COMBINING MONETARY, FISCAL AND STRUCTRAL APPROACHES TO MODEL ALBANIAN INFLATION

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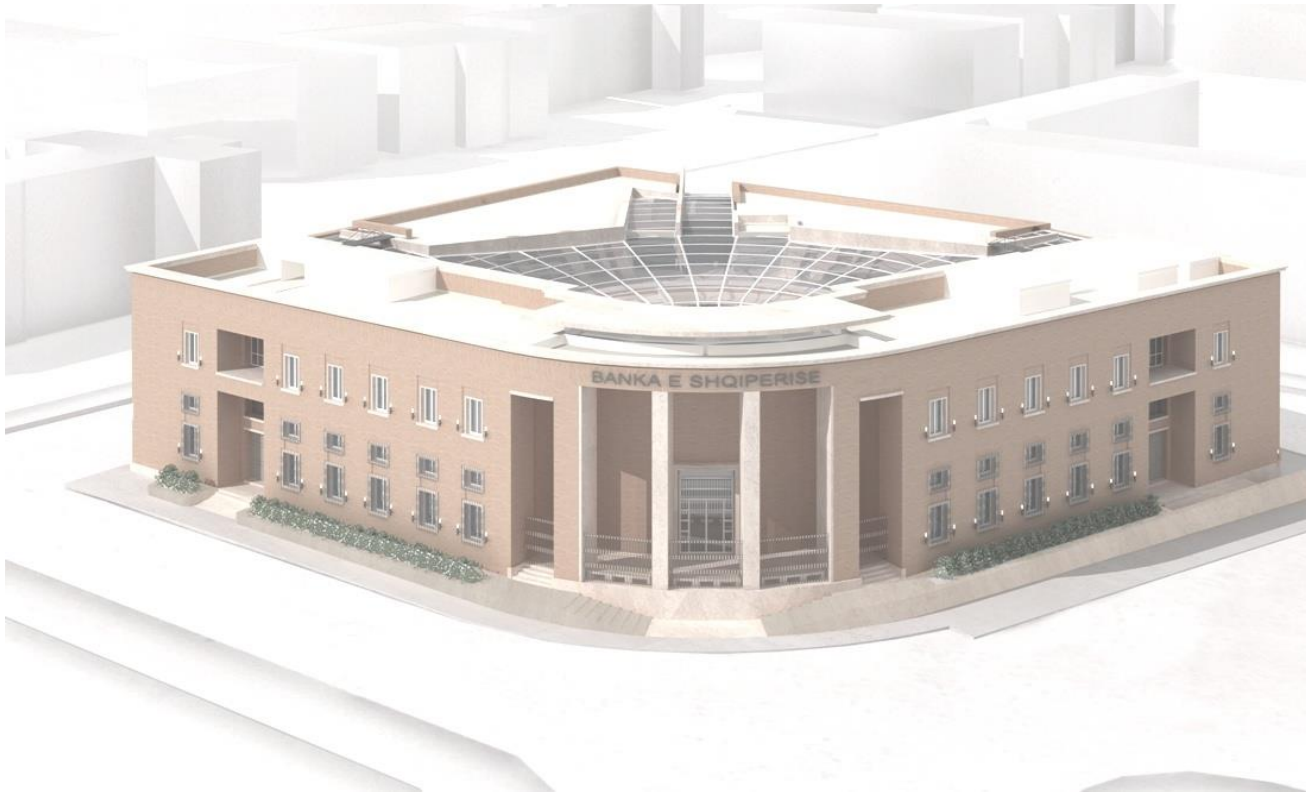

BCC Conference, Geneva, Switzerland, 22-23 September 2022

MOTIVATION

- In the current context of high uncertainty in the global economy, the *continuous rise of prices worldwide* over the recent months have intensified the debate and shifted collective attention to understanding the mechanisms that underpin inflation dynamics in Albania as well.
- Several studies published on this topic for Albania [(Çeliku et al., 2019; Papavangjeli, 2019; Skufi, Kika, 2019; Skufi, Çela, 2017)]
- The *novelties* of this study versus the other ones are the following:

  - The model approach accounts for:
    (i) country's exposure to agricultural shocks that affect food prices and overall price level;
    (ii) import dependence and exposure to international prices shocks, particularly cereals, food, and oil prices;
    (iii) financial repression arising from direct and indirect financing of the fiscal deficit.

  - It uses several inflation measures such as: cereals, food, non-food and total inflation, which may be determined by different factors.

RELEVANT STRUCTURAL FEATURES OF THE ALBANIAN ECONOMY

- The behaviour of the agriculture sector is an important driver of inflation in Albania. The agricultural sector contributes with about 20% to GDP, but yet Albania fulfils a considerable share of cereals domestic demand through imports.

