THE INTERNATIONAL TRANSMISSION OF INFLATION IN CENTRAL AND EASTERN EUROPEAN COUNTRIES: CO-INTEGRATION ANALYSIS

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Abstract

Current globalised world is characterized by an increasing interdependence between integrating countries. Consequently, the inflation of the small open economies can become more vulnerable to foreign inflation impacts. Thus, the paper analyses the international transmission of inflation in tree groups of the central and eastern European countries defined according to their geographical location and trade territorial structure. The analysis is based on the estimation of Vector Error Correction Model (VECM), consequent variance decomposition and impulse response functions. It covers the period 1997 – 2010. Our results indicate the presence of the inflation transmission from the euro area countries to some countries of the particular group as well as between the countries within the group. Therefore the price level of some analysed European economies is significantly influenced by foreign price level and their domestic inflation responses to foreign inflation shocks.

Keywords**:** *international transmission of inflation, variance decomposition, impulse response functions, euro area, central and eastern European countries*

JEL: *E31, E37, F47*

1 INTRODUCTION

The inflation control belongs to the primary objective of many European central banks which have already adopted the inflation targeting as the basic strategy of their monetary policy. Therefore, monetary authorities should analyse inflation fluctuation and determine which factors influence the domestic inflation behaviour. Current world is characterised by an increasing interdependence between economies and an increasing process of integration. For that reason, small open economies can become more vulnerable to foreign inflation shocks, which can influence the domestic inflation in larger or smaller measure. Thus the question of the international transmission of

inflation is actual and quite important for monetary authorities. Furthermore the integration process in globalised world and an increasing foreign trade lead to the price convergence. The assumption of the price convergence between integrating economies leads to the intuition of the inflation transmission among them.

The international transmission of inflation was analysed from the 1980'. The most important researchers in this area were Darby and Lothian [5], who examined the inflation transmission and the American inflation impact in this period. Research performed in recent years neglects the role of the exchange rate regimes. This approach can be observed in several current papers. Yang, Guo and Wang [17] analysed the period 1973 – 2003. They showed that unexpected changes in American inflation have a large impact to inflation in other countries however they are not always a dominant factor. Moreover the inflation shocks in other analysed economies have a significant influence to the American inflation. According to their results, inflation shocks originating from G-7 countries explain approximately 12 % of the American inflation variability. Eun and Jeong [6] declare similar results. Consequently they mention that the domestic price level is not isolated from foreign inflation shocks even in floating exchange rate regime. The international transmission of inflation in the euro area (concretely in France, Germany, Italy, Netherlands and Spain) was analysed by Thams [16] who used the methods of the co-integration analysis. According to his results, the process of inflation transmission is confirmed in short-term and long-term period. Bataa et al. [2] analysed the international transmission of inflation in Europe during the period 1960 – 2006 taking into consideration fixed and floating exchange rate regimes. He used VAR models and examined international interactions between Canada, Great Britain, the euro area and the United Stated. In addition he analysed some countries of the euro area group such as Germany, France and Italy. His results confirm the existence of the international transmission of inflation in some time periods from the euro area to Canada, Great Britain and United States. The inflation transmission between France and Germany was observed too.

The ambition of this paper is to analyse the international transmission of inflation between the euro area on the one side and central and eastern European countries (V4 countries, Latvia, Lithuania, Estonia, Bulgaria, Romania) on the other side as well as between these countries mutually. These countries belong to small open economies, so that foreign inflation impact on domestic inflation can be expected. Moreover the objective is to show whether the inflation transmission is present only in countries with fixed exchange rate regime or also in conditions of the floating exchange rate regimes.

2 THE INFLATION TRANSMISSION: CO-INTEGRATION ANALYSIS

2.1 International transmission of inflation: theoretical point of view

From the theoretical point of view, the principle of the international transmission of inflation can be explained by simple monetary models of the open economy through which we can analyse the impact of foreign price level growth. Purchasing power

parity (PPP) validity is one of the model assumptions. [4] According to this model, the international transmission of inflation is apparent only in the case of fixed exchange rate regimes (see figure 1). It is obvious that an increasing foreign price level (from P_0* to P_1*) directly leads to the increase of domestic country's competitiveness. Provided that the purchasing power parity is valid, PPP line becomes steeper (see graph A, figure 1). Moreover, exchange rate ER_F is fixed at the same value and cannot change. An increasing competitiveness will consequently cause a rise in home country's export. Country's balance of payment surplus will increase (or balance of payment deficit will decrease) and thereafter foreign exchange reserves (FER) will increase too (see graph C, figure 1). In the new equilibrium (point B), domestic money supply will be bigger, aggregate demand will increase and domestic price level will rise to its PPP level. In other words, country with fixed exchange rate regime "imports" the foreign inflation and the international transmission of inflation is declared. [4]

