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What Drives Competitiveness: The Case of New EU Member States[1]

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ABSTRACT

The importance of competitiveness of the contemporary economies has been a popular topic among economists, politicians and the general public. Nevertheless, there is little consensus based on empirical findings on what are the sources of nation's competitiveness, especially in the context of an economic and political union like the EU. Thus, the goal of this paper is to empirically pinpoint the determinants of competitiveness for eleven new EU member states (Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia). We measure competitiveness through GDP per person employed while our explanatory variables are divided into two groups of determinants: price and non-price competitiveness factors. Consequently, we set the following hypothesis that the role of non-price competitiveness factors is more important compared to price competitiveness factors in the new EU member states. In order to test it, we employ linear dynamic panel model based on one step GMM estimator (Arellano-Bond) on the yearly data, covering the period from 1999 to 2016. The most interesting results refer to the positive role of the government and the structure of exported goods (both non-price competitiveness factors). The relevance of our result extends beyond this sample, as it demonstrates the necessity of examining factors other than level of wages, prices and exchange rates when looking at the competitiveness of contemporary economies.

Keywords: Competitiveness, new EU member states, dynamic panel analysis, GDP per person employed

JEL classification: E24, F45, O52, P16

1. Introduction

With the on-going debate on the importance of competitiveness, the constant need for comparison between the economies and the growing tension between the so called "old" and the "new" Europe there is still no unambiguous answer in the academic and public scene on what drives competitiveness. In order to fill that literature gap and to contribute to resolving competitiveness controversy (price versus non-price determinants) we combine several strands of literature (macroeconomics, political economy and business strategy literature).
A phrase – systems competition – coined by Sinn (2003), provides the best explanation of the situation in which new EU member states found themselves during the EU negotiations process and after the entrance "into the club". In order to achieve real convergence and attract much needed capital investments and transfer of know-how they entered the EU Single Market in which the competition is not just in factor prices but also in the optimal set of institutions. Namely, EU Single Market rewards qualitative aspects of a contemporary economies (government regulation, infrastructure, corruption, etc.) just as well (or even more) as it does with quantitative aspects (in terms of wages and/or interest rates). Contemporary economies are now faced with a challenge of attracting investments and achieving sustainable growth by reinventing themselves and offering different "business models" based on the varieties of capitalism literature, i.e. different institutional backgrounds (see Amable, 2003; Sapir, 2006; Bohle, and Greskovits, 2012).

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Having all of that in mind, we opted for a broader measure of competitiveness. In order words, we do not refer to competitiveness in the sense of comparison of prices or costs across countries or external balances; rather we focus on the comparison of welfare, factor incomes and other macroeconomic goals. In order to do that we use GDP per employed person so that we could look at the factor incomes, level of employment and productivity as the underlying concept of the competitiveness of contemporary economies[4]. With respect to Reinert's (1995) approach we examine competitiveness as a "competition" in creating conditions that increase a nation's standard of living, encourage both domestic companies to invest abroad and foreign companies to invest within the national borders, as well as provision of optimal policy, structural and institutional framework.
This paper contributes to the literature by empirically assessing the effects of price and non-price competitiveness determinants in the context of an economic and political union like the EU for the new EU member states. We focused on those new EU member states that shared a common socialist legacy which assured that we have a more homogenous sample. Thus, we excluded Malta and Cyprus from the analysis. With economic policy converging and being more and more so determined at the central level in Brussels we hope to empirically identify those determinants that are still under the control of nation economies themselves, i.e. dominantly non-price competitiveness determinants. Our results confirm these findings and simultaneously open the door for further research with respect to variables and the methodology used, as well as sample and time period examined.
This paper is structured as follows. Section 2 provides the literature review on both price and non-price competitiveness in the EU countries. Section 3 provides a description of the methodology and data used in the empirical estimation. Section 4 presents our econometric results while section 5 concludes.

1. Literature review

Empirical and theoretical literature on the importance of competitiveness of contemporary economies is both vast and versatile. It ranges from positive attitudes that competitiveness can be built and sustained in order to achieve a competitive advantage of a nation (Porter, 1990) to those that see it as a "dangerous obsession" (Krugman, 1994) or even detrimental for the socio-economic development of the society (Cerny, 1997). In any case, whether one looks at the competitiveness as a "silver bullet" or a "dangerous obsession" it has attracted a significant amount of attention.

From the theoretical part, overview of the most important quantitative indicators vis-à-vis competitiveness is presented by Hatzichronoglou (1996) who focuses mostly on price and cost indicators, export market shares, import penetration and trade balances. On the other hand, World Economic Forum (WEF) and Institutte for Management Development (IMD) examine competitiveness through measures of non-price or institutional competitiveness that encompass a broad range of fields from infrastructure and institutions to business sophistication and innovation potential. Both reports produce rankings, country profiles and give analysis of the state and the evolution of competitiveness at the global level.[5]

Regarding empirical part of the competitiveness debate one cannot draw a clear conclusion since the papers vary with respect to time dimension, sample size, methodology, focus (trade balances, GDP, firms exports) and even the range/definition of competitiveness. When one focuses on the trade issue and the so called "narrow" definition of competitiveness following results emerge.

