How Local is the Local Inflation Factor? Evidence from Emerging European Countries

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Motivation

- "In this era of hyperglobalisation, are central banks still masters of their domestic monetary destinies? Or have they become slaves to global factors?" (Carney, 2015)
- "....central banks are unable to fully control the trend in inflation – either because they lack the appropriate tools, or because inflation in any one economy is driven to a large extent by global factors outside their control." (Draghi, 2015)
- "...the key question is whether a central bank – especially in a small open economy like Switzerland – can still independently control inflation given ever-closer economic interrelations." (Jordan, 2015)

Literature Review

- U.S. evidence has accumulated against the traditional Phillips curve, with the 'missing disinflation' in the US following the 2008 Financial Crisis (Stock, 2011; Coibion and Gorodnichenko, 2015), and the recent low rates of inflation despite low rates of unemployment (Ball and Mazumder, 2019).
- Much of the research has focused on the U.S. and the developed countries of the OECD (Ciccarelli and Mojon, 2010; Neely and Rapach, 2011; Parker, 2018), with fewer studies of developing and emerging economies.
- Parker (2018) shows that global inflation matters for high-income countries.
- Jasova et al. (2019) find a diminished role for global inflation in determining emerging markets national inflation rates following the global financial crisis.
- Both Halka and Szafranek (2017) and Lovin (2020) offer a more positive assessment of the effects of global factors on emerging market economies.

Research questions

- Is the idea of the globalisation of inflation relevant for Emerging European markets as it is claimed for developed countries?
- What is an appropriate "global" inflation factor? PCA vs PLS?
- Do global inflation factors help to forecast domestic headline inflation rates?
- Do global inflation factors have predictive power once we have separately controlled for commodity (food and energy) prices?
- Do global inflation dynamics matter for predicting core inflation rates?
- Is there any further improvement in terms of forecast accuracy when we implement methods that allow sparsity and non-linearity?

What we did

- We directly address the relevance of the globalisation of inflation phenomenon for emerging market economies, by analysing a number of emerging European economies.
- We extract the underlying common factor that accounts for most of the variation across European emerging markets' headline inflation rates.
- We check whether the global inflation factor might simply be reflecting common shocks such as those related to commodity prices.
- We investigate whether our findings change when headline inflation is replaced with core inflation.
- We consider alternative methods of evaluating forecast performance, including looking at path forecasts and forecast informativeness.

What we found

- Global factors play an important role in determining European emerging market national headline inflation rates, in addition to the explanatory power provided by local, domestic factor.
- This finding is tempered somewhat when we forecast core inflation instead.
- For forecasting headline inflation rates, global inflation is found to have predictive power beyond the information carried by the commodity prices.
- A consideration of the specific target when constructing factors demonstrably yields better forecast performance in our sample.
- The accuracy gains from implementing time varying shrinkage and non-linear models increase with the forecast horizon.

Data

- A large set of macro-economic indicators on the central and eastern European countries: *Bulgaria, Czech Republic, Greece, Hungary, Poland, and Romania*
- The data-set includes both ‘hard indicators’ and survey data (construction, IP, energy usage, consumer confidence indices, EU expectation surveys and Market PMI survey). -> Bloomberg terminal.
- We employ a large dataset of disaggregated harmonized indices of consumer prices (HICP), up to product-level, for our sample of countries (meat, milk, package holidays, and dental services). -> Eurostat database.
- To construct a proxy for global inflation, we collect a large panel of headline consumer price indices for a set of 98 countries, including the 71 advanced countries, and 21 emerging markets. -> IMF database.
- Our complete monthly dataset covers the period January 2002 to January 2020: the starting date being determined by data availability.

Data

Table: Number of variables in each data group across countries

	Bulgaria	Czech R.	Greece	Hungary	Poland	Romania
Macroeconomic variables	84	70	68	65	74	82
Disaggareted price variables	79	89	81	80	89	80
Emerging markets headline CPI	71	71	71	71	71	71
Developed markets headline CPI	27	27	27	27	27	27

Constructing the local and global factors using Partial Least Squares (PLS)

- In much of the existing literature, a proxy for global inflation is constructed as a common factor of a group of country inflation rates, resulting from the application of principal component analysis (PCA) (Cicarelli and Mojon (2010), Mumtaz et al. (2011), Parker (2018)).
- Unlike those studies, we use partial least squares (PLS) to extract common factors, and calculate factors from our three separate datasets.
  1. country-specific macroeconomic indicators dataset - (LocalMACRO)
  2. country-specific dataset of disaggregated CPI indices - (LocalCPI)
  3. dataset of national inflation rates (includes all countries) - (GlobalCPI)
- Two additional competing measures of ‘global inflation’ are considered: EMCPI - constructed using only inflation rates of emerging countries, and the DMCPI - constructed using only inflation rates of developed countries.

