244***	-0.792***	-2.523***	-0.812**	0.122	0.352	0.375
	(0.339)	(0.301)	(0.714)	(0.320)	(0.482)	(0.611)	(0.588)
Time Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-Test	.000***	.000***	.002***	.000***	.000***	.000***	0.000***
SW -Test	.000***	.000***	.000***	.000***	.000***	.000***	0.000***
Sargan Test	0.206	0.336	0.183	0.623	0.679	0.594	0.587
BIC	203.82	210.39	148.97	235.00	242.32	207.70	210.26
AB Test - 1st order	0.029**	0.024**	0.024**	0.117	0.120	0.105	0.104
AB Test - 2nd order	0.089*	0.835	0.855	0.323	0.300	0.352	0.334
AB Test - 3rd order	0.370	0.837	0.367	0.264	0.246	0.235	0.237
Observations	73	73	62	110	110	106	118
N. of countries	8	8	7	11	11	11	11

Note: p<0.1*, p<0.05**, p<0.01***.Coefficients: Std. Errors in parentheses robust with respect to serial correlation and heteroscedasticity. F-Test, p-values for joint significance of time fixed effects under Ho: no joint effect of time fixed effects. SW (Shapiro-Wilk) test for normality of residuals, p-values reported under Ho: residuals are normally distributed. Sargan Test for over-identifying restrictions, p-values reported under Ho: the instruments as a group are exogenous. AB (Arellano-Bond) test for autoregressive residuals of 1st, 2nd or 3rd order, reported p-values for Ho: no serial correlation.

For both groups results show the importance of the dynamic lagged effect of IIT, confirming that IIT is an intrinsically dynamic concept.[27] In columns 1 and 2 the marginal effect of the differential in the stock of fixed capital formation in CCPC is significant only after controlling for the interaction with the inflow of FDI. The interaction between the FDI and the capital stock is statistically significant and positive, suggesting that FDI contributes to the accumulation of the stock of capital in CCPC and, as standard theory predicts, the marginal effect of capital stock distance on IIT is negative. The variables for economic distance, and in particular physical capital stock, are not significant for the NMS countries (columns 4 and 5).[28]

At first inspection, no direct evidence of significant effects of ULC differentials on IIT is found for both groups. In other words, the generally lower levels of ULC in CESEE do not present a significant impact on IIT. In order to further understand the effect of ULC distances on IIT, we decompose them in two components: the share of labour compensation in GDP and the general level of prices in the domestic economy, both measured as the distance from the average EU15 values. The increasing price level, as measured by the deflator, appears to be a stronger and more significant determinant than the wage share of GDP in deterring IIT with the EU15. The marginal effect of price levels is statistically significant and negative for both NMS and CCPC whereas the effect of labour compensation share is not statistically significant. However, and only in the case of CCPC (column 3), it is interesting to notice that the interaction between FDI and the deflator is significant and negative. This suggests that the inflow of FDI, which CCPC countries witnessed during the period, has brought generalised upward pressures on price levels. Importantly, the effect of the interaction of FDI and price deflator indicates that local monetary authorities could have played a greater role in containing inflationary pressures promoting IIT with the EU15.

The *marginal* effect of FDI is slightly positive and significant. In our preferred specification for CCPC (column 3), the marginal effect for CCPC, evaluated at mean deflator value (1.1269) and mean wage share of GDP difference (0.13), the impact of FDI on IIT is significant and positive.[29] FDI thus appears to contribute to the capacity building in CCPC region and mitigates the lag in the convergence process. A caveat is necessary, due to the previously positive interaction of FDI and the general level of prices, the positive effect of FDI is supported only if the inflationary pressures on the tradable sector are well managed.[30]
Policy rather than structural variables seem to have a higher weight in determining IIT for the NMS. With this respect, the impact of FDI on IIT does not show the same patterns as for the CCPC. The inflow of FDI into the NMS does not have a strong significant effect on IIT even after interacting FDI with the stock of physical capital. Intuitively, given a lower NMS gap of the physical stock of capital with respect to the EU15, the inflow of FDI did not have a significant marginal contribution to the increase of IIT.

A very important result of these estimates, which is robust to different specifications and across the two sets of countries, is the one of the corporate tax distances. In all specifications, the corporate tax difference with respect to the EU15 is statistically significant and positive. Corporate tax differentials can have a strong effect on trade patterns by making one country's exports relatively cheaper than the similar goods produced in the EU15. The transmission channel allows a lower corporate tax rate to provide room for a more competitive pricing of tradable goods and hence promotes IIT with the EU15. This result underlines how the tax structure can be a very important policy lever to increase trade integration with the EU and emphasises further the importance of the fiscal discipline which could allow for some fiscal space to lower (or maintain a low level of) corporate taxes to promote trade integration with the EU15 block.[31]

[27] See the dynamic marginal IIT contribution by Brülhart (1991).
[28] We run separate regressions where we include also GDP per capita distance from the EU15 average as a measure of economic distance: the estimates are insignificant. The results are available from the authors.
[29] Using the coefficients of column 3 we perform the following computation: 0.294+0.053*0.13-0.252*1.1269=0.017.
[30] As already discussed by Gaulier et al (2012), a positive shock of foreign capital helps to build economic capacity but the influx of long-term investment creates an internal demand shock, that is the demand (and thus price level) for tradable and non-tradable products in the domestic economy increases, making the export sector relatively less competitive.
[31] A caveat is due, corporate tax rates can also influence the impact of FDI on IIT (see OECD 2007). Most of CCPC have a sizably lower corporate tax rate than EU15 countries (on average 11.3 percentage points, Table 2), acting as a catalyst in attracting FDI inflows. To control

As for the effect of free trade arrangements, they have a significant and negative effect on IIT among CCPC (column 3). Yet, this result should not be surprising due to the symmetric nature of such agreements coupled with the lower exporting capabilities of the CCPC compared to the EU15.[32] Similarly to candidate countries, the symmetric FTAs that were in place prior to the EU accession in most of the NMS have a markedly negative and statistically significant coefficient (column 6).[33] When splitting the regressions including the EU Membership binary variable in column 7 instead of the FTA dummy, a positive and significant effect for the EU membership is found for the NMS.[34] The estimate for the EU membership dummy indicates that only after a period of real and nominal convergence to EU rules and a period of transition from socialist industrial structures, NMS benefited from the EU partnership in terms of IIT convergence.

The variable for the exchange regime has a positive and highly significant impact on IIT for both groups of countries, suggesting that a less restricted exchange rate mechanism allows less competitive countries to enter EU15 markets via standard competitive devaluation argument. The result reconciles with the notion of devaluation as an adjustment tool to gain external competitiveness relative to trade partners. Is important to emphasize then that the positive effect of flexible exchange rate regime on IIT is not in line with the assertion of fixed exchange rate being a mean to eliminate exchange rate risk, anchor inflation expectations and thus promote trade, which is the standard prescription a country receives when applying for the single currency.

Another interesting result in Table 3 is the heterogeneous effects of corruption on CCPC and NMS, pointing to the importance of the institutional convergence of CESEE to the EU. In particular, the corruption perception index has a very strong and significant effect for CCPC, indicating that higher relative levels of corruption reduce IIT.[35] At the same time corruption distance from EU15 average does not have any significant effect on IIT for NMS. The absence of any impact of corruption for the NMS is not surprising since these countries have undergone recently a comprehensive legislative confluence path toward the EU's *acquis communautaire*, which reduced overall investment risk and increased the trust of trading partners. The overall impact of the institutional convergence process, despite still incomplete given relatively higher levels of corruption in some of the NMS than in the EU15, has been successful and did not harm the IIT flows with the EU15.

6.2. Fractional response Model

In this section we address the bounded nature of our dependent variable by exploiting the non-linear fractional response model. Our pooled fractional probit model[36] has the form:

$$\mathbb{E}\left(IIT_{it}\middle|\boldsymbol{x_{i1}},\boldsymbol{x_{i2}},\ldots\boldsymbol{x_{iT}}\right)=\Phi\left(\gamma_{at}^{g}+\boldsymbol{x}_{it}^{g}\beta_{a}+\bar{\boldsymbol{x}}_{i}^{g}\vartheta_{a}\right)$$

It is estimated using the one-step pooled Bernoulli quasi-MLE (QMLE) derived by maximising the pooled probit log-likelihood. To correct for arbitrary serial dependence and misspecified conditional variance[37] robust standard errors are used. We then compute the partial effects averaged across the population, the average partial effects (APE), to have an estimate of the relative importance of the various determinants. The variable γ_{at}^{g} represents the intercept and the subscript *t* indicates that the average IIT is allowed to differ across years. As

for this interaction, we include interaction terms of FDI with corporate tax differences in other specifications. However, the interaction is not significant. The estimates are available from the authors.