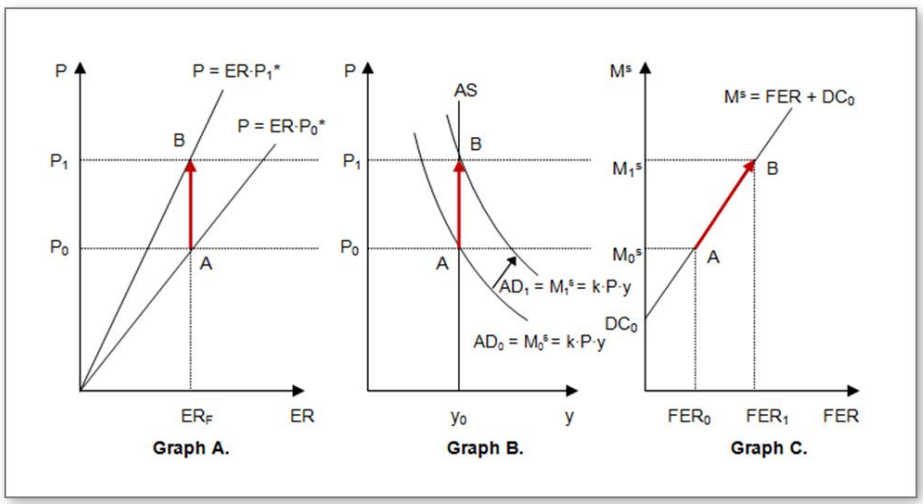


Figure 1: Foreign price level increase under fixed exchange rate regime
Source: Own editing according to [4]

In the monetary model with floating exchange rates, an increasing foreign price level is connected with steeper PPP line and moreover with the domestic currency appreciation from ER_0 to ER_1 (see graph A, figure 2). This fact can be explained by following. Foreign price level increase causes that domestic country becomes more competitive in foreign trades (providing not yet changed exchange rate ER_0). Domestic country's export consequently increases. Therefore foreign importers increase the demand for domestic currency. Higher demand for domestic currency leads to its appreciation (from ER_0 to ER_1). Under condition of the PPP validity, domestic price level does not change (see graph A, figure 2). In other words, domestic price level is determined exclusively by domestic monetary policy. From the theoretical point of view there is no international transmission of inflation under floating exchange rate

regime as floating exchange rates protect domestic inflation from foreign inflation shocks by domestic currency appreciation (graph A, figure 2). [4]

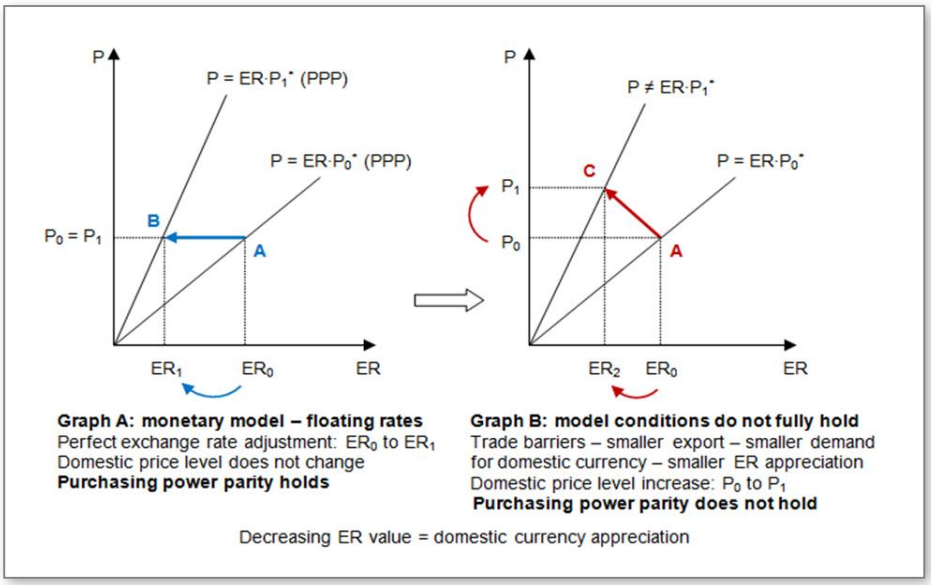


Figure 2: Foreign price level increase under floating exchange rate regime
Source: Own editing according to [4]