Factor-augmented predictive regressions

- **Specification 1**: Local macro factor model
  $y_{t+h} = \mu + \mathcal{L}^p y_t + \beta' F_t^{LocalMACRO} + \varepsilon_{t+h}$
- **Specification 2**: Local inflation factor model
  $y_{t+h} = \mu + \mathcal{L}^p y_t + \beta' F_t^{LocalMACRO} + \vartheta' F_t^{LocalCPI} + \varepsilon_{t+h}$
- **Specification 3**: EM inflation factor model
  $y_{t+h} = \mu + \mathcal{L}^p y_t + \beta' F_t^{LocalMACRO} + \vartheta' F_t^{LocalCPI} + \theta' F_t^{EMCPI} + \varepsilon_{t+h}$
- **Specification 4**: DM inflation factor model
  $y_{t+h} = \mu + \mathcal{L}^p y_t + \beta' F_t^{LocalMACRO} + \vartheta' F_t^{LocalCPI} + \theta' F_t^{DMCPI} + \varepsilon_{t+h}$
- **Specification 5**: Augmented inflation factor model
  $y_{t+h} = \mu + \mathcal{L}^p y_t + \beta' F_t^{LocalMACRO} + \vartheta' F_t^{LocalCPI} + \theta' F_t^{EMCPI} + \delta' F_t^{DMCPI} + \varepsilon_{t+h}$
- **Specification 6**: Global inflation factor model
  $y_{t+h} = \mu + \mathcal{L}^p y_t + \beta' F_t^{LocalMACRO} + \vartheta' F_t^{LocalCPI} + \theta' F_t^{GlobalCPI} + \varepsilon_{t+h}$

Forecasting experiment

- We utilize a recursive window forecasting scheme to generate forecasts from the different specifications.
- All models are re-estimated at each step using the information available up to time t.
- We use exactly 50% of the sample period to assess out-of-sample forecasts, giving us 103-h observations.
- Forecast horizons are evaluated for h = 1, 2 3, 4, 5, 6, 9, 12 step-ahead forecasts
- We compare forecast accuracy using the mean squared forecast error (MSFE).

Time-varying shrinkage parameter and non-linear models

We also investigate the potential for time-varying parameter and non-linear models to improve on the linear factor models.

- Variational Bayes Dynamic Variable Selection (VBDVS) algorithm of Koop and Korobolis (2020)
- Least absolute shrinkage operator (LASSO)
- Elastic Net (ENET)
- Gaussian process regression (GPR)

Forecasting evaluation

- *Forecast accuracy: Multi horizon forecast comparison*

  We utilize the Diebold-Mariano (1995) test (DM), which compares model performances at each horizon separately.

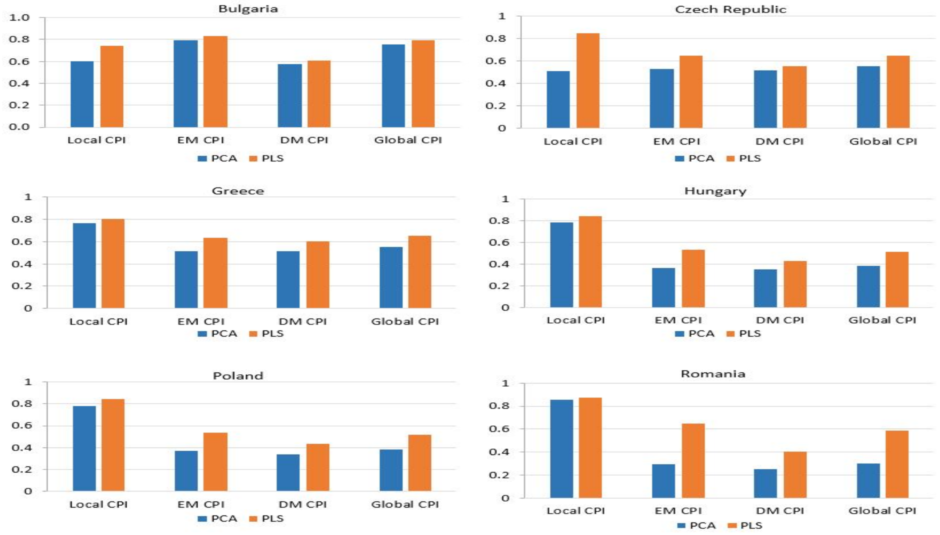
  Multi-horizon superior predictive ability (SPA) test of Quaedvlieg (2021) is implemented to compare the forecast path of different model specifications.