[32] In a different set of estimations we find some evidence that a more asymmetric trade agreement favouring the relatively weaker countries such as the Preferential Trade Agreement (PTA) has a positive effect on IIT. Nevertheless, the PTA effect is not robust across different specifications.

[33] Similar results have been found by Herderschee and Qiao (2007).

[34] From a trade integration perspective, the fundamental differences between the EU Membership and the FTA is that the former encompasses also free movement of factors of production and a common external trade policy whereas the latter is a mere removal of trade tariffs and quotas with no common trade policy.

[35] Similar results have been documented in the trade and corruption literature. See for example de Jong and Bogmans (2011) with respect to corruption at border.

[36] We use the probit model as it was shown to be superior to the conditional logit estimation, the latter is not consistent when the response variable is not binary and serial dependence is an issue. For more details see Wooldridge (2002), section 15.8.3.

[37] In an alternative estimation method we allow for misspecifications in the conditional variance and adopt the generalised estimating equation approach (GEE) with an exchangeable working correlation matrix. The results, available from the authors, are very similar to the Bernoulli QMLE.

before, *g* represents either the CCPC or NMS countries. The subscript *a* represents the scaling factor: in fact, all of the QMLE estimated coefficients depend on the scaling factor *a*, without it the QMLE coefficients would not be identifiable.[38] The explanatory variables are represented by the matrix $\boldsymbol{x}_{it}^{g}$. Importantly, the inclusion of the time averages of the covariates ($\overline{\boldsymbol{x}}_{i}^{g}$) controls for correlation between country unobserved fixed effects and the covariates and helps in estimating, with relative ease, the coefficients of interest up to a scaling factor.[39]

Table 4 illustrates the results of the pooled Bernoulli quasi-MLE estimator for the two groups of countries. Although the coefficients of the pooled fractional response model (that is columns 1, 3, 5 and 7) can be used to evaluate qualitative effects, they do not have meaningful *quantitative* economic interpretation. To gauge the quantitative effect of the covariates we refer to the average partial effects (columns 2, 4, 6, and 8) where we use the scaling factor to obtain the APE coefficients and bootstrapped standard errors.

The non-linear estimates show that the APEs have the same qualitative signs as the dynamic panel regressions although there are some fundamental differences in terms of quantitative effects and statistical significance of some variables. For both groups of countries, it is safe to confirm that the dynamic inertial effects are an important feature of intra-industry trade: the coefficients on the lagged dependent variable are close to 0.5, suggesting that about half of the intra-industry share in one year is carried over to the next. For the NMS and mirroring the linear models, most of the explanatory variables are not significant except for the floating exchange regime which has a positive effect. In the following we focus our attention on the results for the candidate and potential candidates, i.e. columns 2 and 4.

Table 4. Pooled Fractional Response Model and the APEs for CCPC and NMS

	Candidates and Potential Candidates				*New Member States*			
Dep. Var.:	*Pooled*	*APE*	*Pooled*	*APE*	*Pooled*	*APE*	*Pooled*	*APE*
IIT with EU15	*QMLE*		*QMLE*		*QMLE*		*QMLE*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IIT Lag(-1)	2.694***	0.741***	1.898***	0.555***	1.601**	0.475**	1.600**	0.481**
	(0.609)	(0.065)	(0.625)	(0.079)	(0.688)	(0.211)	(0.622)	(0.189)
FDI /GDP	0.092**	0.025***	0.088***	0.025***	-0.054	-0.016	-0.031	-0.009
	(0.045)	(0.007)	(0.033)	(0.005)	(0.040)	(0.014)	(0.038)	(0.012)
Ln (K.Stk/GDP)	-0.319***	-0.088***			-0.042	-0.012		
	(0.089)	(0.025)			(0.175)	(0.046)		
FDI*Ln (K.Stk/GDP)	0.023**	0.006			0.005	0.001		
	(0.011)	(0.004)			(0.021)	(0.006)		
Corp. Tax, diff EU15	0.006*	0.002**			0.002*	0.001		
	(0.004)	(0.001)			(0.001)	(0.001)		
W/GDP, diff EU15	0.467	0.129	-0.566***	-0.166***	-0.216	-0.064	-0.341	-0.102
	(0.527)	(0.091)	(0.195)	(0.031)	(0.548)	(0.155)	(0.487)	(0.138)
Deflator	-0.218**	-0.060	0.007	0.002	-0.282	-0.084	-0.356	-0.107
	(0.102)	(0.056)	(0.097)	(0.038)	(0.298)	(0.087)	(0.331)	(0.114)
FDI* W/GDP	0.007	-0.002	0.002	0.000	-0.008	-0.002	-0.016*	-0.005
	(0.022)	(0.003)	(0.010)	(0.002)	(0.016)	(0.006)	(0.009)	(0.003)
FDI*Deflator	-0.089**	-0.025**	-0.093***	-0.027***	0.046	0.014	0.179	0.005
	(0.044)	(0.009)	(0.029)	(0.004)	(0.040)	(0.013)	(0.035)	(0.012)
FTA			-0.119***	-0.035***			-0.060**	-0.018
			(0.032)	(0.005)			(0.030)	(0.013)
Float XR Regime			0.038***	0.011***			0.012***	0.004**
			(0.012)	(0.002)			(0.003)	(0.002)
Corruption, diff EU15			-0.091**	-0.027***			0.006	0.002
			(0.037)	(0.008)			(0.017)	(0.006)

[38] See Papke and Wooldridge (2008) for further details on QMLE.
[39] See Chamberlain (1980).

Log pseudolikel.	-20.12	-	-20.11		-40.42	-	-39.39	-
AIC	0.670	-	0.669		0.826	-	0.837	-
BIC	-324.99	-	-325.01		-537.76	-	-514.98	-
Observations	81	81	81	81	118	118	118	118
N. of clusters	8	8	8	8	11	11	11	11

Note: ***p<0.01, **p<0.05, *p<0.10, Standard errors in parentheses, robust to general second moment misspecification, conditional variance and serial correlation. All models have time dummies from 1999 to 2010. All models are estimated with pooled Bernoulli QMLE and have time averages of the explanatory variables except the interaction terms and the dummies for trades agreements and EU membership. The standard errors for the APE are obtained with 500 bootstrap replications.

The average partial effect of the difference in the stock of capital is negative: a ten percentage point reduction of the gap from the average EU15 capital stock could have contributed to an increase of 0.8 percentage points in the fraction of intra-industry trade.[40]

One of the most interesting results of this group of estimates is the negative APE of FDI after taking into account the partial effects of the interactions with capital (not significant), wage share (not significant) and the deflator (significant).[41] The result is crucial to understand the policy implications for FDI impact on IIT and the convergence process with the EU15.[42]

As shown in Table 4, the result is exclusively driven by the negative effect of the FDI interaction with the deflator: this illustrates the danger of the possible crowding out effect of FDI on IIT due to the induced inflationary pressures in the tradable sector after a surge in FDI. Domestic monetary authorities can try to cushion the rise in prices when witnessing a surge in FDI inflow into their country in order to maintain the competitiveness of their export sector. With this respect, a comparison with the NMS results is worth considering: between 1998 and 2010, the intensity of FDI inflow in proportion to GDP levels was similar in the two regions, 6.21 for CCPC and 6.20 for the NMS (see Table 2). However, for the NMS we do not find any negative interaction effect of the inflow of FDI and the deflator. We conclude that NMS had more success in controlling inflationary pressures induced by the inflow of FDI, keeping all else constant.