Bayoumi T. et al. (2011) for a panel of 11 euro area countries from 1980 to 2009 report that price competitiveness indices (consumer price index - CPI, unit labour costs - ULC and wholesale price index - WPI based real effective exchange rate) do matter. This is especially true for intra-euro area exports which are more sensitive to price competitiveness (price elasticity ranging from 0.7 to 1.3) than extra-euro area exports. Research by Anderton et. al. (2005) reveals the evidence of a substitution between intra- and extra-euro area

[4] Only meaningful concept of competitiveness at the national level is national productivity (Porter, 1990).
[5] One should also report critics to this approach that focus on the methodology issues (e.g. IMD does not provide overview of its methodology in its reports). Lall (2001) analyses the value of composite competitiveness indices and examines the WEF's Global Competitiveness Report.

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imports due to a change in their relative price levels. Their sample comprised out of nine Euro area countries between 1989Q1-2000Q4. Gabrisch and Staehr (2014) use a dataset for 27 EU countries from 1995 until 2012 and report an interesting finding. Namely, capital flows appear to affect cost competitiveness (real effective exchange rate deflated using unit labour costs or consumer prices and growth rate of the unit labour costs) in the short term, while changes in cost competitiveness variables appear to have no effect on capital flows in the short term.

Especially interesting results have been reported by Staehr and Vermeulen (2016) who show that in most countries shocks to competitiveness help explain subsequent GDP developments in the short term. They have estimated vector autoregressive models on quarterly data from 1995 to 2013 for individual countries and the whole euro area. Furthermore, they show that competitiveness measures have little explanatory power for the short-term dynamics of the current account balance and domestic credit growth. These results apply for all of the competitiveness measures considered, but a non-traditional competitiveness measure (e.g. quality adjusted export price index) accounting for quality differences fares better in some cases.

Estimation results, reported by Bobeica et al (2016), suggest that price competitiveness is more important for exports than for imports. The effect on exports is more evident outside the monetary union and exports are found to be sensitive to relative prices compared to intra-euro area exports. The authors use various measures of price/cost competitiveness but fail to determine one particular measure that outperforms the others. This brings them to the conclusion that within euro area deficit countries should combine price and cost adjustment with structural reforms (in domestic product and labour markets), and those driving non-price competitiveness.
Esteves and Prades (2016) investigate a sample that includes 12 euro area economies in a time period running from 1997 to 2014. They find that countries where exports are more concentrated tend to be less sensitive to the substitution effect between sales to domestic and foreign markets. In other words, redirecting sales from domestic to foreign markets did not lead to gains in exports' market shares or to increase in economic activity (GDP growth). Since the latter actually describes the "broader" definition of competitiveness one asks whether there are other, institutional or non-price competitiveness issues that enable this from happening.

Heumer et al (2013) develop a composite index of institutional competitiveness for 26 EU countries and 10 non-EU OECD countries over the 1990-2009 time periods. The index is structured along the components of the profit maximisation problem and it includes: measure of output (product market regulation), public input goods (public institutions and infrastructure), capital (financial market regulation and the cost of capital), labour (labour market regulation, labour costs and social security) and technology. The main idea is that the index should capture how the institutional framework of a country influences the different elements of a firm's production function. In other words they proxy price competitiveness through Factor Price Competitiveness Index and non-price competitiveness through Institutional Competitiveness Index. The result show that Southern' EMU countries caught up in the 1990s in terms of institutional competitiveness with 'Northern' EMU countries but not enough in order to shrink the gap between these two group of countries in terms of factor prices.

Mačkić et al. (2014) focus on the institutional competitiveness by analysing World Competitiveness Yearbook and regress it to the GDP per capita in order to econometrically pinpoint the crucial competitiveness determinants for 35 to post-socialist and capitalist countries. They conclude that: (i) small and medium enterprises are the main competitiveness generator in the post-socialist block (in opposition to large corporations in the capitalist economies), (ii) credit rating is highly relevant in both groups, and (iii) that labour market flexibility in PS countries plays a vital role in boosting competitiveness.

The effect of corruption in the nine Central and Eastern European countries on competitiveness was investigated by Gamberoni at al. (2016). The focused on the total factor productivity (TFP) growthand the link between corruption and the efficiency of the allocation of both capital and labour. They find evidence that in small countries, in countries with low political stability and civil liberties, and with weak quality and effectiveness of its regulations, increases in corruption are associated with rising misallocation of both capital and labour across firms. Also, they show that changes in corruption are negatively related to TFP growth.