Cannot be the international transmission of inflation present also under floating exchange rate? The answer is yes. Described theoretical monetary model supposes that purchasing power parity holds in all times. But PPP validity is often limited by several factors such as trade barriers; goods in different countries are not perfect substitutes; transaction costs; existence of non-tradable goods and services; etc. [11], [12]

In recent years, PPP validity was tested by many authors, for instance A. Taylor and M. Taylor [15]. Econometric tests results show PPP validity in long-term period whereby PPP does not hold in short-term period. Barlow [1] used co-integration approach and tested PPP in transition European countries. His results do not confirm PPP validity between all tested countries. Purchasing power parity theory between the euro-area and new EU member countries was tested by Koukouritakis [10]. He showed that PPP relevance is confirmed only in four countries and PPP relation is contested for other European countries.

The international transmission of inflation can be observed also under floating exchange rate regimes. For example, we suppose the existence of trade barriers which causes that exchange rate does not adjust perfectly to different price development in two countries (see graph B, figure 2). An increasing foreign price level (from P_0* to P_1*) will lead to higher competitiveness of domestic goods in foreign markets. Therefore domestic country's export will increase. However, it will increase in smaller

measure as in graph A, because we suppose existence of trade barriers. Consequently, demand for domestic currency will rise but in smaller measure as in graph A. Domestic currency will thereby appreciate in smaller measure (from ER_0 to ER_2). Exchange rate does not adjust perfectly and domestic price level can rise as the response to foreign price level increase. Therefore, the international transmission of inflation is possible.

2.2 Analysed groups of countries and methodology

Our analysis covers central and eastern European countries which are divided into three independent groups according to their geographic proximity and foreign trade territorial structure, whereby each group involves also the euro area aggregate:

1. Poland, Czech Republic, Hungary and Slovakia
2. Lithuania, Latvia and Estonia
3. Romania, Hungary and Bulgaria

Geographic proximity, trade territorial structure and interdependence among countries within the group lead to the intuition of the international transmission of inflation between them. Euro area countries play very important role in trade of all analysed countries. Therefore the inflation transmission from the euro area can be expected too. Each group is analysed independently.

Our co-integration analysis is based on harmonized indices of consumer prices monthly data (HICP, 2005=100) during the period 01/1997 – 06/2010. Data are retrieved from EUROSTAT and seasonally adjusted by X12-ARIMA in EViews. Moreover, data are logarithmically transformed in order to stabilise the variance, eliminate the impact of extreme values and enable the interpretation of estimated regression coefficients in terms of elasticity.

Our methodology of co-integration analysis consists from:

- Descriptive statistics
- Correlation analysis: correlation matrix
- Tests of stationarity of the endogenous variables (unit root testing): Dickey Fuller GLS test and Elliott-Rothenberg-Stock Point Optimal test are used.
- Test of number of co-integration equations: Johansen Trace test and Johansen Max-Eigenvalue test are used.
- Vector Error Correction Model (VECM): Estimation of long-term and short-term equilibrium coefficients. In addition, model testing: autocorrelation tests and heteroskedasticity tests, lag exclusion test and AR root VAR stability test
- consequent analysis going out from the estimated VECM
    a. VEC Granger Causality test : causality analysis
    b. Variance decomposition
    c. Impulse response functions

All co-integration analysis of the international transmission of inflation is done in econometric software EViews 7.0.

2.3 International transmission of inflation: V4 countries

After descriptive statistics, correlation analysis and unit root testing, we performed Johansen Trace test which determined only one equilibrium co-integration equation. Akaike information criterion determined two lags.

Vector Error Correction Model (VECM) estimates long-term (ß) and short-term (α) coefficients in equilibrium equation. Estimated coefficients are given in Table 1. It should be pointed out that opposite signs of estimated long-term coefficient in euro area, Poland (positive signs) and Hungary, Czech Republic, Slovakia (negative signs) show the process of inflation transmission from dominant European economies to smaller ones.

Table 1: Estimated VECM in V4 countries

HICP in country:							
co-integration equation	**euro area**	**Poland**	**Hungary**	**Czech rep.**	**Slovakia**	**@TREND (97M01)**	**C**
long term coefficient ß	1.0000	0.222832	-0.062260	-0.378452	-0.113762	-0.000803	-2.995158
		[2.48646]	[-0.49803]	[-3.51966]	[-2.30817]	[-2.78628]	
error correction coefficient α	-0.0392	0.073888	0.088670	0.166236	-0.005029	-	-
	[-2.0621]	[2.29553]	[1.97995]	[4.29499]	[-0.06140]		

Sample: 01/1997 – 06/2010; t-value in [ ]; α - error correction vector, β - co-integration vector

Source: output from EViews

Variance decomposition of inflation

Variance decomposition of inflation gives more complex view on international transmission of inflation within the group of analysed countries, taking into consideration simultaneously short-term and long-term period. The variance decomposition provides information about the relative importance of each random innovation in affecting the variables in the VAR model. [9] In other words variance decomposition is a technique which allows decomposing relative impact of price shocks from previous period on actual inflation variability in each examined country. Variance decomposition of V4 inflation with lags 1, 3, 6, 12 and 24 months is given in Table 2.