  - Uniform superior predictive ability test (uSPA)
  - Average superior predictive ability test (aSPA)

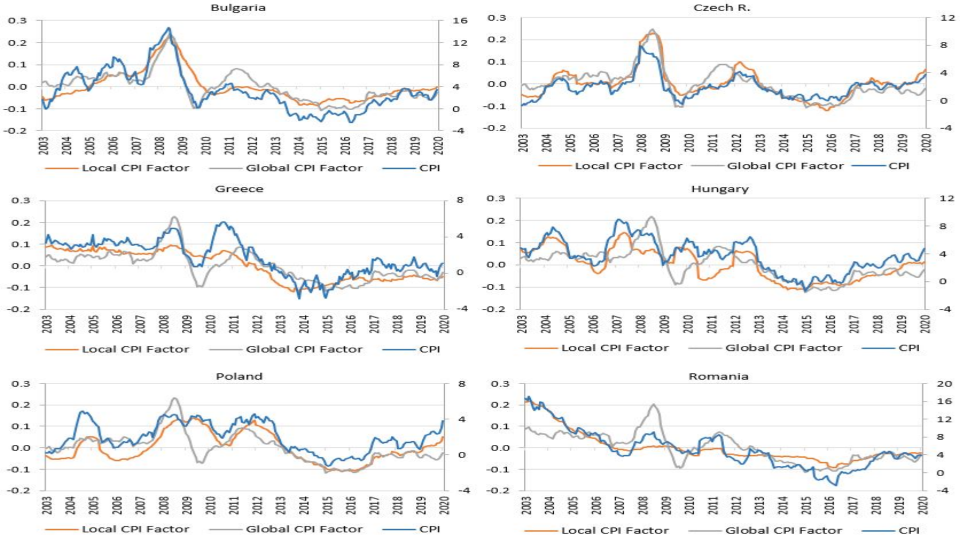
- *Encompassing test: Forecast informativeness*

  We test the null hypothesis that forecast becomes uninformative beyond some limiting forecast horizons h^* using the test of Breitung and Knüppel (2018).

Results: Share of inflation variance explained by the common factors



Co-movement of actual inflation rates with local and global CPI factor



Point forecast results - Factors are extracted using the PLS approach -1

BULGARIA	h=1	h=2	h=3	h=4	h=5	h=6	h=9	h=12
AR	0.439	0.801	1.082	1.375	1.674	1.974	2.949	3.906
Specification -1	1.141	1.048	0.963	0.826**	0.721***	0.633***	0.560***	0.497***
Specification -2	1.115	0.868***	0.737***	0.620***	0.578***	0.529***	**0.490*****	0.328***
Specification -3	1.009	0.866**	0.729***	0.589***	0.523***	0.506***	0.542**	**0.315*****
Specification -4	1.091	0.875***	0.754***	0.630***	0.594***	0.587***	0.562***	0.451***
Specification -5	1.054	0.944	0.836*	0.631***	0.549***	0.556***	0.624**	0.373***
Specification -6	**0.955**	**0.811*****	**0.690*****	**0.547*****	**0.495*****	**0.503*****	0.503***	0.347***
CZECH REPUBLIC								
AR	0.341	0.492	0.628	0.755	0.863	0.964	1.194	1.463
Specification -1	1.051	1.014	0.973	0.900	0.867	0.804*	0.780*	0.705*
Specification -2	1.035	0.939	0.874*	**0.796****	**0.693*****	**0.601*****	**0.487*****	**0.379*****
Specification -3	1.132	1.058	1.032	0.971	0.871*	0.744**	0.498***	0.430**
Specification -4	1.035	**0.938**	**0.825*****	0.814**	0.869	0.796	0.513***	0.446***
Specification -5	1.128	1.106	1.008	0.921	0.859*	0.736**	0.570***	0.505**
Specification -6	1.113	1.046	1.005	0.980	0.899	0.723***	0.530***	0.404***
GREECE								
AR	0.528	0.687	0.819	0.957	1.144	1.348	2.215	3.135
Specification -1	0.991	0.958	0.943	0.920	0.815	0.692*	0.423**	0.386**
Specification -2	0.908**	**0.807****	**0.759*****	0.721**	0.641**	0.556**	0.270**	0.187**
Specification -3	0.936*	0.869*	0.795***	0.721***	0.591***	**0.482****	0.275**	**0.155****
Specification -4	**0.894*****	0.817**	0.760***	**0.662*****	**0.575*****	0.490**	0.271**	0.188**
Specification -5	0.934**	0.912	0.826**	0.731***	0.645***	0.527**	0.265**	0.174**
Specification -6	0.912**	0.837**	0.789***	0.698***	0.574***	0.485**	**0.238****	0.174**