- Food is an important component of the consumption basket for most of the population, the respective weight of which in the consumer basket is around 42%.

- Therefore, movements in food prices and the exposure of agricultural production to weather shocks may generate large and frequent changes in output and overall inflation. Negative shocks to domestic food production may also induce an increase in food imports, which may exacerbate and prolong the effects of imported inflation to the overall inflation.

- Another channel of external pressure on domestic prices is imports of petroleum and related products, which represent about 16 percent of Albania's total imports. Thus, the country is exposed to the international energy prices which pass through the domestic production costs of goods and services, eventually increasing inflation.

- The exchange rate also plays an important role in any import-dependent economy, as the case of Albania. A depreciation of the domestic currency raises the cost of imports, which in turn increases the domestic prices (as shown also in several existing studies (Tanku, Vika, 2020; Vika, Rama, 2017).

AIM & METHODOLOGY

- Aim: To investigate empirically the driving forces of inflation in Albania, based on several approaches, namely the monetarist, fiscal and structuralist ones.

Research questions:

- What are the specific factors determining several inflation measures?
- How do they differ between short-term and long-term?
- How is the current global price increase transmitted into domestic prices?
- What are the inflationary implications of fiscal indicators?

Methodology: Application of a vector error correction model (VECM), which allows capturing both short- and long-term effects (through adjustment to equilibrium in the respective sectors) of domestic and external forces affecting inflation.

APPROACHES TO MODEL INFLATION

- *Monetary approach* (Friedman, 1963): Money supply growth is the cause of inflation.

- *Fiscal theory of inflation* (Catão and Terrones, 2005; Gordon and Leeper, 2006): the price level is determined by fiscal policy rather than monetary policy

- *The structuralist approach* (Pinga and Nelson, 2001):

  - The money stock is 'partly' endogenous and in some situations only plays a passive role in the inflationary process.
  - Imported capital and intermediate goods are essential inputs in the production process of developing countries.
  - The ability of developing countries to finance imported goods is constrained by foreign exchange scarcity, due to the fact that many developing countries only export a few primary commodities.

METHODOLOGY & DATA DESCRIPTION

- Following Mawejje and Lwanga (2016) and Durevall (2010), inflation is viewed as mainly originating either from price adjustments in markets with excess demand or supply or from price adjustments due to import costs, using a two-step estimation procedure.

- The baseline model is specified as follows:

$$\Delta p_t = \theta_0 + \sum_{j=2}^{k} \theta_{1j} \Delta p_{t-j} + \theta_2 agrigap + \sum_{j=2}^{k} \theta_{3j} \Delta m_{t-j} + \sum_{j=2}^{k} \theta_{4j} \Delta p^{w}_{cereals\ t-j} + \sum_{j=2}^{k} \theta_{5j} \Delta er_{t-j} + \theta_6 ECM_m + \theta_7 ECM_{cer} + \theta_8 ECM_{nfood} + \varepsilon_t \qquad (1)$$

where ***agrigap*** -> the agricultural output gap, ***m*** -> real money stock, $\boldsymbol{\Delta p^{w}}$ -> inflation (including cereal price, food price, non-food price and oil price changes in the global market), ***er*** -> the nominal exchange rate of ALL to EUR and ***ECM*** are the error correction terms representing the cointegration equations (disequilibria) for the money market, relative prices for food (cereals), and non-food markets, respectively.

- Quarterly data for the period 2000Q1-2022Q1 (89 periods)

  Sources of information:

  - *Ministry of Finance and Economy*: fiscal indicators
  - *INSTAT*: CPI; GDP, Agricultural output
  - *Bank of Albania*: Exchange rate (ALL/EUR), Monetary aggregates
  - *World Bank Commodity Price Data (The Pink Sheet):* international prices data