There is some evidence that the effect of unit labour costs, decomposed in wage share and price deflator, decreases IIT. However the effect is significant only when we run the estimates unconditional on the capital stock distance (column 4). In particular, this time the APE of the wage share has a negative and significant effect on IIT, this is an indication that wage share can have negative effects on IIT at extreme distributional values, namely for countries with very high levels of wages. Quantitatively, a 1 percent decrease in the wage share increased IIT with the EU15 by 16 basis points. Furthermore, the interaction with FDI and deflator has a negative sign, making the average partial effect of the increase in prices negative: a 1 percentage point increase of the deflator, evaluated at average 1998-2010 FDI ratio in CCPC, decreases IIT by 16 basis points.

Free trade agreements have a negative effect on trade integration, although this effect is quantitatively marginal, (column 4). Similarly, the degree of flexibility of the exchange rate can have a positive effect on IIT, for instance a drastic paradigm shift in the exchange rate policy from the value of 1 (euroisation) in the Reinhart-Rogoff (2004) scale to the value of 14 (fully floating exchange rate), ceteris paribus, could increase IIT with the EU15 by 14.3 basis points.

[40] The estimated coefficient is considerably lower with respect to the linear model estimate. This implies that the linear model prediction is not performing well due to the non-linear nature of the response variable.

[41] Looking at column 4 and evaluating at the average deflator level of CCPC we calculate the following: 0.025-0.027*1.1269=-0.005: a 10 percentage point rise of the FDI/GDP ratio decreased intra-industry exchange between CCPC and the EU15 block by 5 basis points. For the sake of illustration and extrapolating further, we note that in the period 1998-2010 the average growth rate of the share of FDI in GDP for CCPC was 27 percent per year. This translates into an average dampening effect on IIT of approximately 13.5 basis points per year.

[42] As a caveat recall that the linear model may have a good approximation of the effect at the average of the FDI distribution, however at extreme values of FDI inflow the linear model performs poorly.

The effect of the difference in corruption perception for the CCPC is also highly statistically significant. The estimate shows how a reduction of the index by one unit with respect to the EU15 average leads to a 2.7 basis points rise in IIT.[43]

6.3. Vertical and Horizontal Intra-Industry Trade

To conclude the empirical analysis, we present evidence for the determinants of vertical and horizontal IIT which helps to shed new lights on the previous results. Table 5 illustrates the determinants of horizontally and vertically differentiated goods, in addition it shows the estimates also for low and high quality differentiated goods.

Table 5. Determinants of Vertical and Horizontal IIT for CCPC and NMS

	Candidates and Potential Candidates				*New Member States*			
	Horizontal	*Vertical*	*V-Low*	*V-High*	*Horizontal*	*Vertical*	*V-Low*	*V-High*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag HIIT	-0.028				-0.134			
	(0.035)				(0.164)			
Lag VIIT		0.247***				0.519***		
		(0.061)				(0.145)		
Lag VIIT L			0.166				0.441**	
			(0.139)				(0.186)	
Lag VIIT H				-0.133				0.329***
				(0.129)				(0.052)
FDI/GDP	-0.488**	0.588***	0.432**	0.867***	-0.117	-0.065	0.019	-0.118
	(0.193)	(0.115)	(0.177)	(0.262)	(0.157)	(0.067)	(0.068)	(0.171)
Ln (K.Stock)	0.559	-1.415***	-0.844	-1.183	-0.299	-0.062	-0.179	-0.167
	(0.926)	(0.533)	(0.956)	(0.799)	(0.531)	(0.250)	(0.402)	(0.337)
FDI*lnKStk	-0.058	0.131***	0.012	0.369***	-0.035	0.004	0.034	-0.007
	(0.120)	(0.045)	(0.093)	(0.095)	(0.067)	(0.027)	(0.052)	(0.046)
Corp. Tax	0.015	0.028**	0.023	0.021	0.046***	0.001	0.006	-0.001
	(0.014)	(0.012)	(0.015)	(0.021)	(0.015)	(0.003)	(0.006)	(0.006)
W/GDP	-1.630	0.539	1.385	-3.452***	0.916	-1.061	-2.189***	0.455
	(1.581)	(0.735)	(1.221)	(1.212)	(1.530)	(0.647)	(0.828)	(0.819)
Deflator	0.276	0.936**	1.811	-0.596	-3.451*	-0.456	-0.165	-0.359
	(0.564)	(0.408)	(1.144)	(1.567)	(1.886)	(0.507)	(0.874)	(1.869)
FDI*W/GDP	-0.152	0.037*	0.032	-0.088**	0.062	-0.014	-0.053**	0.040
	(0.093)	(0.022)	(0.025)	(0.041)	(0.050)	(0.018)	(0.027)	(0.037)
FDI*Deflator	0.362	-0.592***	-0.400**	-1.030***	0.158	0.051	-0.057	0.141
	(0.238)	(0.123)	(0.199)	(0.295)	(0.180)	(0.070)	(0.075)	(0.190)
FTA	-0.584***	-0.083	-0.168	0.222	-0.339*	-0.131	-0.231	0.048
	(0.113)	(0.099)	(0.210)	(0.253)	(0.178)	(0.092)	(0.231)	(0.220)
Float XR	0.019	0.104***	0.100*	0.058	0.035***	0.014***	0.020**	0.008
	(0.044)	(0.035)	(0.057)	(0.067)	(0.011)	(0.005)	(0.009)	(0.007)
Corruption	0.144	-0.372***	-0.145	-0.313*	0.058	-0.030	-0.114**	0.096*
	(0.164)	(0.100)	(0.176)	(0.181)	(0.092)	(0.023)	(0.049)	(0.050)
Democracy	-0.041	0.110***	0.139	0.084	-0.004	-0.004	-0.057	0.049
	(0.073)	(0.035)	(0.089)	(0.096)	(0.043)	(0.043)	(0.046)	(0.050)
Intercept	-4.508**	-1.710***	-4.670**	-1.729	-1.011	-0.152	-0.549	-1.979
	(1.995)	(0.560)	(1.824)	(1.849)	(1.913)	(0.652)	(1.232)	(1.861)
Time Fix Eff	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-Test	.000***	.000***	.001***	.000***	.000***	.000***	.000***	.000***

[43] The corruption perception index ranges from 0 to 10 (the 10 meaning no corruption perception). As an example, in 2010 the average EU15 value was 7.25, the Croatian was 4.1 (3.14 points distant from the EU15 average): ceteris paribus, if Croatia had reduced this distance completely over the past decade, its IIT with the EU15 block could have benefited by approximately 9 basis points.

SW -Test	.000***	.086*	.168	.000***	.000***	.000***	.001***	.000***
Sargan Test	0.540	0.010**	0.650	0.218	0.427	0.219	0.130	0.156
BIC	264.52	151.50	254.94	279.76	381.95	187.31	267.34	283.23
AB Test - 1st	0.034**	0.191	0.032**	0.043**	0.024**	0.013**	0.011**	0.040**
AB Test - 2nd	0.293	0.567	0.036**	0.104	0.188	0.913	0.396	0.024**
AB Test - 3rd	0.185	0.394	0.078*	0.264	0.134	0.474	0.350	0.090**
Observations	62	62	62	62	106	106	106	106
N. countries	7	7	7	7	11	11	11	11

Note: p<0.1*, p<0.05**, p<0.01***Std. Errors in parentheses robust with respect to serial correlation and heteroscedasticity. F-Test, p-values for joint significance of time fixed effects under Ho: no joint effect of time fixed effects. SW (Shapiro- Wilk) test for normality of residuals, p-values reported under Ho: residuals are normally distributed. Sargan Test for over-identifying restrictions, p-values reported under Ho: the instruments as a group are exogenous. AB (Arellano-Bond) test for autoregressive residuals of 1st, 2nd or 3rd order, reported p-values for Ho: no serial correlation.

For NMS the dynamic effect are particularly important for vertically differentiated goods, suggesting a learning and cumulative effect of IIT over the years. In contrast, the dynamic nature of IIT is a weaker feature for CCPC. One interpretation can be that inertial effects of established intra-industry relationships and trade patterns persist over time when industrial structures are more similar and there is some already established trade relationship.

The negative effect of the ULC is mostly driven by their effect on the high quality IIT for CCPC while for NMS the wage inflation hinders trade in low quality goods. For NMS, horizontal IIT is penalised by increasing general price dynamics, whereas the low quality range of IIT is reduced by increasing wage dynamics. In the regressions for CCPC, the wage share of GDP has a remarkable negative effect for the high range of the quality spectrum: over the period under study, and evaluating at average FDI inflow, a 1 percentage point increase in wage share decreased the IIT in high quality goods by 4 percentage points. Similarly, an increase in the general level of prices has also a considerable negative effect on high quality IIT, driven exclusively by the interaction with FDI inflow.