Point forecast results - Factors are extracted using the PLS approach -2

HUNGARY	h=1	h=2	h=3	h=4	h=5	h=6	h=9	h=12
AR	0.463	0.736	0.971	1.235	1.483	1.735	2.480	3.200
Specification -1	1.005	0.990	0.906	0.790	0.736*	0.670*	0.536*	0.481**
Specification -2	1.015	0.933	0.807*	0.740*	0.680*	0.643*	0.402**	0.297**
Specification -3	**0.935**	0.881*	0.814**	0.738**	0.700**	0.633**	0.334**	0.285**
Specification -4	1.025	0.938	0.805*	0.748*	0.715*	0.683*	0.441**	0.328**
Specification -5	1.006	1.007	0.864*	0.754**	0.680**	0.611***	0.395**	0.340**
Specification -6	0.981	**0.870**	**0.776****	**0.705****	**0.638****	**0.573****	**0.332****	**0.266****
POLAND								
AR	0.302	0.486	0.674	0.843	1.015	1.158	1.608	2.082
Specification -1	0.917**	0.894**	0.886**	0.853***	0.786***	0.728***	0.552***	0.525***
Specification -2	0.924	0.866**	0.802***	0.732***	0.659***	0.585***	0.367***	0.314***
Specification -3	0.892*	0.813***	0.751***	0.726***	0.656***	0.504***	0.312***	0.327***
Specification -4	**0.882***	0.854**	0.815**	0.790**	0.732***	0.648**	0.426***	0.366***
Specification -5	0.892*	0.867**	0.819***	0.822**	0.728***	0.534***	0.484***	0.358***
Specification -6	0.887*	**0.798*****	**0.730*****	**0.695*****	**0.614*****	**0.445*****	**0.295*****	**0.268*****
ROMANIA								
AR	0.625	0.935	1.218	1.398	1.565	1.694	2.158	2.687
Specification -1	1.079	1.127	1.103	1.083	1.025	0.987	0.880	0.833*
Specification -2	1.098	1.085	1.045	1.010	0.995	0.958	0.866	0.846
Specification -3	1.072	1.022	**0.928**	0.852*	0.784***	0.727***	0.550***	0.591***
Specification -4	1.141	1.208	1.116	1.051	0.978	0.904	0.719***	0.763**
Specification -5	1.119	1.111	0.986	0.904	0.800**	0.726***	0.624***	0.619***
Specification -6	1.146	1.094	0.953	**0.833****	**0.741*****	**0.710*****	**0.483*****	**0.538*****

Point forecast results - Factors are extracted using the PCA approach-1

BULGARIA	h=1	h=2	h=3	h=4	h=5	h=6	h=9	h=12
AR	0.439	0.801	1.082	1.375	1.674	1.974	2.949	3.906
Specification -1	1.021	1.019	1.044	1.069	1.094	1.107	1.145	1.135
Specification -2	1.140	1.141	1.173	1.196	1.223	1.209	1.036	**0.919**
Specification -3	1.108	1.110	1.126	1.166	1.203	1.220	1.072	1.008
Specification -4	1.132	1.162	1.224	1.252	1.322	1.358	1.151	1.036
Specification -5	1.067	1.020	1.094	1.078	1.158	1.206	1.094	1.080
Specification -6	1.143	1.159	1.179	1.210	1.276	1.337	1.125	0.954
CZECH REPUBLIC								
AR	0.341	0.492	0.628	0.755	0.863	0.964	1.194	1.463
Specification -1	**0.997**	**0.954**	**0.954**	**0.968**	**0.964**	**0.964**	1.123	1.285
Specification -2	1.067	1.062	1.066	1.092	1.122	1.172	1.482	1.573
Specification -3	1.101	1.056	1.055	1.053	1.186	1.330	1.463	1.453
Specification -4	1.117	1.191	1.278	1.438	1.562	1.612	1.593	1.536
Specification -5	1.158	1.233	1.369	1.401	1.451	1.368	1.435	1.322
Specification -6	1.138	1.106	1.097	1.093	1.169	1.259	1.391	1.350
GREECE								
AR	0.528	0.687	0.819	0.957	1.144	1.348	2.215	3.135
Specification -1	1.018	1.017	1.029	1.017	0.999	0.995	1.010	1.009
Specification -2	1.012	**0.996**	**0.977**	**0.951**	0.918	0.901	0.866	0.875
Specification -3	1.042	1.054	1.103	1.121	1.049	0.944	0.602*	0.578*
Specification -4	1.014	1.027	1.019	0.977	**0.885**	**0.865**	0.807	0.701*
Specification -5	1.072	1.147	1.154	1.186	1.133	1.029	0.637*	0.594*
Specification -6	1.064	1.112	1.185	1.226	1.116	0.962	**0.599***	**0.547***