From Table 2, we can see that with an increasing time period from 1 to 24 months, the impact of foreign inflation is rising. According to our results, inflation in V4 countries has very little impact on euro area inflation – only 8 % with lag 24 months. Hungarian inflation seems to be quite dependent on Polish inflation as the inflation in Poland explains from 27 % of Hungarian inflation variability (in 3-months horizon) to 42 % (in 24-month horizon). The Czech Republic seems to be the most vulnerable to foreign inflation impacts because foreign inflation explains almost 90 % of Czech inflation variability in 24 months horizon whereby euro area inflation explains 56 % of its variability. Slovakia is quite independent from foreign inflation impacts. It can be explained by the fact that National Bank of Slovakia has adopted inflation targeting and Slovakia became part of ERM II in 2005. [14]

Table 2: Variance decomposition of inflation in V4

Variance decomposition of inflation in the Euro Area

		inflation in countries:						
explained country	period (month)	**Euro Area**	**Poland**	**Hungary**	**Czech Rep.**	**Slovakia**	**foreign except EA**	**foreign countries**
Euro Area	1	100.000	0.000	0.000	0,000	0.000	0.000	0.000
	3	99.056	0.048	0.287	0.550	0.059	0.944	0.944
	6	97.214	0.057	1.207	1.444	0.077	2.786	2.786
	12	94.714	0.088	2.079	3.044	0.074	5.286	5.286
	24	91.875	0.203	2.884	4.984	0.054	8.125	8.125

Variance decomposition of inflation in Poland

		inflation in countries:						
explained country	period (month)	**Euro Area**	**Poland**	**Hungary**	**Czech Rep.**	**Slovakia**	**foreign except EA**	**foreign countries**
Poland	1	3.947	96.053	0.000	0.000	0.000	0.000	3.947
	3	6.003	89.363	0.125	0.118	4.391	4.634	10.637
	6	3.926	85.040	0.318	1.030	9.686	11.034	14.960
	12	3.106	80.830	0.280	3.307	12.476	16.064	19.170
	24	4.182	77.068	0.139	7.284	11.327	18.750	22.932

Variance decomposition of inflation in Hungary

		inflation in countries:						
explained country	period (month)	**Euro Area**	**Poland**	**Hungary**	**Czech Rep.**	**Slovakia**	**foreign except EA**	**foreign countries**
Hungary	1	2.542	21.641	75.817	0.000	0.000	21.641	24.183
	3	3.904	27.030	68.164	0.117	0.784	27.932	31.836
	6	4.582	34.818	58.672	0.120	1.808	36.747	41.328
	12	6.157	40.816	49.383	1.144	2.499	44.459	50.617
	24	9.273	42.110	42.816	3.945	1.855	47.910	57.184

Variance decomposition of inflation in the Czech Republic

		inflation in countries:						
explained country	period (month)	**Euro Area**	**Poland**	**Hungary**	**Czech Rep.**	**Slovakia**	**foreign except EA**	**foreign countries**
Czech Republic	1	11.026	7.659	1.686	79.629	0.000	9.345	20.371
	3	34.571	19.053	0.662	45.426	0.288	20.003	54.574
	6	44.632	25.832	0.358	28.986	0.192	26.382	71.014
	12	51.535	30.010	0.292	17.932	0.231	30.532	82.068
	24	59.464	29.332	0.144	10.086	0.974	30.450	89.914