In the CCPC group one of the most important aspects of the quality-partitioned estimates is that the negative effect of FDI on IIT is driven mainly by the effect FDI has on the similar quality range of exports. At the same time, FDI has also a negative effect on the high quality goods after accounting for the partial effects and a slightly weaker effect on the low quality goods.[44]

The floating exchange rate regime has some competitive benefits for the lower end of the quality spectrum as well as for IIT in similar goods. This indicates that high quality goods are not affected by the competitive devaluation argument. An interpretation can be that they are able to compete in the foreign market solely through their intrinsic quality.

Interestingly, in the estimates for NMS corruption perception distance has a statistically significant and positive coefficient on the highest quality range. With regards to the positive impact of corruption on the high quality range, the literature shows[45] that it is likely that the highest quality range of producers correspond to companies having a greater disposal of financial resources whereby invest in lobbying activities in order to improve their market access into the EU.

[44] For the high quality range we perform the following calculation: 0.867-0.088*0.13-1.030*1.1269+0.369*0.29 = -0.198
For the low quality range: 0.432-0.4*1.1269 = -0.019
[45] See Meunier and Nicolaidis (2006).

7. CONCLUDING REMARKS

Over the past quarter of a century, CESEE countries have opened up to trade as part of a process of economic transformation and integration into the European Union. This paper has looked into trade integration from the point of view of intra-industry trade (IIT) between CESEE countries and the EU15. The focus on IIT is of first order importance for the EU integration process for two main reasons: firstly, IIT is an important determinant of competitiveness and sustainable current account balances; secondly, IIT is a tool for achieving more synchronised business cycles and, as a consequence, reduce the effects of asymmetric shocks in an integrated trade area.
By describing and analysing the factors behind these in a panel data set up, using the most disaggregated level of bilateral trade data available and applying various statistical modelling techniques, this paper finds that EU candidate countries and potential candidates are lagging behind in terms of IIT integration with respect to the new EU member states.

The study identifies common factors behind IIT between the agglomerate CESEE region and EU15 countries, such as fiscal incentives (corporate tax rate) and the exchange rate regimes. In particular, the strong significance of the corporate tax differential indicates that tax policy could play an important role in promoting a faster convergence process toward the EU trade structure. Furthermore, we find evidence that for both groups of countries unit labour costs and their interplay with the influx of FDI are negative drivers of IIT. The findings in the baseline specifications are echoed by results from a fractional response model, which underlines the considerable quantitative effects of the variables.

Common determinants notwithstanding, there is considerable variation between CCPC on the one hand and NMS on the other hand. While the trade competitiveness of CCPC with the EU15 is affected by institutional quality and the distance in stock of physical capital, none of these factors appear to play a salient role in explaining IIT between NMS and EU15. Our analysis shows that corruption perception plays a critical role in hampering trade integration of CCPC into the EU. The disaggregated analysis of vertical versus horizontal IIT reveals more important distinctions between the explanatory variables, and in particular the importance of highly innovative and qualitative goods for intra-industry trade development.

REFERENCES

Arellano, M., Bond, S. (1991). 'Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations', Review of Economic Studies, 58, pp. 277–297.

Aturupane, C., Djankov, S. and Hoekman, B. (1997). 'Determinants of intra-industry trade between East and West Europe', World Bank policy research working paper No. 1850.

Balassa, B. (1966). 'Tariff reduction and trade in manufactures among the industrial countries', American Economic Review, 56 (3), pp. 466-473.

Balassa, B. (1986). 'The Determinants of Intra-industry Specialisation in United States Trade', Oxford Economic Paper, 38, pp. 220-233.

Balassa, B. and L. Bauwens (1987). 'Intra-Industry Specialisation in a Multi-Country and Multi-Industry Framework', The Economic Journal, 97, Dec., pp. 923-939.

Baldwin, R., Skudelny, F. and Taglioni, D. (2005). 'Trade effects of the Euro. Evidence from sectoral data', ECB Working Paper No. 446.

Barro, R.J. (1996). 'Determinants of Economic Growth: A Cross-Country Empirical Study', NBER Working Papers 5698, National Bureau of Economic Research, Inc.

Bijsterbosch M. and Kolasa M. (2009). 'FDI and Productivity Convergence in Central and Eastern Europe: an Industry-level Investigation', ECB Working Paper Series No. 992.

Botrić, V. (2012). 'Intra-industry trade between the European Union and Western Balkans: A close-up', EIZ Working Paper No. EIZ-WP-1202.

Botrić, V. (2013). 'Determinants of Intra-industry trade between Western Balkans and EU15: Evidence from bilateral data', International Journal of Economic Sciences and Applied Research, 6, pp. 7-23.

Brander, J.A. and Krugman, P.R. (1983). 'A reciprocal dumping model of international trade', Journal of International Economics, 15, pp. 313–321.

Brülhart, M. (1991) 'Marginal Intra-Industry Trade: Measurement and Relevance for the Pattern of Industrial Adjustment', Weltwirtschaftliches Archiv, 130, pp. 600-613.

Caetano, J. and Galego, A. (2007). 'In search for the determinants of intra-industry trade within an enlarged Europe', South-Eastern Europe Journal of Economics, pp. 163-183.

Chamberlain, G., (1980). 'Analysis of Variance with Qualitative Data', Review of Economic Studies, 47, pp. 225-238.

Dhareshwar A. and Nehru V., (1993). 'A New Database of Physical Capital Stock: Sources, Methodology and Results', Revista de Analisis Economico, 8(1).

Dixit, A. K., & Stiglitz, J. E. (1977). 'Monopolistic competition and optimum product diversity', The American Economic Review, 297-308.

ECB, (2012). 'Competitiveness and External Imbalances within the Euro Area', ECB Occasional Paper No.139.

Falvey, R. E. (1981). Commercial policy and intra-industry trade. Journal of international economics, *11*(4), 495-511.

Falvey R., Kierzkowski H. (1987). 'Product Quality, Intra-Industry Trade and (Im)perfect Competition, in Kierzkowski H. (ed.) (1987). Protection and Competition in International Trade, Blackwell, Oxford

Felipe J. And Kumar U. (2011). 'Unit Labour Costs in the Eurozone: The Competitiveness Debate Again', Levy Economics Institute Working Paper No. 651.

Flam, H. and E. Helpman (1987). 'Vertical Product Differentiation and North-South Trade', American Economic Review, 77, pp. 810-22.

Fidrmuc, J., Grozea-Helmenstein, D. and Wörgötter, A. (1999). 'East-West intra-industry trade dynamics', Weltwirtschaftliches Archiv, 135(2), pp. 332-346.

Fidrmuc, J. (2004). 'The endogeneity of the optimum currency area criteria, intra-industry trade and EMU enlargement', Contemporary Economic Policy, 22 (1), pp. 1-12.

Fontagné, L. and Freudenberg, M. (1997). 'Intra-industry trade: Methodological issues reconsidered', CEPII Working Paper No 97-01.

Fontagné, L. and Freudenberg, M. (1999). 'Endogenous Symmetry of Shocks in a Monetary Union', Open Economies Review, 10, pp. 263-287.

Fontagné, L., Freudenberg, M. and Gaulier, G. (2005). 'Disentangling horizontal and vertical intra-industry trade', CEPII Working Paper No. 2005-10.

Foster, N. and Stehler, R. (2010). 'Preferential Trade Agreements and the Structure of International Trade', WIIW Working Paper No. 61.

Frankel, J.A., and Rose A. K. (1998). 'The endogeneity of the optimum currency area criteria.' The Economic Journal 108.449 1009-1025.

Gabrisch, H. (2006). 'Vertical intra-industry trade between EU and Accession countries', IHW Discussion paper No. 12, Institut für Witschaftsforschung Halle.

Gaulier G., Taglioni D. and Vicard V. (2012). 'Tradable Sectors in the Eurozone periphery, Countries did not underperform in the 2000s', http://www.voxeu.org/article/tradable-sectors-eurozone-periphery

Gaulier, G. and Zignago, S. (2012). 'BACI: International trade database at the product level. The 1994-2007 Version', CEPII Working Paper No 2010-23.