Point forecast results - Factors are extracted using the PCA approach-2

HUNGARY	h=1	h=2	h=3	h=4	h=5	h=6	h=9	h=12
AR	0.463	0.736	0.971	1.235	1.483	1.735	2.480	3.200
Specification -1	1.038	1.049	1.057	1.042	1.053	1.071	1.054	1.049
Specification -2	1.068	1.068	1.075	1.031	1.030	1.043	1.029	1.083
Specification -3	1.077	1.049	1.124	1.113	1.180	1.202	0.963	0.796
Specification -4	1.099	1.079	1.069	1.010	**0.984**	**0.969**	0.907	0.823
Specification -5	1.064	1.055	1.079	1.043	1.108	1.158	0.894	0.765
Specification -6	1.046	1.010	1.034	**0.988**	1.005	1.005	**0.836**	**0.726**
POLAND								
AR	0.302	0.486	0.674	0.843	1.015	1.158	1.608	2.082
Specification -1	**0.917***	**0.877****	**0.858****	**0.862***	**0.851****	**0.853****	0.979	1.101
Specification -2	0.930**	0.906*	0.896	0.917	0.909	0.903	0.986	1.151
Specification -3	0.976	0.956	0.955	0.975	0.956	0.930	**0.779**	0.935
Specification -4	1.012	1.030	1.045	1.104	1.129	1.124	1.148	0.920
Specification -5	1.026	1.039	1.053	1.103	1.108	1.045	1.203	1.124
Specification -6	0.997	1.024	1.030	1.060	1.039	1.039	0.857	**0.908**
ROMANIA								
AR	0.625	0.935	1.218	1.398	1.565	1.694	2.158	2.687
Specification -1	1.015	1.023	1.030	1.053	1.105	1.145	1.221	1.287
Specification -2	1.056	1.119	1.152	1.219	1.294	1.350	1.502	1.632
Specification -3	1.054	1.204	1.331	1.478	1.601	1.732	1.825	1.825
Specification -4	1.116	1.243	1.248	1.359	1.406	1.463	1.560	1.798
Specification -5	1.068	1.217	1.301	1.419	1.471	1.552	1.630	1.679
Specification -6	1.064	1.198	1.279	1.425	1.551	1.691	1.830	1.964

Point forecast results - Commodity Prices Augmented

BULGARIA	h=1	h=2	h=3	h=4	h=5	h=6	h=9	h=12
AR	0.439	0.801	1.082	1.375	1.674	1.974	2.949	3.906
LocalMACRO + LocalCPI + Com.	1.038	0.839***	0.728***	0.607***	0.554***	0.523***	**0.495*****	0.360***
Specification − 6	**0.955*****	0.811***	0.690***	0.547***	0.495***	0.503***	0.503***	**0.347*****
LocalMACRO + LocalCPI + GlobalCPI + Com.	0.977	**0.806*****	**0.680*****	**0.539*****	**0.492*****	**0.494*****	0.518***	0.377***
CZECH REPUBLIC								
AR	0.341	0.492	0.628	0.755	0.863	0.964	1.194	1.463
LocalMACRO + LocalCPI + Com.	1.105	1.017	**0.952***	**0.861*****	**0.745*****	**0.626*****	**0.493*****	0.397***
Specification − 6	1.113	1.046	1.005	0.980	0.899	0.723***	0.530***	0.404***
LocalMACRO + LocalCPI + GlobalCPI + Com.	1.130	1.099	1.054	1.017	0.935	0.738**	0.537***	**0.378*****
GREECE								
AR	0.528	0.687	0.819	0.957	1.144	1.348	2.215	3.135
LocalMACRO + LocalCPI + Com.	0.916**	**0.820****	**0.772****	0.727**	0.645**	0.577**	0.276**	0.203**
Specification − 6	**0.912****	0.837**	0.789***	**0.698*****	**0.574*****	**0.485****	**0.238****	**0.174****
LocalMACRO + LocalCPI + GlobalCPI + Com.	0.929*	0.839**	0.795***	0.711***	0.599***	0.490**	0.260**	0.181**
HUNGARY								
AR	0.463	0.736	0.971	1.235	1.483	1.735	2.480	3.200
LocalMACRO + LocalCPI + Com.	1.018	0.949	0.822	0.775*	0.718*	0.673*	0.440**	0.296**
Specification − 6	**0.981**	**0.870**	**0.776****	**0.705****	**0.638****	**0.573****	**0.332****	**0.266****
LocalMACRO + LocalCPI + GlobalCPI + Com.	1.008	0.901	0.801**	0.722**	0.656**	0.582**	0.370**	0.267**
POLAND								
AR	0.302	0.486	0.674	0.843	1.015	1.158	1.608	2.082
LocalMACRO + LocalCPI + Com.	0.937	0.876**	0.802***	0.727***	0.648***	0.579***	0.362***	0.312***
Specification − 6	**0.887****	**0.798*****	0.730***	**0.695*****	**0.614*****	**0.445*****	0.295***	**0.268*****
LocalMACRO + LocalCPI + GlobalCPI + Com.	0.905*	0.806***	**0.727*****	0.696***	0.615***	0.454***	**0.294*****	0.269***
ROMANIA								
AR	0.625	0.935	1.218	1.398	1.565	1.694	2.158	2.687
LocalMACRO + LocalCPI + Com.	1.098	1.116	1.089	1.066	1.020	0.974	0.882	0.878
Specification − 6	1.146	1.094	**0.953**	**0.833*****	**0.741*****	**0.710*****	**0.483*****	**0.538*****
LocalMACRO + LocalCPI + GlobalCPI + Com.	1.157	1.143	1.015	0.898*	0.774***	0.743***	0.515***	0.559***