Variance decomposition of inflation in Slovakia

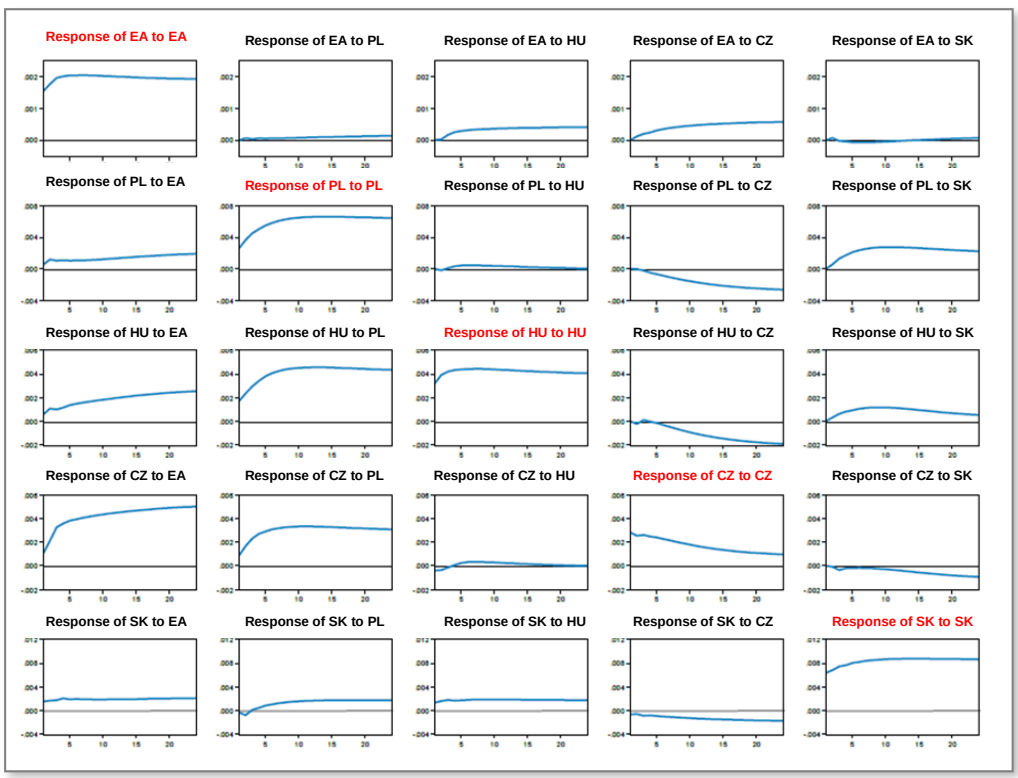
		inflation in countries:						
explained country	period (month)	**Euro Area**	**Poland**	**Hungary**	**Czech Rep.**	**Slovakia**	**foreign except EA**	**foreign countries**
Slovakia	1	5.030	0.282	3.873	0.997	89.819	5.152	10.181
	3	5.015	0.484	4.619	1.018	88.863	6.122	11.137
	6	5.182	0.706	4.335	1.145	88.631	6.186	11.369
	12	4.560	1.803	4.142	1.578	87.917	7.523	12.083
	24	4.498	2.636	3.839	2.375	86.652	8.850	13.348

Source: Output from EViews

Impulse response functions

In VAR models, a shock to the *i*-th variable not only directly affects the *i*-th variable but is also transmitted to all of the other endogenous variables through the dynamic (lag) structure of the VAR. An impulse response function traces the effect of a one-time shock to one of the innovations on current and future values of the endogenous variables. [9] This implies that impulse response functions allow us explaining how domestic price level responses to foreign price shocks.

Figure 3 illustrates impulse response function, in other words reaction of domestic inflation to foreign inflation shocks, all this mutually between countries. Impulse response functions confirm variance decomposition results. Euro area and Poland are independent from foreign shocks (see row 1 and 2 in Figure 3). On the other hand, response of Hungarian inflation to euro area and polish inflation is quite significant and increasing in time (see row 3). Czech Republic is dependent on euro area and Poland. This confirms the intuition of inflation transmission from large economies to smaller ones. Moreover Slovak inflation independence is confirmed (see row 5).



EA – HICP in euro area, PL – Poland, HU – Hungary, CZ – Czech Republic, SK - Slovakia

Figure 3: Impulse response functions in V4 countries
Source: Output from EViews

2.4 International transmission of inflation: Estonia, Latvia, Lithuania

Firstly we tried to estimate VECM for the euro area, Poland, Estonia, Latvia and Lithuania. In that case Johansen Trace Test and Max-Eigenvalue test determined not one but two co-integration equilibrium relations and furthermore long-term and short-term coefficients were not significant. Therefore we decided to analyse inflation transmission only within group Estonia, Latvia and Lithuania. Estimated coefficients are shown in Table 3. All coefficients are significant, so that long-term equilibrium relation exists and inflation transmission between countries is evident.

