Food consumer inflation rate convergence in the European Union with special emphasis on the New Member States

Zoltán Bakucs

Institute of Economics – Centre for economic and regional Studies, Hungarian Academy of Science

Budapest Corvinus University

email: Zoltan.bakucs@krtk.mta.hu

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Introduction

Purpose: The comparative analysis of overall HCPI and food inflation rates' regional convergence between the European Monetary Union and New Member States (NMS) using both aggregated and disaggregated data from January 2000 until December 2013.

Motivation:

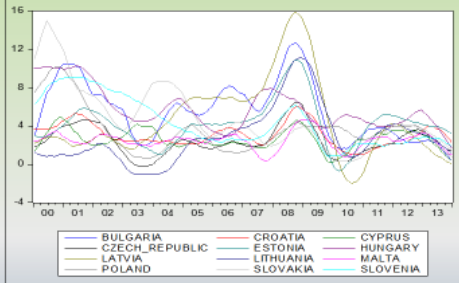
- although there exist now a wealth of empirical papers with respect to inflation convergence, NMS were somewhat neglected, more, research highlighted that many results suffer from inappropriate methodology and data aggregation problems.
- There are a number of theoretical and policy implications with respect to divergence of inflation rates in a monetary union. For NMS, (overall and food) inflation rate convergence is important on one hand because of the desire to meet Maastricht euro convergence criteria and on the other, from consumers' welfare point of view.
- The food basket expenditure as part of disposable income is still significantly higher for NMS consumers that those in 'old' EU member states.
- This poster aims to derive conclusions by employing a dataset that covers a politically, socially and none-the-less economically extremely interesting period: from before the EU accession, through the global financial crisis, price spike the adoption of Euro in some NMS, and finally the adherence of the newest NMS, Croatia.

Main conclusion:

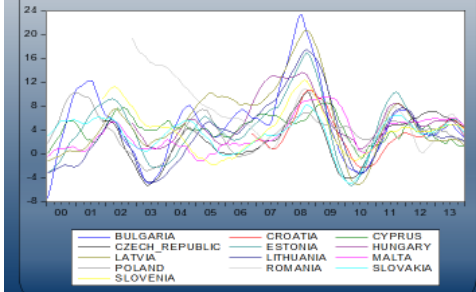
There is some evidence that after an initial, pre- and post EU accession convergence process, the financial crises together with the agricultural and food commodity price surge (price spike) did not halt, but diversified the convergence process of NMS.

Data

HCPI inflation rates for NMS



Food inflation rates for NMS



Methodology

Theoretical convergence:

$$\lim_{t\to\infty}(X_t - \vartheta Y_t) = \alpha$$

Empirical convergence tests: univariate and panel unit root (UR) tests.

Large number of UR tests with varying power and size properties.

UR tests in the presence of structural breaks

Descriptive statistics

	HCPI inflation rate			Food inflation rate		
	Mean	Max.	Rel. Std.Dev.	Mean	Max.	Rel. Std.Dev.
BG	5.6	12.6	53.5	5.1	23.4	114.4
CR	3	6	38.5	3.5	10.8	95.7
CY	2.6	4.9	39	4.2	8.6	47.1
CZ	2.4	6.5	61.9	2.4	10.4	157
EE	4.2	10.9	54.5	4.4	17	107.7
HU	5.8	10.3	37.1	5.8	13.7	64.5
LV	4.6	15.8	87.2	5.7	20.8	98.5
LT	2.8	11.1	100.7	3.6	17.5	148.7
MT	2.4	4.7	34.5	3.4	9.6	83.4
PL	3.5	10.2	65.2	3.7	10.3	78.5
RO	14.5	50.9	94.9	6.8	19.4	67.8
SK	4.8	15	68.8	3.2	8.3	86
SI	4.3	9.1	57.9	4.1	12.4	90.6
EUR17	2.1	3.5	28.2	2.2	5.9	72.7

Results 1.