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Delgado et al (2012) take an interesting approach in their analysis of more than 130 countries over the 2001-2008 periods. First, they foundational competitiveness as the expected level of output per working-age individual that is supported by the overall quality of a country as a place to do business. Second, they report a positive and separate influence of three broad and interrelated drivers of foundational competitiveness: social infrastructure and political institutions, monetary and fiscal policy, and the microeconomic environment. And third, they define a new concept, global investment attractiveness, which is the cost of factor inputs relative to a country's competitiveness.

Based on the presented empirical and theoretical work we opt for a holistic view of the competitiveness debate and focus on the broader definition of competitiveness. Thus, we use both price and non-price measures of competitiveness in order to access the level of competitiveness as the ability of a country to create added value and increase a nation's standard of living (IMD, 1996).

2. Methodology and data

In our paper we set the hypothesis that the role of non-price competitiveness factors is more important compared to price competitiveness factors in the new EU member states. In order to test it, we employ linear dynamic panel model based on one step GMM estimator (Arellano-Bond) proposed by Arellano and Bond (1991). Dynamic panel analysis is applied in research in which the current value of a variable depends on the previous values of the same variable (Baltagi, 2008). Also, including one or more lags of dependent variable significantly affects the consistent assessment of other parameters in the model (Bond, 2002).
A dynamic panel model with t-1 lag and K independent variables xitk, k=1,…,K can be written as:

$$Y_{i,t} = \mu + \gamma Y_{i,t-1} + \beta_1 X_{it1} + \beta_2 X_{it2} + \beta_K X_{itK} + \alpha_i + \varepsilon_{i,t} \quad i = 1,\ldots,N \quad t = 1,\ldots,T \tag{1}$$

where N is the number of units of observation, T is the number of periods, α_i is a random or fixed individual-specific effect. It is assumed that the idiosyncratic shocks ε_{it} are IID $(0,\sigma^2_{\varepsilon})$.

When model include the lagged dependent variable, Arellano and Bond (1991:277-297) propose using the generalized method of moments (GMM) estimator instead of least squares OLS estimators. As authors argue, lagged dependent variable is correlated with the individual-specific effect, which makes OLS estimation parameters biased and inconsistent. According to this, the first difference of equation (1) is given as:

$$Y_{i,t} - Y_{i,t-1} = \gamma(Y_{i,t-1} - Y_{i,t-2}) + \beta_1(X_{it1} - X_{i,t-1,1}) + \beta_2(X_{it2} - X_{i,t-1,2}) + \beta_K(X_{itK} - X_{i,t-1,K}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \quad i = 1,\ldots,N \quad t = 1,\ldots,T \tag{2}$$

It is important to point out that Arellano-Bond GMM procedure uses instrument for parameters estimation. Validity of chosen instruments for parameters estimation is tested with Sargan test where null hypothesis states the validity of chosen instruments.

The data used in the analysis is yearly GDP per person employed for the eleven new EU member states: Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia. Depending on the data availability for each variable in model, the analysis covers the period from the 1999 until the end of 2016. Data description and sources are available in Table 1.

Dependent variable in our analysis measures competitiveness through GDP per person employed. Explanatory variables are divided into two groups of determinants: price and non-price competitiveness factors (Table 1).

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Table 1. Data description and sources

	Variable	Label	Time	Measure	Source	The expected sign
Dependent variable	GDP per person employed	GDP_PE	1999-2016	Constant, 2011 PPP $	WDI database, World Bank	
Price competitiveness factors (PCF)	Terms of trade	TT	2000-2015	Index, 2005=100	ECB	-/+
	Market Share – Marginal Price Competitiveness	MS_MPC	1999-2014	Rate, %	UN Comtrade	+
	Relative exports price	RXP	1999-2014	Index, 2000=100	UN Comtrade	-
	Consumer price index	CPI	1999-2016	Index, 2005=100	Eurostat	-
Non-price competitiveness factors (NPCF)	Export sophistication good	Soph_G	2000-2014	Index, 2005, USD	UN Comtrade	+
	Relative exports price quality adjusted	RXPQA	1999-2014	Index, 2000=100	UN Comtrade	-
	Regulator quality	reg_qual	2002-2015	Index, [-2.5:2.5]	WDI database, World Bank	+
	Government effectiveness	govt_effect	2002-2015	Index, [-2.5:2.5]	WDI database, World Bank	+
	Rule of Law	rule_law	2002-2014	Index, [-2.5:2.5]	WDI database, World Bank	+
	Control of Corruption	control_corup	2002-2014	Index, [-2.5:2.5]	WDI database, World Bank	+

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Control variable	GDP per capita - EU15	GDP_pc_EU15	1999-2016	Constant, Previous year prices, EUR	Eurostat	+