Multi-horizon forecast comparison results

	short horizon		all horizon		short horizon		all horizon	
	uSPA	aSPA	uSPA	aSPA	uSPA	aSPA	uSPA	aSPA
	BULGARIA				HUNGARY			
Spec.2 aganist Spec.1	-1.08	-0.69	-1.08	**1.60****	-0.90	0.24	-0.90	0.43
Spec.3 aganist Spec.2	**0.55***	**1.41****	**0.22***	**0.77***	-1.44	-1.04	-1.44	-0.78
Spec.4 aganist Spec.2	-1.08	-0.80	-3.55	-2.87	-0.09	**1.05***	-0.09	**1.64****
Spec.5 aganist Spec.4	-0.10	0.80	-0.10	**0.96***	-2.34	-1.87	-3.37	-1.87
Spec.6 aganist Spec.5	**0.73****	**0.93****	-0.10	**0.88***	0.14	**1.67****	-0.74	0.64
Spec.6 aganist Spec.2	0.34	**1.13****	-0.42	0.36	-1.60	-0.55	-1.60	0.27
	CZECH REPUBLIC				POLAND			
Spec.2 aganist Spec.1	-1.51	-1.20	-1.51	0.10	-0.68	**0.81***	-0.68	**2.90*****
Spec.3 aganist Spec.2	**1.84*****	**2.54*****	-1.38	0.49	**1.39*****	**1.69*****	-0.96	0.05
Spec.4 aganist Spec.2	**0.68****	**1.02***	-2.39	-1.08	**0.43****	**0.73***	-0.29	**1.67****
Spec.5 aganist Spec.4	-0.38	0.49	-1.31	0.57	-1.26	-0.03	-2.19	-1.52
Spec.6 aganist Spec.5	-0.04	0.26	-3.02	0.57	**0.81*****	**1.40****	-0.93	0.37
Spec.6 aganist Spec.2	**1.05*****	**1.65****	-2.70	-0.41	**1.37*****	**1.73****	-1.10	-0.02
	GREECE				ROMANIA			
Spec.2 aganist Spec.1	-1.38	-0.98	-1.38	**1.12****	-1.94	-1.60	-1.94	-1.46
Spec.3 aganist Spec.2	**0.60****	**1.02***	-3.88	-1.99	**2.54*****	**3.04*****	**0.51*****	**3.07*****
Spec.4 aganist Spec.2	-2.03	-1.82	-3.01	-2.74	**1.27*****	**1.56****	-2.84	0.66
Spec.5 aganist Spec.4	**0.55***	**0.76***	-2.49	-0.52	**2.38*****	**2.85*****	-0.28	**2.97*****
Spec.6 aganist Spec.5	**1.44*****	**2.01****	**0.06***	**1.97*****	-1.73	-0.89	-1.73	0.19
Spec.6 aganist Spec.2	0.09	**1.63****	-2.08	-1.13	**1.79*****	**3.09*****	-0.26	**3.41*****