HCPI inf. Rate differentials UR tests

Food inf. rate differentials UR tests

	ADF t-Stat[a]	ADF t-Stat[b]	DF-GLS t-Stat	ZA t-Stat	Break date	Perron t-Stat	Break date	ADF t-Stat[a]	ADF t-Stat[b]	DF-GLS t-Stat	ZA t-Stat	Break date	Perron t-Stat	Break date
DBG	-1.76*	-1.77	-2.02**	-4.28	Y5m8	-5.19*	Y5m7	-2.85***	**-3.46***	-1.69*	-3.30	Y9m9	-5.99***	Y9m9
DCR	-3.00***	**-3.84***	-2.04**	-4.99**	Y7m8	-4.34	Y7m7	-1.75*	-2.16	-2.2**	-3.51	Y12m7	-3.46	Y9m11
DCY	-2.15**	-2.41	-2.39**	-4.67	Y7m10	-2.70	Y7m9	-1.21	-1.68	-1.36	-3.46	Y3m2	-3.45	Y3m1
DCZ	-3.97***	-4.08***	-4.06***	-4.97**	Y7m10	-4.33	Y7m2	-1.82*	-1.84	-2.04	-3.96	Y8m11	-5.16*	Y8m9
DEE	-1.08	-1.60	-1.63*	-2.93	Y6m1	-2.91	Y5m12	-2.11**	**-3.19**	-1.38	-7.06***	Y8m10	-6.99***	Y8m8
DHU	-2.53***	**-2.81**	0.30	-4.09	Ym8	-3.91	Y6m7	-1.19	**-2.6***	-2.01**	-4.94**	Y6m7	-4.91	Y6m7
DLV	-1.30	-1.68	-1.54	-3.71	Y9m9	-7.12***	Y11m4	-1.41	-2.11	-1.36	-2.96	Y4m7	-5.80**	Y9m1
DLT	-3.11***	-3.27**	-3.16***	-4.85*	Y6m5	-3.32	Y5m10	-1.49	-1.7	-1.08	-3.13	Y5m10	-5.66	Y5m9
DMT	-2.03**	**-4.86***	-1.41	-5.69***	Y8m6	-3.46	Y8m9	-1.13	-1.63	-1.04	-2.51	Y8m8	-2.50	Y7m7
DPL	-4.46***	-4.44***	-0.57	-4.82*	Y8m7	-5.06*	Y8m6	-3.21***	**-3.69***	-3.64***	-5.50***	Y8m12	-3.17	Y4m5
DRO	-4.22***	-4.34***	-0.13	-3.55	Y8m8	-3.52	Y7m7	-2.12**	-1.94	0.26	-3.40	Y8m19	-3.82	Y5m7
DSL	-2.10**	-2.15	-0.07	-5.94***	Y10m11	-3.44	Y4m12	-2.47***	**-2.99**	-1.71*	-6.09***	Y7m2	-5.66**	Y10m2
DSI	-2.26**	-1.76	-0.12	-3.87	Y3m12	-2.96	Y3m2	-1.79*	-2.30	-1.20	-4.97**	Y7m2	-3.60	Y7m1

Source: own calculations, data from EUROSTAT. Note: ***,**,* denote 1, 5 and 10% significance respectively. [a] without intercept and trend, [b] with intercept. Y:year, m: month. Bold numbers in this column indicate significance of the intercept (at 1,5 or 10%).

H_0: convergence, H_1: divergence

Results 2.

- most structural breaks occurred during the crisis/price spike period.
- repeating the UR tests (Result 1.) on subsamples *200m1–2007m10* and *2007m10-2013m12* yields:
- crisis and surge of global commodity prices: very different impacts upon NMS
- countries that displays strong convergence irrespective of period and test statistic: Slovakia, Malta, Cyprus and the Czech Republic.
- When food inflation is considered, the overall picture is similar to HCPI inflation, however some countries converge in the second period and not in the first (Bulgaria, Lithuania), but some (Croatia, Romania and Latvia) not at all.

Panel UR tests of HCPI and food inf.

	HCPI					Food				
	NMS	CEFTA	Baltic	First8_CEE	NMS_euro	NMS	CEFTA	Baltic	First8_CEE	NMS_Euro
Null: Unit root (assumes common unit root process)										
LLC	0.58	0.02	0.95	0.32	0.96	0.89	0.78	0.91	0.92	0.94
Null: Unit root (assumes individual unit root process)										
IPS	0.00	0.00	0.17	0.00	0.01	0.00	0.00	0.00	0.00	0.00
ADF	0.00	0.00	0.30	0.00	0.03	0.00	0.00	0.00	0.00	0.00
PP	0.02	0.34	0.21	0.24	0.02	0.00	0.04	0.04	0.01	0.01

Common unit root process: convergence of CEFTA countries for overall inflation.
Individual processes: generally reject the null of UR and thus no-convergence.
Baltics group: none of the tests reveal convergence for HCPI, yet there is strong convergence when food inflation is considered.
in line with univariate results, that the rejection rate is higher for food inflation than HCPI inflation.

Conclusions

The **main conclusion** of this paper – although it might sound trivial – is that convergence, as it is rightly put, is a process, and thus continuously affected by national and global impacts, therefore in motion until Euro adoption is completed (or even after that, see the examples of some peripheral countries).

- Results reveal the sensitivity of results with respect to the testing framework.
- Overall, there is a convergence process for all NMS, for both HCPI and food inflation.
- However this is by far not uniform throughout countries or groups of countries.
- Further research will focus on the use of so called 'second generation' univariate and panel UR tests, that are expected to resolve some of the contradictory results obtained in this paper.
- The use of even more disaggregated data (sector specific, e.g. meats, dairy, cereals, fruit and vegetables) and the employment of covariates in test procedures (such as openness of economy, unemployment rate or real effective exchange rate) might help to emphasise the convergence process of NMS.

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