Note: WDI, World Development Indicators; ECB. European Central Bank

Source: authors' representation

For measuring the effect of price factor competitiveness, we choose following variables: terms of trade, market share – marginal price competitiveness, relative exports price and consumer price index. Terms of trade (TT) present the value of a country's exports relative to that of its imports. It is calculated by dividing export deflator by the import deflator, then multiplying the result by 100 (ECB, various years). The expected sign is unclear and should be empirically tested. It depends on net impact of exports and imports prices.
Variable Market Share – Marginal Price Competitiveness (MS_MPC) measures component of market share annual growth rate due to the expansion in conquered markets, in particular the contribution of price and costs factors represents the impact of changes in country's export prices relative to prices of competitors (exporting the same product) (UN Comtrade, various years). The expected sign is positive showing that market share growth is the result of cost and price competitiveness resulting in a higher level of competitiveness of the national economy.

The expected sign is negative for variables Relative export prices (RXP) and Consumer price index (CPI). They both measure price competitiveness so the decrease in RXP or CPI implies a higher level of competitiveness of the national economy. Relative export prices are the price of exports of the country of interest relative to world exports. It is based on unit values. This indicator is calculated on a disaggregated level and then aggregated to total relative export prices using product weights adjusted by the elasticity of substitution, which allows evaluating precisely the price competitiveness. It takes into account individual characteristics of each commodity/product market and put more weight on markets with low monopoly power (UN Comtrade, various years).

For measuring the effect of non-price factor competitiveness, we include in model following variables: export sophistication good, relative exports price quality adjusted, regulator quality, government effectiveness and rule of law and control of corruption.
Export sophistication good (Soph_G) is index of the income level embedded in country's export: it is a weighted average of GDP per capita of countries that export a certain good, where the weights are given by how important each good is in the total export bundle of that country. The index shows the extent to which a country exports goods exported by rich countries (UN Comtrade, various years). The expected sign for this variable is positive because the higher the value of the index shows that the country exports good that also exports rich countries, i.e. it exports goods that are more sophisticated, require more knowledge and processing and are good with higher added value.

Relative exports price quality adjusted (RXPQA) captures changes in physical quality of export products and shifts in consumer taste in addition to changes in unit values. It uses the "euros per unit of utility" definition of price. The unobserved relative quality and taste are proxied by the combination of relative export prices and relative export quantities on a commodity/product level. Increase of RXP adjusted for quality and taste means loses in price and non-price competitiveness. By comparing RXP and RXP adjusted for quality and taste one can identify changes in non-price competitiveness (UN Comtrade, various years).
The expected signs for all the remaining non-price competitiveness variables (regulator quality, government effectiveness, rule of law and control of corruption) are positive because higher quality of public services causes the greater support of the non-tradeable sector of the economy to national competitiveness.
Regulator quality (reg_qual) measures the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. From expert assessment it shows how prevalent are unfair competitive practices and from surveys of firms and individuals it shows is it easy to start a business (WB, various years).

ISBN: 978-605-307-788-6

Government effectiveness (govt_effect) measures the quality of public services, the quality of the civil service and its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to its stated policies. The indicator is an index combining up to 15 different assessments and surveys, depending on availability, each of which receives a different weight, depending on its estimated precision and country coverage (WB, various years).
Rule of law (rule_law) measures the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence. From expert assessment it shows is the judicial process swift and fair and from surveys of firms and individuals it shows if the judiciary is independent from political interference (WB, various years).

Control of corruption (control_corup) measures the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. From expert assessment it shows to what extent do politicians engage in corruption and nepotism and from surveys of firms and individuals it shows for what percentage of sales are "unofficial payments" typically account (WB, various years).
Using the data described above, we are estimating the following relationship:

$$GDP\_PE_{i,t} = \beta_0 + \beta_1 * GDP\_PE_{i,t-1} + \beta_2 * GDP\_pc\_EU15_{i,t} + \beta_3 * PCF_{i,t} + \beta_4 * NPCF_{i,t} + \varepsilon_{i,t} \quad (3)$$
$$i = 1,\ldots,N$$
$$t = 1,\ldots,T$$

for the different set of price and non-price competitiveness factors. Different specifications of estimated equation are organized in four models depending on which price competitiveness factor is applied. Each model contains 6 equations which differ depending on choice of non-price competitiveness factor. Specifications of models are available in Appendix I. In order to estimate equations, we employ linear dynamic panel model based on one step GMM estimator (Arellano-Bond) proposed by Arellano and Bond (1991).