Greenaway, D. and Milner, C. (1986). 'The Economics of Intra-Industry Trade', Oxford: Blackwell.

Grubel, H.G. (1967). 'Intra-industry specialisation and the pattern of trade', Canadian Journal of Economics and Political Science, 33(3), pp. 374-388.

Grubel, H.G. and Lloyd, P.J. (1975). 'Intra-Industry Trade: The theory and measurement of international trade with differentiated products', London: Macmillan.

Helpman E. and Krugman P.R. (1985). 'Market Structure and Foreign Trade', Wheatsheef Boods, Havester Press, MIT.

Herderschee J., Qiao Z., (2007). 'Impact of Intra-European Trade Agreements, 1900-2005: Policy Implications for Western Balkans and Ukraine', IMF Working Paper No. WP/07/126.

Hoekman, B. and Djankov, S. (1996). 'Intra-industry trade, foreign direct investment and the reorientation of Eastern European exports', World Bank policy research working paper No. 1652.

Jensen, L. and Lüthje, T. (2009). 'Driving forces of vertical intra-industry trade in Europe 1996-2005', Review of World Economics, 145(3), pp. 469-488.

de Jong, E., Bogmans, C., (2011). 'Does corruption discourage international trade?', European Journal of Political Economy, 27, pp. 385–398.

Judson, R.A. and Owen, A.L. (2001). 'Estimating Dynamic Panel Data Models: a Guide for Macroeconomists', Economic Letters, 65, pp. 9-15.

Kiviet, J.F., (1995). 'On bias, inconsistency and efficiency of various estimators in dynamic panel data models', Journal of Econometrics, 68, pp. 53–78.

Krugman, P. R. (1979). 'Increasing returns, monopolistic competition, and international trade', Journal of international Economics, *9*(4), 469-479.

Krugman, P. R. (1981). 'Intra-industry specialization and the gains from trade', The Journal of Political Economy, 959-973.

Lancaster, K. (1980). 'Intra-industry trade under perfect monopolistic competition', Journal of International Economics, 89 (5), pp. 151-175.

Mardas, D. and Nikas, C. (2008a). 'Economic Integration and Intra-industry trade between the European community and the Western Balkan countries', Transition studies review, 15(3), pp. 511-523.

Mardas, D. and Nikas, C. (2008b). 'European Integration, Intra-Industry Trade in Vertically Differentiated Products and the Balkan Countries', International advances in Economic Research, 14(4), pp. 355-368.

Marin, Dalia. 2006. 'A New International Division of Labour in Eastern Europe: Outsourcing and Offshoring to Eastern Europe.' Journal of the European Economic Association, 4(2–3), 612–622.

Markusen, J.R. (1984). 'Multinationals, multi-plant economies and the gains from trade', Journal of International Economics, 16(3–4), pp.205–226.

Markusen, J.R. (2002). 'Multinational Firms and the Theory of International Trade'. Cambridge, MA:M.I.T. Press

Meunier, S. and Nicolaidis, K. (2006). 'The European Union as a conflicted trade power', Journal of European Public Policy, 13(6), pp. 902–921.

Mundell, R. A. (1961). 'A theory of optimum currency areas.' The American Economic Review,657-665.

Papke, L. E., & Wooldridge, J. M. (2008). 'Panel data methods for fractional response variables with an application to test pass rates', Journal of Econometrics, *145*(1), 121-133.

OECD (2007). 'Tax Effects on Foreign Direct Investment' Tax Effects on Foreign Direct Investment – No. 17, Recent Evidence and Policy Analysis, 2007.

Reinhart, C.M. and Rogoff, K.S. (2004). 'The Modern History of Exchange rate Arrangements: a Reinterpretation', The Quarterly Journal of Economics, CXIX (1)

Rodas-Martini, P. (1998). 'Intra-industry trade and revealed comparative advantage in the Central American Common Market', World Development, 26(2), pp. 337-344.

Shaked A. and Sutton J. (1984). 'Natural Oligopolies and International Trade', in Kierzkowski H. (ed.) (1987). Protection and Competition in International Trade, Blackwell, Oxford

Shin, K. and Wang, Y. (2003). 'Trade integration and business cycle synchronisation in East Asia', ISER Discussion Paper No. 574.

Shleifer A. and Vishny, R.W. (1993). 'Corruption', The Quarterly Journal of Economics, MIT Press, 108(3), pp. 599-617.

Verdoorn, P.J. (1960). 'The Intra Block Trade of Benelux', In: Robinson, E.A.G (ed). Economic consequences of the size of nations, London: Macmillan.

Wooldridge, J.M. (2002). 'Econometric Analysis of Cross Section and Panel Data', MIT Press, Cambridge, MA.

SECTION III

THE CHALLENGES OF OTHER WBCs IN THE PROCESS OF EUROPEAN INTEGRATION

Branka Topić-Pavković
Faculty of Economics, University of Banja Luka, Bosnia and Herzegovina

FISCAL AND MONETARY ASPECTS OF ACCESSION OF BOSNIA AND HERZEGOVINA TO THE MONETARY UNION

ABSTRACT

Bosnia and Herzegovina needs to become a member of the EU and to achieve the criteria for membership, before gaining the position of candidate for EMU. Since the criteria for accessing the EMU are quantitatively more precise than a wide range of other criteria, in this paper we focus on the fiscal and monetary specificity of joining BiH the monetary union. Due to the heterogeneity of members of the monetary union, the main question remains whether the loss of monetary sovereignty and unique monetary policy can be optimal for all its members? Considering the theoretical and empirical knowledge about the benefits and disadvantages of monetary integration, the aim goal of this paper is to analyze possible fiscal and monetary implications on BiH in asseccion to monetary union. The results suggest that a rational solution for BiH, after joining the EU, is based on gradual process of monetary integration, with stable monetary policy, effective management of public finances and careful management of public debt. Central Bank of Bosnia and Herzegovina, which functions on the principle of the currency board succeeded in maintaining monetary and financial stability even in times of crisis. Since the institutional arrangement of the currency board does not allow budget deficit financing, the monetary system of BiH will have certain advantages in terms of the Treaty of Maastricht. On the other hand, in the next period monetary authorities should be devoted to assure the development of money market in BiH, and then adjusting the structure of euro area monetary aggregates. Analysis of fiscal convergence criteria related to the budget deficit and public debt, currently shows acceptable results for BiH, because the deviation from the reference value is minimal. However, keeping in mind that the dynamics of the public debt directly depends on the level of increase in GDP, exports and disposable income for debt servicing, the decision on further borrowing will have to be associated with production projects or funding projects that would contribute to further economic growth. This emphasizes that in the future, BiH needs to manage fiscal policy more efficiently, especially due to negative effects of the recent debt crisis. According to the optimum currency area theory, member state must maintain a certain degree of flexibility and autonomy, and manage fiscal policy with clear rules and budgetary principles. Fiscal aspect of monetary integration is significant because fiscal policy in EU is based on coordination of single member states fiscal (budgetary) policies through Maastricht convergence criteria and the Stability and Growth Pact. The long-term goal of BiH lies in achieving real convergence through increased productivity and competitiveness. Consequently, our main purpose is to highlight the question of conducting effective economic policy and necessary reforms before entering the E(M)U, because if implemented quality as it should be, assecing the monetary union will have more benefits than costs to the economy of Bosnia and Herzegovina.

Key words: monetary integration, fiscal policy, public debt, monetary policy, debt crisis
JEL classification: E5, H6, F02

1. INTRODUCTION

Bosnia and Herzegovina's capacity for the accession to the European Union has been determined by characteristics influencing monetary and fiscal system of BiH, from political, economic and social aspect.

For a country that is in a transition to a market economy, it is important to ensure macroeconomic stability which is a key condition for stable national currency with solid basis for the investments in economic development. If we observe the achieved level of macroeconomic stability and confidence in domestic currency, we can say that Currency Board arrangement in Bosnia and Herzegovina has achieved its main goal. However, past experience and theoretical aspects of functioning of Currency Board also show limitations in the results of growth of real investments, GDP and employment. In terms of accession to the Monetary Union, the currency board as a form of monetary arrangement has positive implications.