Table 3: Estimated VECM in Estonia, Latvia, Lithuania

	HICP in country:				
co-integration equation	**Estonia**	**Latvia**	**Lithuania**	**@TREND (97M01)**	**C**
long term coefficient ß	1.000000	7.929263	-5.187929	-0.024551	-14.79503
		[4.70474]	[-2.61576]	[-6.23230]	
error correction coefficient α	-0.002344	-0.002040	0.007223	-	-
	[-1.55158]	[-1.39868]	[4.77074]		

Sample: 01/1997 – 06/2010; t-value in [ ]; α - error correction vector, β - co-integration vector

Source: Output from EViews

Variance decomposition of inflation

Variance decomposition of inflation shows that inflation in Estonia is independent from Latvian and Lithuanian inflation. Their common impact is only 6 % in 24-month horizon. But Estonian inflation explains 34 % of inflation variability in Latvia. Furthermore inflation in foreign countries (Estonia, Latvia) explains almost 94 % of Lithuanian inflation variability in 24-month horizon (see Table 4).

Table 4: Variance decomposition of inflation in EE, LV, LT

Variance decomposition of inflation in Estonia

		inflation in countries:			
explained country	period (month)	**Estonia**	**Latvia**	**Lithuania**	**foreign countries**
Estonia	1	100.000	0.000	0.000	0.000
	3	99.194	0.070	0.737	0.806
	6	97.320	0.446	2.234	2.680
	12	95.476	1.787	2.737	4.524
	24	93.771	3.077	3.152	6.229

Variance decomposition of inflation in Latvia

		inflation in countries:			
explained country	period (month)	**Estonia**	**Latvia**	**Lithuania**	**foreign countries**
Latvia	1	9.282	90.718	0.000	9.282
	3	12.639	85.909	1.452	14.091
	6	20.096	79.345	0.559	20.655
	12	27.311	72.175	0.514	27.825
	24	33.610	65.465	0.924	34.535

Variance decomposition of inflation in Lithuania

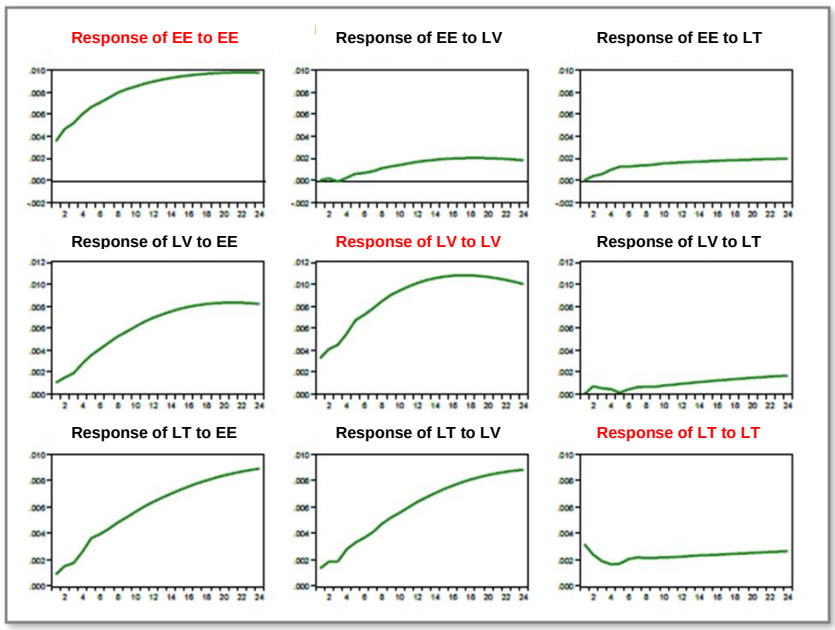
		inflation in countries:			
explained country	period (month)	**Estonia**	**Latvia**	**Lithuania**	**foreign countries**
Lithuania	1	6.365	14.206	79.428	20.572
	3	17.981	25.441	56.578	43.422
	6	37.327	36.550	26.123	73.877
	12	44.696	43.604	11.700	88.300
	24	46.927	46.876	6.196	93.804

Source: Output from EViews

Impulse response functions

Impulse response functions (see Figure 4) confirm independence of Estonian inflation within analysed group, as it does not response to Latvian and Lithuanian inflation in significant measure (see row 1, Figure 4).

On the other hand, inflation in Estonia influences inflation in Latvia and Lithuania (see column 1, Figure 4). Moreover Lithuanian inflation responses to price shocks originating from Latvia.