TABLE 1. ESTIMATION RESULTS – BASELINE SPECIFICATION

Variables		Cereals	Food	Non-food	Headline
		Adjustment effects			
Monetary sector	$[(m-p)-0.79y+0.12e]_{t-1}$	0.202 (0.106)	0.058 (0.869)	0.035 (0.974)	0.339* (0.091)
Cereals sector	$[(e+p_f^w)-0.88p_f-5.23]_{t-1}$	0.049*** (0.009)	0.051** (0.030)		0.410* (0.095)
Non-food sector	$[(e+p_{nf}^w)-0.41p_{nf}-5.79]_{t-1}$			0.034** (0.015)	0.360* (0.079)
		Domestic factors			
Domestic cereal inflation (-1)		0.462*** (0.000)			0.031* (0.062)
Agricultural output gap (-1)		-0.133* (0.063)	-0.049* (0.061)		-0.003 (0.053)
Money growth (-1)		0.026 (0.814)	0.051 (0.874)	0.057 (0.208)	0.021* (0.096)
Domestic food inflation (-1)			0.628*** (0.000)		
Domestic non-food inflation (-1)				0.173* (0.052)	
		External factors			
World cereal inflation		0.211** (0.027)			0.042** (0.024)
World food inflation			0.241** (0.023)		
World non-food inflation				0.003* (0.072)	
Exchange rate change		0.001 (0.106)	0.005 (0.113)	0.017 (0.908)	0.029* (0.059)
World Oil Price					0.001* (0.091)
World food*spike		0.043** (0.016)	0.012** (0.034)		0.014* (0.074)
Constant		0.002 (0.243)	0.004 (0.321)	0.002* (0.067)	0.135*** (0.000)
Obs.		73	73	73	73
Adjusted R-squared		0.415	0.497	0.267	0.419

Note: Estimates are corrected for autocorrelation and heteroskedasticity. *** denotes significance at 1%, ** sign. at 5%; * sign. at 10%. Spike is a *dummy* variable capturing the "spikes" in the world food prices.

TABLE 2. ESTIMATION RESULTS – ALTERNATIVE SPECIFICATION

Variables		Cereals	Food	Non-food	Headline
		Adjustment effects			
Fiscal sector	$[(m-p)-2.23*pubdef-0.68*debt]_{t-1}$	-0.096 (0.363)	-0.066 (0.869)	0.072 (0.454)	-0.009* (0.091)
Cereals sector	$[(e+p_f^w)-0.88p_f-5.23]_{t-1}$	0.049*** (0.009)	0.051** (0.030)		0.410* (0.095)
Non-food sector	$[(e+p_{nf}^w)-0.41p_{nf}-5.79]_{t-1}$			0.038* (0.093)	0.360* (0.079)
		Domestic factors			
Domestic cereal inflation(-1)		0.527*** (0.000)			0.028* (0.055)
Domestic food inflation (-1)			0.610*** (0.000)		
Domestic non-food inflation (-1)				0.109* (0.057)	
Agricultural output gap (-1)		-0.101* (0.091)	-0.081* (0.061)		-0.005* (0.087)
Public sector borrowing		0.001 (0.814)	0.010 (0.602)	0.0002 (0.208)	0.014* (0.095)
		External factors			
World cereal inflation		0.039** (0.043)			0.011** (0.042)
World food inflation			0.049** (0.013)		
World non-food inflation				0.034* (0.077)	
World Oil Price					0.0007* (0.059)
World food*spike		0.035** (0.025)	0.015** (0.037)		0.028* (0.082)
Constant		0.001 (0.784)	0.004 (0.321)	0.003 (0.893)	0.012*** (0.000)
Obs.		67	67	67	67
Adjusted R-squared		0.351	0.508	0.143	0.546

Note: Estimates are corrected for autocorrelation and heteroskedasticity. *** denotes significance at 1%, ** sign. at 5%; * sign. at 10%. Spike is a *dummy* variable capturing the "spikes" in the world food prices.

FINAL REMARKS

- This article emphasizes the critical importance of considering structural supply-side factors to understand the dynamics of inflation, especially food sector developments in general and those in the cereals sector in particular.

- External factors play an important role in fuelling domestic inflation, particularly through imported food and energy products as well as exchange rate fluctuations. The results show persistent effects of shocks to world prices on several measures of domestic inflation, confirming that the Albanian economy is significantly integrated in the global economy.

- In the short-run period, inflation is driven mainly by structural factors: sporadic food price inflation seems to be influenced more by international prices, and agricultural supply shocks rather than money growth and the exchange rate. Money growth affects positively all price measures, but the effect is statistically significant only for the headline inflation.

- Inflation exhibits inertia, with price shocks leading to high inflation, especially in the cases of food and cereal inflation. Non-food inflation displays a smoother pattern and is not affected by either money growth or public sector borrowing, which could be due to the fact that this indicator includes items for which prices are controlled or closely monitored, such as fuel.

- The fiscal sector has both long-run and short-run impacts on inflation in Albania, even though the effects are minor.

POLICY IMPLICATIONS

- The empirical results suggest intervention by easing supply-side constraints and stabilizing cereal production in line with the needs of the fluctuating demand, arising from the fast changing population and urbanization trends.

- Additionally, keeping money growth under control is desirable to avoid exacerbating other pressures on inflation from the demand and supply sides.

- Even though the analysis herein show that the current effects are negligible, containing government borrowing should be part of the inflation-controlling strategy, in order to prevent any adverse effect in the future. However, the government borrowing implications for inflation are complex, as they work through both the demand and supply sides.