In conditions of passive monetary policy, country's economic policy and real GDP growth is significantly dependant on fiscal and budgetary policy. High budget deficit from previous period and slow implementation of political and economic reforms have resulted in increase of BiH borrowing from international financial institutions and in significant increase in borrowing from commercial banks in the domestic capital market. Combined with projected slow economic growth and high budget deficit, the issue of public debt sustainability comes into the focus. Main treats to public debt management are: credit rating, reduced capacity for borrowing from international financial institutions, political (in)stability, impact of global financial and economic crisis, decrease in inflow of foreign direct investments, negative balance of payments, high unemployment rate, reduced transfers from abroad and etc. In addition to mentioned characteristics, macroeconomic environment in BiH was also largely influenced by the last economic crisis and high risk and uncertainty which challenged economic policy in maintaining financial stability and in selecting economic policy as a response to crisis.

The crisis in majority EU countries has affected financial system, and afterwards the real sector causing slow economic growth, increase in unemployment and increase of fiscal pressures. As a consequence, the slowdown of global economy indicates fall in overall consumption and investment activities which also caused significant deterioration in trade conditions in BiH. Main effects of economic stagnation in the EU (and eurozone) to domestic economy were reflected in reduction of foreign demand for our export and insufficient capital inflows. Weak domestic demand, deterioration in fiscal position of country and pressure on foreign currency reserves are the primary generators of negative economic growth in BiH.

Considering the advantages and disadvantages, it is evident that classic currency board represents appropriate tool for the fiscal stabilization but not the mechanism for a more dynamic economic growth. At the same time, tendency of growth of public debt of Bosnia and Herzegovina in conditions of current global economic crisis, stagnation of GDP and budget revenues, as well as the fact that settlement of long-term liabilities as a priority requires higher percentage of budget funds, indicates the need for caution in future borrowing in terms of contracting new borrowings under the more favorable terms, adapting repayment schedule to expected revenues, and selection of priority projects. One of the main treats is a reduced credit rating of BiH influencing reduction in inflow of foreign direct investments, as well as the deterioration in borrowing conditions of BiH from international financial institutions, as well as limited opportunities for borrowing in the domestic market due to a limited domestic accumulation.

The analysis presented is aimed at acquiring information on the current monetary and fiscal parameters in BiH, and their aspects in the assessment of level of achieved convergence of BiH to the Maastricht criteria, that candidate countries and potential candidates must meet on their way to the accession to E(M)U.

2. THE CRITERIA FOR MONETARY UNION ACCESSION

One of the main characteristics of the European integration, in all phases through which European history has passed was heterogeneity of countries making the Union. This heterogeneity is reflected in socio-cultural characteristics, history and level of economic development. As a primary goal of integration of Europe was a need for prevention of new wars and accomplishment of deeper economic integration in order to defend its economic interests and create strong economic force that will be equally competitive in the global market. According to the theory of optimum currency area, which critically evaluates costs and benefits of Monetary Union, similarity between the Member States, especially the achieved level of economic growth, is considered as a prerequisite of successful functioning of Monetary Union.

Crucial moment in the history of European integration was the Maastricht Treaty, signed in December 1991 by the EU Member States. Accession to Monetary Union was conditioned by meeting of convergence criteria. Why did Member States have to meet convergence criteria for the creation of Monetary Union? First, we will look at the theoretical framework and definitions of convergence.

2.1. The Criteria of Nominal Convergence

The concept of economic convergence indicates an accelerated process of social development resulting in convergence of the values of economic variables among Member States, and primarily referring to the nominal and real convergence. In order to adopt common currency Member States, according to the Maastricht Treaty, are required to comply with nominal convergence (five convergence criteria). *Nominal convergence* indicates meeting quantitatively determined criteria prescribed by Maastricht Treaty on readiness of country to join eurozone. Since mentioned criteria are quantitative and more precisely defined than Copenhagen criteria, in the economic literature they have become synonym of readiness of candidate countries for joining EMU. Country may accede Monetary Union if it meets determined criteria, i.e. nominal convergence criteria (De Grauwe, 2003), such as:

1. inflation rate not more than 1,5% higher than the average inflation rates of the three Member States with the lowest inflation,
2. Long-term interest rates should be no more than 2% higher than in the three Member States with the lowest inflation rate,
3. Applicant country must accept exchange rate mechanism (ERM II) of the European Monetary System, and must not devaluate its currency during the 2 years before the accession to EU,
4. The ratio of budget deficit to GDP must not exceed 3% (or if the deficit exceeds reference value, deficit must decline until reaching the level of 3%) or, on the other hand, if the excess has a temporary nature and, is close to the reference value, i.e. 3%,
5. The ratio of Government debt to GDP must not exceed 60% (or if debt exceeds reference value, debt must be diminished and must be approaching reference value at a satisfactory pace).

2.2. Real Convergence

Concept of *real convergence* indicates decrease in differences in the levels of development of Member States. It is defined as similarity in GDP per capita, level of nominal wages, equilibrium of real exchange rate and similarity of price levels and ratio of foreign trade and local goods (Gaspar, 2005). Human capital is also quoted as crucial criteria of convergence.

Bjorksten (Björksten, 2000) defines real convergence as reduction of differences in productivity and price level between the States. Real convergence requires sustainable economic growth in potential candidate countries, and this requires appropriate micro and macro-economic policies, and effective mechanism for transition to a market economy. According to Kowalski (Kowalski, 2003), real convergence refers to similarities of real structures and

business cycles in countries introducing or that have introduced common currency, in terms of productivity convergence and higher standards of living measured by reduction of differences in GDP per capita.

3. CHARACTERISTICS OF MONETARY ARRANGEMENT OF BOSNIA AND HERZEGOVINA

3.1.Scope and limitations of currency boards in terms of monetary integration

Currency Board was the only adequate form of monetary policy for the stabilization of financial sector in the political and economic environment characteristic for Bosnia and Herzegovina after the war. For a country that is in a transition to a market economy, it is important to ensure macroeconomic stability which is a key condition for stable national currency with solid basis for the investments in economic development. The primary task of currency board in countries undergoing transition and reform is to secure currency stability, i.e. to keep inflation at the lowest possible level.

For developing countries, tight fixing of exchange rate to the foreign currency of any leading monetary authority may represent good strategy for the economic stabilization. Lack of exchange rate risks makes market participants unaware of economic differences of country that pegged its currency compared to the country with anchor currency, so the borrowing conditions of these countries converge. Appearance of external shocks lead to exponential growth of dispersion of financing conditions of developed countries compared to the less developed, especially in countries which have tightly fixed its exchange rates to foreign currencies. Reason for this is a lack of flexibility of exchange rate, which in time of crisis leads to situation in which negative effects of the crisis are fully reflected to the real sector.

In terms of the achieved level of macroeconomic stability, we can say that Currency Board arrangement in Bosnia and Herzegovina has achieved its main goal. On the other hand, creating favorable investment environment and strengthening of competitive position should represent main goal of BiH economy, and accelerate the implementation of criteria of the real convergence. In other words, meeting the macroeconomic stability is a good base for successful economic development in the long run. In conditions of passive monetary policy, the essential question for BiH economy has been aimed at raising international competitiveness of country in order to reduce the current account deficit.

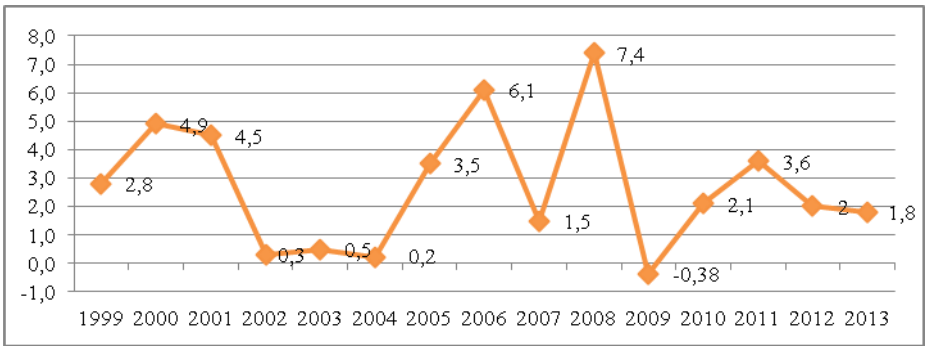
Required prerequisite for this is acceptable ratio of productivity growth and wage adjustment. If the gross wages in major sectors are growing faster than productivity in these sectors, this could increase inflationary pressures and destimulate export on the one hand, boosting consumption and import on the other hand, which could at certain point lead to unsustainable deficit of the current account and put into the question existence of currency board arrangement and parity between the EURO and Convertible Mark (Kristic, 2007).