EE – HICP in Estonia, LV – Latvia, LT - Lithuania

Figure 4: Impulse response functions in Estonia, Latvia and Lithuania
Source: Output from EViews

2.5 International transmission of inflation: Romania, Hungary, Bulgaria

Third analysed group consists from aggregate euro area, Romania, Bulgaria and Hungary. Johansen Trace test and Johansen Max-Eigenvalue test indicated only one co-integration relation. Estimated VECM and significant long-term coefficients prove the existence of one equilibrium co-integration equation and possibility of the inflation transmission between them. Estimated long-term and short-term coefficients are given in Table 5.

Table 5: Estimated VECM in Romania, Hungary and Bulgaria

	HICP in country:					
co-integration equation	**Euro area**	**Romania**	**Hungary**	**Bulgaria**	**@TREND (97M01)**	**C**
long term coefficient ß	1.000000	0.097552	-0.276469	-0.300746	0.000912	-2.486232
		[3.04037]	[-4.41262]	[-8.86050]	[2.55689]	
error correction coefficient α	-0.026099	-0.435759	0.152908	0.385093	-	-
	[-0.63572]	[-5.90183]	[1.64349]	[3.06782]		

Sample: 01/2003 – 06/2010; t-value in [ ]; α - error correction vector, β - co-integration vector

Source: Output from EViews

Variance decomposition of inflation

According to variance decomposition (which takes into consideration long term + short term view), impact of foreign price shocks on domestic price level with lag 24 months is different. This impact is the smallest in Hungary (9.4%) and the biggest in Bulgaria (66%) - see Table 6.

Bulgarian inflation explains 15 % of Romanian inflation variance in 3-month horizon and 41 % of Romanian inflation variance in 24-month horizon (see Table 6). Secondly, euro area inflation explains 27 % of Bulgarian inflation variance in 3-month horizon and 48% of Bulgarian inflation variance in 24-month horizon (whereby Bulgaria has currency board towards euro and it confirms inflation transmission under fixed exchange rate regime). It appears from this that the foreign inflation impact is increasing in time.

However Hungary seems to be quite independent from foreign price shocks originating from the euro area, Romania and Bulgaria.

Table 6: Variance decomposition of inflation in RO, HU, BG

Variance decomposition of inflation in the Euro Area

		inflation in countries:					
explained country	period (month)	**Euro Area**	**Romania**	**Hungary**	**Bulgaria**	**foreign except EA**	**foreign countries**
Euro Area	1	100.000	0.000	0.000	0.000	0.000	0.000
	3	98.953	0.223	0.386	0.439	1.047	1.047
	6	86.016	2.693	0.198	11.093	13.984	13.984
	12	78.224	7.200	0.837	13.739	21.776	21.776
	24	77.856	7.669	0.790	13.685	22.144	22.144

Variance decomposition of inflation in Romania

		inflation in countries:					
explained country	period (month)	**Euro Area**	**Romania**	**Hungary**	**Bulgaria**	**foreign except EA**	**foreign countries**
Romania	1	3.341	96.659	0.000	0.000	0.000	3.341
	3	13.119	71.870	0.131	14.880	15.011	28.130
	6	12.222	58.714	4.233	24.831	29.064	41.286
	12	9.049	52.651	3.133	35.167	38.300	47.349
	24	4.402	52.641	1.843	41.115	42.958	47.359

Variance decomposition of inflation in Hungary

		inflation in countries:					
explained country	period (month)	**Euro Area**	**Romania**	**Hungary**	**Bulgaria**	**foreign except EA**	**foreign countries**
Hungary	1	0.476	0.399	99.124	0.000	0.399	0.876
	3	3.569	1.394	94.732	0.305	1.699	5.268
	6	3.981	9.737	85.183	1.099	10.836	14.817
	12	2.463	9.194	87.344	1.000	10.193	12.656
	24	1.309	6.259	90.624	1.808	8.067	9.376