In analyzing the competitiveness of national economies for new EU member states, especially when it comes to non-price factors of competitiveness, it should be emphasized that the data available is mostly annual and covers a short period of time. Hence, availability and quality of data therefore require the use of panel analysis. In panel analysis it is preferable that the spatial component (N) dominates over time component (T), but it is also desirable to find a similar set of countries. In this analysis, this set refers to the new EU member states (all except Cyprus and Malta). Due to the fact that economic variables often depend on their previous values, the panel model estimator must also be adapted. In this case it is necessary to use a dynamic panel model and the choice fell on a dynamic panel model that works well in a sample with a small spatial dimension. According to the Judson and Owen (1999) and Buddelmeyer, Jensen, Oğuzoğlu and Webster (2008) the best choice in this case is the LSDVC estimator (bias-corrected least-squares dummy variable estimator). However, it functions well if the independent variable are strictly exogenous, which is not the case in this analysis. Therefore, it was more appropriate to choose Arellano - Bond estimators in one step. However, it should be taken into account that it is desirable that the narrow spatial dimension is compensated with extended time dimension, which was not possible in this analysis. Bearing in mind these limitations of research, in the next chapter are given the empirical results of the research.

3. Empirical results

Estimates for model 1 are presented in Table 2. The results confirmed the significance of all non-price competitiveness factors, besides for variable RXPQA. In addition, all of significant non-price competitiveness factors confirmed the expected sign. The price competitiveness factor TT is significant only in Equation 1 with negative sign. This implies that prices of imports reacted more compared to prices of exports due to present economic conditions.
The results obtained from model 1 confirm papers' hypothesis that the role of non-price competitiveness factors is more important compared to price competitiveness factors in the new EU member states.
Table 2. The results of model 1

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	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6
L.GDP_PE	0.67	0.67	0.66	0.69	0.65	0.68
	(0.03)***	(0.04)***	(0.04)***	(0.03)***	(0.04)***	(0.03)***
GDP_pc_EU15	0.42935	0.70584	0.66888	0.60360	0.61291	0.64736
	(0.11682)***	(0.10075)***	(0.09341)***	(0.09248)***	(0.09206)***	(0.09230)***
TT	-37.64	6.01	-31.31	-0.99	-14.16	-17.64
	(19.22)*	(16.39)	(20.78)	(17.54)	(18.57)	(18.20)
Soph_G	0.89					
	(0.22)***					
RXPQA		-10.07				
		(13.28)				
reg_qual			110.90			
			(40.26)***			
govt_effect				59.84		
				(34.12)*		
rule_law					81.06	
					(34.29)**	
control_corup						97.06
						(29.60)***
_cons	-3471.58	-2193.87	-6492.64	-4840.73	-3535.39	-6165.26
	(1923.99)*	(2604.76)	(2834.94)**	(3029.18)	(2300.26)	(2564.96)**
Sargan test	177.1	182.1	162.6	159.0	159.1	156.0
chi2	5,003.60	4,758.24	2,867.41	2,729.71	2,772.58	2,813.20
zrank	137.00	138.00	137.00	137.00	137.00	137.00

*Notes:*Significance at the 10% level; ** significance at the 5% level; ***significance at the 1% level.*

zrank – the number of instruments

Source: authors' calculation

Estimates for model 2 are presented in Table 3. The results support those given from previous model 1. Non-price competitiveness factors are all significant with confirmed expected sign, besides from variable RXPQA. The price competition factor MS_MPC is not significant in any of the estimated equations. The results obtained from model 2 also support the hypothesis of this paper.

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Table 3. The results of model 2

	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6
L.GDP_PE	0.68	0.71	0.65	0.67	0.64	0.65
	(0.03)***	(0.03)***	(0.04)***	(0.04)***	(0.04)***	(0.04)***
GDP_pc_EU15	0.46072	0.63508	0.71518	0.70905	0.68904	0.75628
	(0.10947)***	(0.10214)***	(0.10870)***	(0.10939)***	(0.10846)***	(0.10899)***
MS_MPC	-922.92	-506.52	-689.27	-864.09	-945.99	-781.23
	(791.10)	(808.80)	(869.37)	(877.64)	(876.58)	(863.14)
Soph_G	0.60					
	(0.18)***					
RXPQA		4.07				
		(12.89)				
reg_qual			74.09			
			(36.31)**			
govt_effect				92.09		
				(39.65)**		
rule_law					83.61	
					(34.17)**	
control_corup						104.72
						(29.66)***
_cons	-4800.45	-2831.87	-7764.46	-9337.45	-6490.63	-10228.74
	(1563.39)***	(2338.83)	(3151.59)**	(3476.47)***	(2427.20)***	(2811.36)***
Sargan test	184.9	183.2	159.7	157.7	158.0	155.2
chi2	4,925.60	4,532.23	2,464.82	2,420.42	2,435.10	2,504.78
zrank	140.00	141.00	128.00	128.00	128.00	128.00

*Notes:*Significance at the 10% level; ** significance at the 5% level; ***significance at the 1% level.*

zrank – the number of instruments

Source: authors' calculation

Estimates for model 3 are presented in Table 4. The results confirmed the significance of some non-price competitiveness factors: Soph_G, reg_qual and control_corup. The other non-price competitiveness factors are not significant. Nevertheless, all of them again confirmed the expected sign. The price competitiveness factor RXP is not significant in any of estimated equations in model 3. The results obtained from model 3 support papers' hypothesis.