3.2. Criteria of Inflation Convergence

The primary task of currency board in countries undergoing transition and reform is to secure currency stability, i.e. to keep inflation at the lowest possible level. One of these requirements implies convergence of inflation rate to the inflation rate of anchor currency, i.e. currency to domestic currency is pegged. If we look at the inflation in BiH (Chart 1), we can see that inflation declined in period from 2000 to 2004 and ranged below the value of the inflation in the eurozone. A slight increase in 2005 was caused by exogenous pressures caused by the increase in oil prices on the world markets. In 2006, level of inflation increased in prices due to the introduction of Value Added Tax (VAT). Prices of raw oil had significant increase in the first part of 2008 which significantly affected global inflation trends. Inflation pressures were more pronounced, and annual inflation almost reached double figures in the middle of the year. Start of inflation was caused by the increase in prices of oil and food on the world market, but inflationary spiral accelerated due to growth of local wages and utility services. In addition,

inflation was also characterized by emphasized fiscal expansion, mostly through the growth of social transfers and current spending. International position was further weakened by increased foreign trade deficit.

Chart 1 Inflation in BiH



Source: World Economic Outlook Database, interpretation of the author

Despite the increase of merchandize export, net export (foreign trade deficit) sustained deterioration and practically had negative contribution to the economic growth. Domestic spending was stimulated by the growth of wages (particularly in public sector), large amount of new loans to the population, and continuous inflow of remittances from abroad (information from *Central Bank BiH*).

We can see that inflation converges to the reference value of inflation rate in the eurozone, except in 2006 and 2008, which was a result of mentioned exogenous factors caused by the increase in oil prices on the world market. The downward trend in inflation was present since the beginning of 2011 and continued in 2013, with the deflationary pressures showing in the second part of the year. Annual inflation measured by consumption prices index (CPI) in 2013 was -0,1%. In the end of 2013, inflation rate was -1,2%. Deflation in 2013 was the result of continued downward trend in food and oil prices on the world market. The only significant divergences in primary inflation were in 2010 as a result of simultaneous increase of excise duties to alcohol and tobacco. Week domestic demand despite deflation in addition to deferred consumption due to expectations of further price reductions indicates weak purchasing power of population.

4. FISCAL ASPECT OF INTEGRATION OF BOSNIA AND HERZEGOVINA

Fiscal aspect of integration of Bosnia and Herzegovina will be observed through the prism of fiscal criteria of convergence. Please note that with the accession of a new member to the fiscal system of EMU, Member States experience changes within their public finances, both in public revenues and also in public expenditures. Also, in conditions of passive monetary policy, country's economic policy and real GDP growth is significantly dependant on fiscal and budgetary policy.

Fiscal aspects of joining E(M)U are important due to several significant reasons: (Shaw, 1996)
1. it seems that accession regularly leads to fiscal pressures in the new Members, regardless of the principle that new Members State should not immediately contribute to the EU budget, there were even talks of possibility of fiscal crisis caused by enlargement;
2. After accession, new Member States must conduct fiscal policy in accordance with the rules of Stability and Growth Pact, which could also cause certain fiscal consequences.

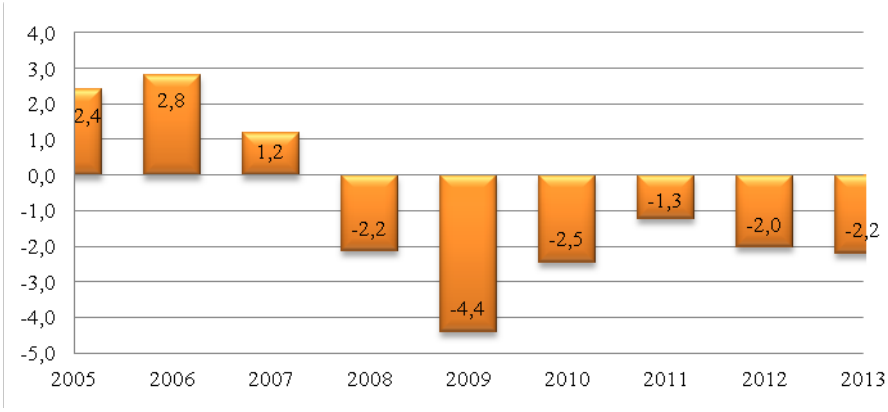
4.1. The Budget Deficit

From the analysis and studies on the importance of convergence, among the basic criteria is the criteria of budget convergence, that requires: budget deficit of member country must not exceed 3% of GDP (and in case of higher deficit, deficit must decline continuously and substantially before reaching rate of 3%), or on the other hand, if this divergence from the referent value is caused by exceptional circumstances and has a temporary nature and is close to the referent value, i.e. 3%.

The bottom line of the fiscal sustainability criteria is reflected in stabilization of debt-to-GDP ratio („stabilization of primary budget“) (Bajo and Pezer, 2011). Issue of sustainability may be formulated in following manner: budget deficit leads to the increase in government debt which will have to be serviced in the future. If interest rates on government debt exceed growth rate of the economy, debt is set dynamically, which leads to the increase in government debt in relation to the GDP. Government must ensure that primary budget has a surplus. If there is no surplus, debt/GDP ratio will increase which will certainly lead to default in government debt (De Grauwe, 2003).

Development of budget surplus/deficit in Bosnia and Herzegovina presented in the Chart no. 2.

Chart 2 Budget surplus/deficit in BiH



Source: Central Bank of Bosnia and Herzegovina, interpretation of the author

Budget of BiH had deficit over 753 million BAM or 2,5% of GDP in 2010, which is lower by 29,3% compared to the previous fiscal year. Although we see the improvement of fiscal balance of BiH in the next year, 2012 and 2013 were characterized by further growth of deficit. According to these parameters, Bosnia and Herzegovina still meets the Maastricht criteria in connection to the budget deficit.

4.2. Public debt

With the increase of country's indebtedness and expansion of its financial activities problem of defining debt limit emerges. Last debt crisis has produced growth of public debt which has increased in previous years at rate higher than growth of GDP in the majority of European States. Country with growth of public debt creates effect of negative spillover to the other countries. Size and structure of public debt influences all trends in the economy, and managing public debt is becoming more and more important segment of the overall economic policy of the country. The growth of public debt in the long run must be lower than the economic growth rate, if we want to avoid problems with liquidity. Therefore, a primary criterion for accession to the European Monetary Union sets the limit for the public debt-to-GDP ratio to 60%.

Basic indicators of public debt of Bosnia and Herzegovina according to the above criteria, classify BiH as a medium indebted country. Bosnia and Herzegovina in 2013 had debt-to-GDP ratio of 39,69%. However, analysis of situation shows constant growth of public debt, and attention should be focused on how we spend borrowed money and level of public debt sustainability in BiH.

4.2.1. Public Debt Trends in Bosnia and Herzegovina

Since 2008, increase in fiscal deficit, as well as the escalation of the economic crisis in 2009, has influenced growth of debt of Bosnia and Herzegovina. In the period from 2008-2012 Bosnian economy had real fall of 2,2% which led to the decline of public revenues, and country failed to adjust public expenditures which led to the fiscal deficit that is present throughout the observed period. These developments were the main cause of the sudden increase in public debt that has increased significantly over the period of 4 years.

Table1 Percentage increase/decrease of foreign debt of BiH compared to the previous year

Year	2004.	2005.	2006.	2007.	2008.	2009.	2010.	2011.	2012.	2013.
%	0,45	7,59	-6,15	-2,70	7,04	23,44	20,16	5,92	7,42	3,48

Source: Author

Increase of foreign debt on 31.12.2013 compared to 31.12.2012 was 249.209.054 BAM, i.e. 3,48%. Mentioned increase in 2013, was a result of use of granted loans in amount of 1.009 million BAM (EIB 247 million BAM, IMF 240 million BAM, EBRD 200 million BAM, etc.), minus the amount of paid principals (approx. 600 million BAM), with correction of part referring to the foreign exchange movements (approx. 160 million BAM) for the observed period. The main risk in projecting internal debt is: potential changes in legislation regulating the obligation of payment of internal debt in different manner from the existing legal arrangements, and thus preventing planning and control of repayment, and potentially new obligations.