Variance decomposition of inflation in Bulgaria

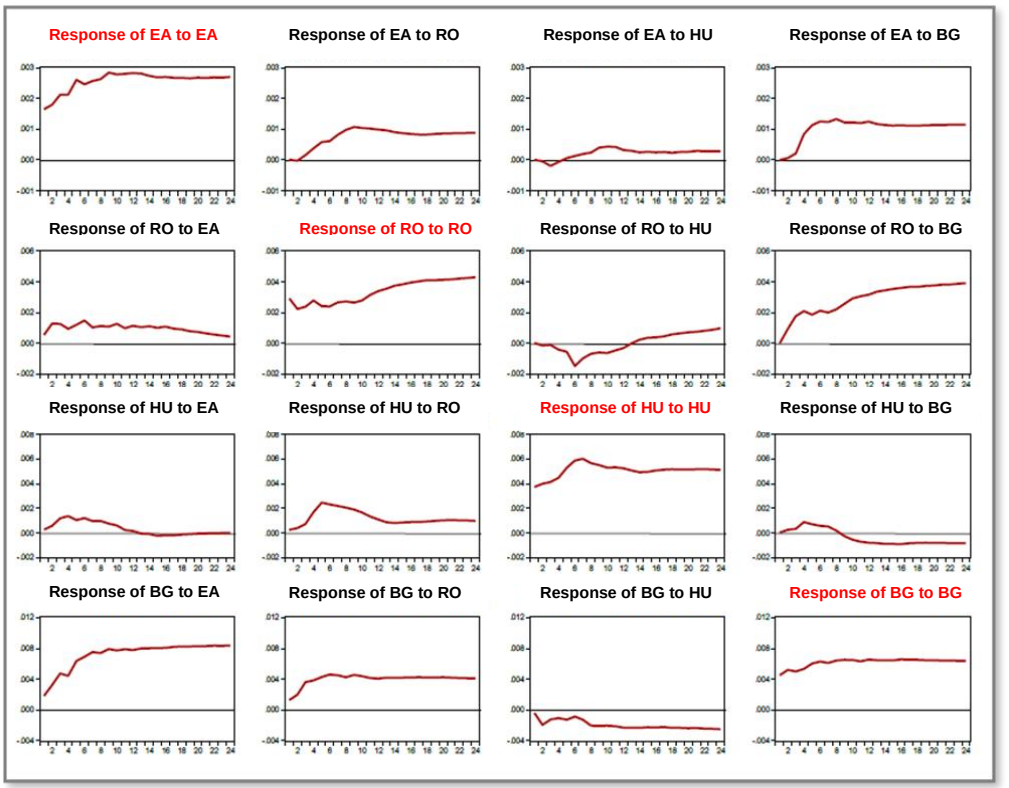
		inflation in countries:					
explained country	period (month)	**Euro Area**	**Romania**	**Hungary**	**Bulgaria**	**foreign except EA**	**foreign countries**
Bulgaria	1	12.907	6.412	0.626	80.056	7.038	19.944
	3	27.203	13.936	4.225	54.637	18.161	45.364
	6	35.711	18.071	2.268	43.950	20.339	56.050
	12	43.843	16.196	2.934	37.027	19.130	62.973
	24	47.970	14.503	3.677	33.850	18.180	66.150

Source: Output from EViews

Impulse response functions

Country's responses to foreign inflation impacts originating from other countries in this analysed group are illustrated in Figure 5. From there it is evident that the response to foreign inflation shocks originating from the euro area is the biggest in Bulgaria. Foreign inflation shock causes more rapid impulse response function increase from the beginning. Nevertheless this increase is damped later and impulse response function has almost horizontal trend approximately from 9th month. It can be explained by currency board exchange rate regime in Bulgaria from 1997.

Response to euro area inflation shocks is quite small in Romania and Hungary. Impulse response function is even decreasing. Furthermore, impulse response functions confirm that Hungary is independent from foreign inflation shocks. Romanian inflation responses to inflation shocks originating from Bulgaria (impulse response function is increasing), but does not response to inflation shocks originating from the euro area and Hungary.



EA – HICP in euro area, RO – Romania, HU – Hungary, BG - Bulgaria

Figure 5: Impulse response functions in Romania, Hungary and Bulgaria
Source: Output from EViews

3 CONCLUSION

The international transmission of inflation in Central and Eastern Europe was analysed using co-integration approach (VECM estimation), consequent variance decomposition of inflation and impulse response functions. The co-integration analysis implies that Czech Republic is the country which absorbs foreign inflation, whereby Czech inflation variance is primarily explained by inflation in the euro area and Poland. Moreover Polish inflation influences Hungarian one. Therefore our intuition of inflation transmission from large to small economies is proved. However Slovakia, which became part of ERM II, is relatively immunized against foreign inflation. The international transmission of inflation among similar economies such as Estonia, Latvia and Lithuania is confirmed too. Furthermore variance decomposition and impulse response functions proved that Bulgarian inflation is affected by the euro area inflation. In addition Bulgarian inflation explains quite big part of Romanian inflation variance. According to our results, international transmission of inflation does not

depend on exchange rate regime as it is confirmed in case of floating (Czech Republic) and also in case of fixed exchange rate regime (Bulgaria which has currency board regime and its currency is fixed to euro).Variance decomposition and increasing impulse response functions show that with an increasing time horizon (3 to 24 months) foreign inflation shocks impacts on domestic inflation is increasing. This implies that laggard domestic inflation responses to foreign inflation shocks are confirmed.

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