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Table 4. The results of model 3

	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6
L.GDP_PE	0.66	0.66	0.62	0.64	0.62	0.63
	(0.03)***	(0.04)***	(0.04)***	(0.04)***	(0.04)***	(0.04)***
GDP_pc_EU15	0.47937	0.68714	0.78794	0.77781	0.76678	0.80883
	(0.11006)***	(0.10124)***	(0.10918)***	(0.11014)***	(0.10970)***	(0.10943)***
RXP	1.73	19.86	18.32	19.79	19.02	9.85
	(16.10)	(15.97)	(18.51)	(18.73)	(18.71)	(18.84)
Soph_G	0.72					
	(0.19)***					
RXPQA		-15.47				
		(13.04)				
reg_qual			73.62			
			(35.58)**			
govt_effect				65.02		
				(39.83)		
rule_law					53.51	
					(33.98)	
control_corup						88.12
						(30.61)***
_cons	-5946.18	-2626.69	-10091.23	-9800.22	-7466.33	-10410.72
	(2076.12)***	(2586.25)	(3609.95)***	(3935.04)**	(3035.30)**	(3180.68)***
Sargan test	183.2	183.4	156.9	154.0	154.8	152.8
chi2	5,053.29	4,712.07	2,502.64	2,435.92	2,444.97	2,509.31
zrank	138.00	139.00	126.00	126.00	126.00	126.00

*Notes:*Significance at the 10% level; ** significance at the 5% level; ***significance at the 1% level.*

zrank – the number of instruments

Source: authors' calculation

Estimates for model 4 are presented in Table 5. As in models 1 and 2, the results of model 4 also confirmed the significance of all non-price competitiveness factors, besides for variable RXPQA. All of significant non-price

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competitiveness factors confirmed the expected sign. The price competitiveness factor CPI is significant in five out of six equations with confirmed negative sign. This supports the relationship between internal devaluation and competitiveness in contemporary economies.
The results obtained from model 4 do not confirm papers' hypothesis that the role of non-price competitiveness factors is more important compared to price competitiveness factors in the new EU member states. Results support the role of price and non-price competitiveness.

Table 5. The results of model 4

	Equation 1	Equation 2	Equation 3	Equation 4	Equation 5	Equation 6
L.GDP_PE	0.72	0.71	0.74	0.76	0.72	0.74
	(0.04)***	(0.04)***	(0.04)***	(0.04)***	(0.05)***	(0.04)***
GDP_pc_EU15	0.49779	0.71662	0.68348	0.61090	0.62029	0.65255
	(0.11224)***	(0.10357)***	(0.09158)***	(0.09096)***	(0.08975)***	(0.08964)***
CPI	-36.60	-24.73	-42.69	-33.90	-31.38	-33.27
	(14.73)**	(15.34)	(15.98)***	(16.62)**	(16.50)*	(16.22)**
Soph_G	0.77					
	(0.20)***					
RXPQA		-19.19				
		(13.96)				
reg_qual			89.70			
			(31.74)***			
govt_effect				56.85		
				(33.39)*		
rule_law					68.10	
					(30.90)**	
control_corup						79.97
						(26.45)***
_cons	-6908.74	-1048.52	-8662.84	-5445.42	-4744.31	-7125.18
	(1752.14)***	(2318.30)	(2805.14)***	(2580.04)**	(1946.91)**	(2254.76)***
Sargan test	176.5	180.5	170.0	166.4	168.5	166.5
chi2	4,803.15	4,624.76	3,314.43	3,148.90	3,223.35	3,269.31
zrank	140.00	141.00	150.00	150.00	150.00	150.00

*Notes:*Significance at the 10% level; ** significance at the 5% level; ***significance at the 1% level.*

zrank – the number of instruments

Source: authors' calculation

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4. Conclusion

With respect to our stated hypothesis, we report a positive relationship between non-price factors of competitiveness and competitiveness.
Summary report of all the given results shows that the variable Soph_G is significant in all model specification at the 1% level, regardless to choice of price factor competitiveness variable in model specification. The sign and size of estimated coefficient does not vary in different specification which supports its' robustness. Results imply a positive role of the structure of exported goods in boosting the competitiveness. These results show the importance of exporting sophisticated goods with higher added value. Policy recommendation that steams from these results goes in direction of supporting smart specialization and innovation policies that improve the structure of exports.