Point forecast results - Core inflation rates- 1

BULGARIA	h=1	h=2	h=3	h=4	h=5	h=6	h=9	h=12
AR	0.311	0.498	0.639	0.770	0.874	1.016	1.490	2.110
Specification -1	1.042	0.976	0.916	0.861**	0.814***	0.735***	0.527***	0.377***
Specification -2	1.013	**0.888***	0.820**	0.731***	0.697***	0.640***	0.476***	0.341***
Specification -3	1.052	0.906	**0.786*****	**0.694*****	0.660***	0.600***	0.403***	0.369***
Specification -4	1.045	0.944	0.882	0.807***	0.791***	0.694***	0.504***	0.404***
Specification -5	1.091	0.962	0.862***	0.771***	0.749***	0.662***	0.488***	0.532***
Specification -6	1.060	0.982	0.873	0.734**	**0.647*****	**0.578*****	**0.403*****	**0.322*****
CZECH REPUBLIC								
AR	0.219	0.330	0.404	0.468	0.517	0.562	0.644	0.729
Specification -1	1.349	1.377	1.169	1.010	0.887	0.799**	0.735**	0.686**
Specification -2	1.088	1.075	1.027	0.942	0.834**	**0.708*****	**0.534*****	0.427***
Specification -3	1.186	1.205	1.123	1.118	1.049	0.928	0.647***	0.438***
Specification -4	1.171	1.127	**0.951**	**0.828****	**0.759*****	0.784***	0.673**	0.502***
Specification -5	1.237	1.279	1.174	1.216	1.158	0.979	0.746**	0.638***
Specification -6	1.189	1.254	1.153	1.126	0.980	0.888	0.653***	**0.385*****
GREECE								
AR	0.596	0.726	0.821	0.850	0.977	1.066	1.680	2.187
Specification -1	0.855**	0.764**	0.699**	0.710**	0.652***	0.547***	0.355***	0.255***
Specification -2	**0.730*****	**0.595*****	**0.521*****	0.559***	**0.533*****	**0.484*****	0.324***	0.223***
Specification -3	0.761***	0.648**	0.558***	0.580***	0.594***	0.510***	0.340***	0.210***
Specification -4	0.732**	0.619**	0.555***	**0.553*****	0.567***	0.512***	0.325***	0.225***
Specification -5	0.780***	0.670**	0.579***	0.602***	0.677***	0.568***	0.327***	0.222***
Specification -6	0.761***	0.631**	0.550***	0.582***	0.659***	0.514***	**0.308*****	**0.209*****

Point forecast results - Core inflation rates- 2

HUNGARY	h=1	h=2	h=3	h=4	h=5	h=6	h=9	h=12
AR	0.275	0.414	0.505	0.618	0.722	0.819	1.205	1.569
Specification -1	1.084	1.137	1.064	0.970	0.915	0.918	0.637***	0.545***
Specification -2	1.190	1.088	0.898	0.761*	0.774*	0.750*	0.453***	0.407***
Specification -3	1.091	0.999	0.886	0.835	0.793	0.712**	0.451***	**0.336*****
Specification -4	1.170	1.027	0.840	**0.729****	0.814	0.744*	0.531***	0.500***
Specification -5	1.071	**0.971**	**0.837***	0.775**	0.807	0.739**	0.491***	0.470***
Specification -6	1.113	0.977	0.842	0.767*	**0.722****	**0.681****	**0.448*****	0.371***
POLAND								
AR	0.242	0.355	0.445	0.533	0.625	0.696	0.903	1.083
Specification -1	1.022	0.929	0.859***	0.805***	0.739***	0.681***	0.561***	0.499***
Specification -2	0.989	0.865**	0.737***	**0.623*****	**0.559*****	**0.536*****	**0.361*****	**0.379*****
Specification -3	0.993	0.885	0.741***	0.655***	0.585***	0.539***	0.488***	0.422***
Specification -4	**0.966**	**0.855****	0.744***	0.691***	0.666***	0.655***	0.384***	0.454***
Specification -5	1.000	0.922	0.784***	0.722***	0.670***	0.624***	0.481***	0.426***
Specification -6	1.000	0.868*	**0.717*****	0.629***	0.577***	0.552***	0.454***	0.390***
ROMANIA								
AR	0.297	0.405	0.515	0.619	0.716	0.801	1.032	1.282
Specification -1	1.106	1.330	1.386	1.410	1.366	1.285	1.039	0.825*
Specification -2	1.166	1.157	1.072	0.986	0.910	0.796*	0.667***	0.588***
Specification -3	1.179	1.195	1.049	0.843*	0.798*	0.773*	0.646***	0.451***
Specification -4	1.271	1.293	1.117	0.978	0.869	0.717**	0.697***	0.644***
Specification -5	1.208	1.226	**0.966**	0.831*	0.782**	0.756**	0.639***	0.440***
Specification -6	1.227	1.230	1.053	**0.830****	**0.775****	**0.716****	**0.605*****	**0.423*****

Maximum forecast horizons in months determined by informativeness test

	Bulgaria	Czech	Greece	Hungary	Poland	Romania
AR	6	9	6	6	6	9
Specification -1	12	12	12	12	12	9
Specification -2	12	12	12	12	12	9
Specification -3	12	12	12	12	12	12
Specification -4	12	12	12	12	12	12
Specification -5	12	12	12	12	12	12
Specification -6	12	12	12	12	12	12