Level of debt sustainability is significantly influenced by currency structure of foreign debt. In the end of 2013, foreign debt of BiH included 4 major currencies: EUR, SDR, USD and CPU[1]. Since the Central Bank of BiH maintains monetary stability in accordance with the *currency board* arrangement, we can say that EUR holds a second place in currency structure of debt (two currencies have majority share, EUR and SDR with 85%). Such a high share of EUR provides high degree of predictability of future liabilities and BiH is exposed to a lower currency risk.

When it comes to the currency structure of foreign debt servicing in the period 01.01.- 31.12.2013, share of paid debt to the IMF created currency structure of payments dominated by the SDR. SDR[2] is exposed to currency risk, although effective payments are realized in EUR. Taking into account already said, if all payments realized in EUR were presented, share of this currency in total currency structure would be 84,01%. Focus should be on the loans in USD because rise of USD could affect increase of foreign debt, which would at the same time

[1]CPU- Current pool unit of World Bank for the liabilities under the consolidation loan - IBRD no. 40390, which were in 2012 serviced in USD and EUR, and in 2013 in JPY and USD and are included in currency structure of serviced debt.

[2]SDR - Special Drawing Rights are supplementary foreign exchange reserve assets defined and maintained by IMF, World Banka and some other international financial institutions. The value is based on the basket of key international currencies (USD 41,9%, EUR 37,4%, Japanese yen 9,4% and British pound 11,3%). In total currency structure of serviced liabilities for the period 01.01.-31.12.2013, settled liabilities to IMF were presented separately, while other liabilities were in SDR (to World Bank and IFAD-u) and paid in EUR and USD, and these were included in currency structure of serviced debt in these currencies.

require more domestic currency for the servicing of foreign debt. Having in mind aforementioned, we can conclude that future *loans should be in EUR.*
Servicing of debt refers to payment of funds each fiscal year for the principal, interest, discounts, other obligations originating from debt, including all other associated costs. Since majority of loans granted to Bosnia and Herzegovina have due, i.e. grace period has expired, share of paid principals in the structure of totally serviced liabilities, i.e. compared to the collected interest, servicing and other costs, and has an growth tendency.

5. FINAL CONCLUSIONS

Results of research have shown that indicators determining the economic variable of criteria for the accession to the Monetary Union from the monetary and fiscal aspect have been at a satisfactory level in Bosnia and Herzegovina. Owing to the currency board as a monetary arrangement present in Bosnia and Herzegovina, monetary criteria would be met relatively fast in the process of the accession to the ERM 2. Inability of monetarisation of budget deficit, elimination of the exchange rate risk and low inflation have provided strong basis for the required macroeconomic stability of Country.

Analysis of fiscal convergence criteria have shown that Bosnia and Herzegovina is currently classified as a medium indebted country. Criteria relating to the budget deficit and public debt to GDP ratio, currently show acceptable results for BiH, because divergence from referent values is minimal. However, considering that development of public debt and servicing of the same is directly dependent on the degree of increase/decrease of GDP, export and available income for servicing of debt, decisions on future borrowing will have to be associated with production projects, or financing of projects which would help future economy growth. Characteristics related to the public debt in BiH are reflected through inability to pursue active monetary policy and exchange rate policy. Having in mind aforesaid, dominant segment of public debt management belongs to the fiscal policy and expenditure control policy.

It should be underlined that BiH will have to manage efficiently fiscal policy in the future, and particularly when BIH accedes E(M)U, because then monetary policy will be under the European Central Bank whose member will also become Central Bank BiH. In accordance with the OCA Theory, it is recommended that BiH, i.e. institutions managing its fiscal policy, must keep certain level of flexibility and autonomy and manage fiscal policy (with clear rules and principle of budget equilibrium in terms of managing budget debt to GDP ratio). Namely, this will be mandatory because we will have to meet the requirements defined under the Stability and Growth Pact.

Within the passive monetary policy, significant efforts for the economy of BiH are aimed at boosting international competitiveness of country in order to reduce deficit of current account. Creation of favorable investment environment and strengthening of competitive position should represent main goal of BiH economy and accelerate meeting of criteria of real convergence. The purpose of the entire process of convergence is achievement of real convergence, gradual move towards equalizing the level of per capita income of regional countries to the average income of EU Member States.

REFERENCES

Bajo, A. and Pezer, I. (2011): *Strategije i ciljevi upravljanja javnim dugom*, Ekonomski fakultet Zagreb

Björksten, N. (2000). *Real convergence in the enlarged euro area: a coming challenge for monetary policy*, Bank of Finland, Economics department, Working papers. 1/2000. URL: http://www.researchgate.net/publication/5059202_Real_Convergence_in_the_Enlarged_Euro_Area_a_Coming_ Challenge_for_Monetary_Policy

Central Bank of Bosnia and Herzegovina, URL: www.cbbh.ba

De Grauwe, P. (2012*). Economics of Monetary Union*, Ninth Edition, Oxford University Press.

Gaspar, P. (2005). *Real and Nominal Convergence of Pre-Accession Economies and the Choice of Exchange Rate Regime*, International Centre for Economic Growth (ICEG) and Budapest University of Economics (BUE), Paper presented on the conference Alternatives for Exchange Rate RegimeinPre-Accession Economies. Vienna: September 20-21, 2005. URL: http://www.ecb.int/pub/pdf/other/neweumemberstatesen2005en.pdf

Kowalski, P. (2003). *Nominal and Real Convergence in Alternative Exchange Rate Regimes in Transition Countries: Implications for the EMU Accession*, Center for Social and Economic Research,Warsaw. URL: http://www.case-research.eu/upload/ publikacja _plik/1708281_270.pdf

Kristić, I. (2007). *Održivost aranžmana valutnog odbora u BiH*, Direkcija za ekonomsko planiranje Savjeta ministara BiH-DEP. URL: http://www.dep.gov.ba /dep_publikacije/doc/?id=102

Shaw, J. (1996). Law of the European Union, Macmillan, London.

LIST OF AUTHORS

Botrić, Valerija
The Institute of Economics, Zagreb
Trg J.F. Kennedy 7
10000 Zagreb, Croatia
vbotric@eizg.hr

Dautović, Ernest
Université de Lausanne, Switzerland
ernest.dautovic@unil.ch

Dušek, Jiří
College of European and Regional Studies
Žižkova 6, 370 01 České Budějovice, Czech Republic
jiridusek@centrum.cz

Golob, Marino
Colegium Fluminense Polytechnic of Rijeka, Rijeka, Croatia

Golob, Martin
Mara Mara d.o.o., Pazin, Croatia

Gonza, Tej
Erasmus University of Rotterdam
gonza.tej@gmail.com

Kandžija, Tomislav
Primorsko–goranska County, Rijeka, Croatia

Kumar, Andrej
ECSA Slovenija
andrej.kumar@siol.net

Orszaghova, Lucia
Národná banka Slovenska, Slovakia
lucia_orszaghova@nbs.sk

Pána, Lubomír
College of European and Regional Studies
Žižkova 6, 370 01 České Budějovice, Czech Republic
pana@vsers.cz

Schudel, Willem
De Nederlandsche Bank, The Netherlands
c.j.w.schudel@dnb.nl

Šlander, Sonja
University of Ljubljana, Faculty of Economics,
Kardeljeva pl. 17, 1000 Ljubljana, Slovenia
katja.zajc@ef.uni-lj.si

Topić-Pavković, Branka
University of Banja Luka, Faculty of Economics, Bosnia and Herzegovina
branka.topic-pavkovic@efbl.org

Zajc Kejžar, Katja
University of Ljubljana, Faculty of Economics,
Kardeljeva pl. 17, 1000 Ljubljana, Slovenia
katja.zajc@ef.uni-lj.si

Zaninović, Vinko
University of Rijeka, Faculty of Economics, Croatia
vinko.zaninovic@efri.hr

Conference Proceedings
COOPERATION CHALLENGES AFTER THE EU ACCESSION OF CROATIA

Edited by

Andrej Kumar, Katja Zajc Kejžar

Slovensko društvo za raziskovanje evropskih integracij
European Communities Studies Association of Slovenia