The expected signs for non-price competitiveness variables: reg_qual, govt_effect, rule_law and control_corup are confirmed in every model specification and imply a positive role of the government in boosting competitiveness. These findings are especially important since most of the countries in our sample are stuck between second and third phase of competitiveness development (WEF, various years).[6] Thus they require an active role of the government to transform themselves into innovation driven economies. Additionally, all of these variables are significant in every model (reg_qual at the 1% and 5% level, govt_effect at 5% and 10% level, rule_law at 5% level and control_corup at 1% level), with exception of govt_effect and rule_law in model 3. These results imply, regardless of the size of the state in the economy and the resulting model of capitalism enacted[7], that the higher quality of public services will result in the greater support of the non-tradeable sector of the economy to, on average, increased overall competitiveness. In other words, in order to increase competitiveness of contemporary economies, these countries must strive to minimize the inefficiencies in the non-traded sector. Namely, its competitiveness has a huge impact on the competitiveness of the overall economy, which relies on the supply of a wide range of products and services.

When it comes to price competitiveness factors, they are mainly non-significant in different model specification, except TT in first equation of model 1 and CPI in all equations (besides second) in model 4. This suggests that "one suit fits all" policies are not optimal to post socialist EU member states.
In conclusion, based on the results obtained from estimations of models we can accept papers' hypothesis that the role of non-price competitiveness factors is more important compared to price competitiveness factors in the new EU member states. We especially highlight a positive and statistically significant effect for the governance in all of model specifications.

We call for researchers and policy makers alike to thoroughly analyse our findings. For the future research one could include additional measures of non-price factors of competitiveness (governance indicators, sub-indices of the existing competitiveness indexes and etc), as well as indicators of financial development and labour and final goods and services market efficiency. Also, one could apply different dynamic panel estimator together with different sample size.

[6] In Global Competitiveness Report for 2017-2018 Croatia, Hungary, Latvia, Lithuania, Poland, Romania and Slovakia are between 2nd and 3rd phase, while Bulgaria is in the 2nd phase (efficiency driven development). Only Slovenia, Czech Republic and Estonia have managed a transition to the 3rd phase of development that is based on innovations (WEF, 2017).
[7] Bohle and Greskovits (2012) clearly identify four different models of capitalism enacted in the former post-socialist countries of CEE and SEE countries. These are: neo-liberal Baltic countries, Višegrad group of countries that exhibit signs of "embedded" neoliberalism and neo-corporativist model (Slovenia) with weak state models (Croatia, Bulgaria and Romania).

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1 References

Amable, B. (2003). The Diversity of Modern Capitalism. New York: Oxford University Press.

Anderton R, Baltagi B. H., Skudelny F. & Sousa N. (2005). "Intra- and Extra-euro Area Import Demand for Manufactures". *ECB Working Paper No. 532*, pp 1-36.

Arellano, M. & Bond, S. (1991). "Some Tests of specification fror Panel Dana: Monte Carlo Evidence and Application to Employment Equations". *Review of Economic Studies*, 58(2), pp.277-297.

Baltagi, B. H. (2008). Econometric Analysis of Panel Data. West Sussex: JohnWiley&Sons.

Bayoumi T., Harmsen R. & Turunen J. (2011). "Euro Area Export Performance and Competitiveness". *IMF Working Paper* No. 11/140., pp 1-17.

Bobeica, E., Christodoulopoulou, S. & Tkačevs, O. (2016). "The role of price and cost competitiveness for intra- and extra-euro area trade of euro area countries". *ECB Working Papers No 1941*, pp 1-63.

Bohle, D. & Greskovits, B. (2012). Capitalist Diversity on Europe's Periphery. Cornell Studies in Political Economy. London: Cornell University Press

Bond, S. R. (2002). "Dynamic panel data models: a guide to micro data methods and practice". *Portuguese Economic Journal*, 1(2), pp. 141-162. doi: 10.1007/ s10258-002-0009-9

Buddelmeyer, H., Jensen, P., Oğuzoğlu, U. & Webster, E. (2008). "Fixed Effects Bias in Panel Data Estimators". *IZA Dicussion Paper*, No. 3487, pp. 1-7.

Delgado, M., Ketels, C., Porter, M. E. & Stern, S. (2012). "The Determinants of National Competitiveness". *NBER Working Paper* No. 18249, pp 1-48.

European Central Bank (various years). Statistical Data Warehouse. https://sdw.ecb.europa.eu/home.do. (Accessed on: September 11th, 2017).

Esteves, P. S. & Prades, E. (2016). "On domestic demand and export performance in the euro area countries: does export concentration matter?". *ECB Working Papers No 1941*, pp 1-16.

Eurostat (various years). Database. http://ec.europa.eu/eurostat/data/database. (Accessed on: September 5th, 2017).

Cerny, G.P. (1997). „Paradoxes of the competition state: the dynamics of political globalization". Government and opposition, 32 (2), 251–274.

Gabrisch, H. & Staehr, K. (2014). "Cost Competitiveness and External Capital Flows in the EU Countries". *ECB Working Paper No. 1650*, pp 1-34.