MSFEs based on the use of shrinkage and non-linear methods - 1

BULGARIA	h=1	h=2	h=3	h=4	h=5	h=6	h=9	h=12
AR	0.439	0.801	1.082	1.375	1.674	1.974	2.949	3.906
MSFE Best w/o shrinkage	**0.955**	**0.811*****	**0.690*****	0.547***	0.495***	0.503***	0.490***	**0.315*****
GPR	0.981	0.851***	0.708***	**0.542*****	**0.492*****	**0.502*****	**0.469*****	0.360***
VBDVS	1.058	0.936*	0.835**	0.735**	0.669**	0.640**	0.500**	0.536**
ENET	0.987	0.814***	0.703***	0.566***	0.525***	0.534***	0.496**	0.401***
LASSO	0.976	0.817***	0.699***	0.567***	0.523***	0.531***	0.497**	0.404***
CZECH REPUBLIC								
AR	0.341	0.492	0.628	0.755	0.863	0.964	1.194	1.463
MSFE Best w/o shrinkage	1.035	0.938	0.825***	0.796**	0.693***	0.601***	0.487***	0.379***
GPR	1.019	1.004	0.851**	**0.756****	**0.644*****	**0.563*****	0.460***	**0.370*****
VBDVS	**0.987**	1.008	0.969	0.930	0.890	0.865	0.754*	0.702*
ENET	1.009	**0.925**	**0.817*****	0.799**	0.687***	0.600***	0.462***	0.413***
LASSO	1.013	0.931	0.831***	0.798**	0.695***	0.604***	**0.459*****	0.413***
GREECE								
AR	0.528	0.687	0.819	0.957	1.144	1.348	2.215	3.135
MSFE Best w/o shrinkage	0.894***	0.807**	**0.759*****	**0.662*****	0.575***	**0.482****	**0.238****	**0.155****
GPR	0.896***	**0.801****	0.763***	0.677***	**0.572*****	0.508**	0.248**	0.158**
VBDVS	0.991	0.852***	0.913**	0.814*	0.688**	0.673**	0.488**	0.430**
ENET	**0.894*****	0.818***	0.773***	0.682***	0.613***	0.518**	0.253**	0.158**
LASSO	0.899***	0.816***	0.772***	0.679***	0.605***	0.509**	0.248**	0.156**

MSFEs based on the use of shrinkage and non-linear methods - 2

HUNGARY	h=1	h=2	h=3	h=4	h=5	h=6	h=9	h=12
AR	0.463	0.736	0.971	1.235	1.483	1.735	2.480	3.200
MSFE Best w/o shrinkage	0.935	**0.870**	**0.776****	0.705**	0.638**	**0.573****	0.332**	**0.266****
GPR	**0.934**	0.880*	0.793**	**0.701****	**0.638****	0.584**	**0.307****	0.275**
VBDVS	1.098	0.962	0.975	0.863	0.826	0.770*	0.564**	0.478**
ENET	0.957	0.884	0.799**	0.722**	0.663**	0.604**	0.350**	0.284**
LASSO	0.950	0.893	0.800**	0.721**	0.664**	0.606**	0.354**	0.285**
POLAND								
AR	0.302	0.486	0.674	0.843	1.015	1.158	1.608	2.082
MSFE Best w/o shrinkage	0.882*	0.798***	0.730***	**0.695*****	0.614***	**0.445*****	0.295***	**0.268*****
GPR	**0.882***	0.877**	0.774***	0.726***	0.624***	0.475***	**0.263*****	0.299***
VBDVS	1.024	0.936	0.933	0.822***	0.849*	0.799**	0.716**	0.543**
ENET	0.890*	**0.791*****	0.738***	0.715***	**0.610*****	0.462***	0.316***	0.322***
LASSO	0.890*	0.809***	**0.724*****	0.718***	0.611***	0.470***	0.313***	0.323***
ROMANIA								
AR	0.625	0.935	1.218	1.398	1.565	1.694	2.158	2.687
MSFE Best w/o shrinkage	1.072	1.022	**0.928**	0.833**	0.741***	0.710***	**0.483*****	**0.538*****
GPR	1.072	**0.997**	0.940	**0.831****	**0.716*****	**0.655*****	0.530***	0.648***
VBDVS	1.060	1.005	0.947*	0.930	0.873**	0.967	0.824	0.939
ENET	1.080	1.033	0.941	0.839***	0.757***	0.737***	0.552***	0.598***
LASSO	1.089	1.045	0.939	0.844***	0.742***	0.735***	0.551***	0.594***

Conclusion

- We find that a global inflation factor accounts for more than a half of the variance in the national inflation rates.
- We show that forecasting models of national headline inflation rates that include global inflation factors generally produce more accurate forecasts.
- While global factors still play an important role in determining the core inflation rates, local factors are now found to play a more prominent role than they did for headline inflation.
- Our results are qualitatively unaffected by allowing for sparsity and non-linearity in the factor forecasting models.
- Our findings demonstrate that central banks should consider a multitude of domestic and global factors when formulating monetary policy responses.