Gamberoni, E., Gartner, C., Giordano, C. & Lopez-Garcia, P. (2016). "Is corruption efficiency-enhancing? A case study of nine Central and Eastern European countries". *ECB Working Paper No. 1950*, pp 1-59.

Hatzichronoglou, T. (1996). "Globalisation and Competitiveness: Relevant Indicators". *OECD Science, Technology and Industry Working Papers*, No. 1996/05. http://dx.doi.org/10.1787/885511061376

ISBN: 978-605-307-788-6

Huemer, S., Scheubel, B. & Walch, F. (2013). „Measuring Institutional Competitiveness in Europe". *CESifo Economic Studies*, 59(3), pp 576–608.

IMD (variuos years). World Competitiveness Yearbook. Lausanne: IMD.

Judson, R. & Owen, A. (1999). "Estimating dynamic panel data models: a guide for macroeconomists". *Economic letters*, 65 (1), pp. 9-15.

Krugman, P. (1994). „Competitiveness: a dangerous obsession". *Foreign Affairs*, 73 (2), 28–44.

Lall, S. (2001). "Competitiveness indices and developing countries: an economic evaluation of the global competitiveness report". *World Development*, 29 (9), pp. 1501–1525.

Mačkić, V**.,** Škrabić Perić B. & Sorić, P. (2014). "Systemic competitiveness of post-socialist and capitalist economies: a broader look at the competitiveness debate". *Post-communist Economies* 26(4), pp. 477-497.

Porter, M.E. (1990). The competitive advantage of nations. London: MacMillan.

Reinert, E. (1995). "Competitiveness and its predecessors – a 500-year cross-national perspective". *Structural Change and Economic Dynamics*, 6, pp. 23-42.

Sapir, André (2006). "Globalization and the Reform of European Social Models", *Journal of Common Market Studies*, Vol. 44-2, 369–90.

Sinn, H.-W. (2003). The New Systems Competition, New York: Oxford University Press.

Staehr, K. & Vermeulen, R. (2016). "How competiveness shocks affect macroeconomic performance across euro area countries". *ECB Working Paper No. 1940*, pp 1-35.

United Nations (various years). UN Comtrade Database. https://comtrade.un.org/. (Accessed on: September 4th, 2017)

World Bank (various years). Worldwide Governance Indicators project. World Bank Development Research Group. http://info.worldbank.org/governance/wgi/#home. (Accessed on: September 9th, 2017)

World Economic Forum (various years).The Global Competitiveness Report. Geneva: WEF.

2 Appendices

I. Specification of models

Specification of model 1:

$$GDP\_PE_{i,t} = \beta_0 + \beta_1 * GDP\_PE_{i,t-1} + \beta_2 * GDP\_pc\_EU15_{i,t} + \beta_3 * TT_{i,t} + \beta_4 * \begin{pmatrix} Soph\_G_{i,t} \\ RXPQA_{i,t} \\ reg\_qual_{i,t} \\ govt\_effect_{i,t} \\ rule\_law_{i,t} \\ control\_corup_{i,t} \end{pmatrix} + \varepsilon_{i,t}$$

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Specification of model 2:

$$GDP\_PE_{i,t} = \beta_0 + \beta_1 * GDP\_PE_{i,t-1} + \beta_2 * GDP\_pc\_EU15_{i,t} + \beta_3 * MS\_MPC_{i,t} + \beta_4 * \begin{pmatrix} Soph\_G_{i,t} \\ RXPQA_{i,t} \\ reg\_qual_{i,t} \\ govt\_effect_{i,t} \\ rule\_law_{i,t} \\ control\_corup_{i,t} \end{pmatrix} + \varepsilon_{i,t}$$

Specification of model 3:

$$GDP\_PE_{i,t} = \beta_0 + \beta_1 * GDP\_PE_{i,t-1} + \beta_2 * GDP\_pc\_EU15_{i,t} + \beta_3 * RXP_{i,t} + \beta_4 * \begin{pmatrix} Soph\_G_{i,t} \\ RXPQA_{i,t} \\ reg\_qual_{i,t} \\ govt\_effect_{i,t} \\ rule\_law_{i,t} \\ control\_corup_{i,t} \end{pmatrix} + \varepsilon_{i,t}$$

Specification of model 4:

$$GDP\_PE_{i,t} = \beta_0 + \beta_1 * GDP\_PE_{i,t-1} + \beta_2 * GDP\_pc\_EU15_{i,t} + \beta_3 * CPI_{i,t} + \beta_4 * \begin{pmatrix} Soph\_G_{i,t} \\ RXPQA_{i,t} \\ reg\_qual_{i,t} \\ govt\_effect_{i,t} \\ rule\_law_{i,t} \\ control\_corup_{i,t} \end{pmatrix} + \varepsilon_{i,t}$$

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