NATIONAL BANK OF RWANDA

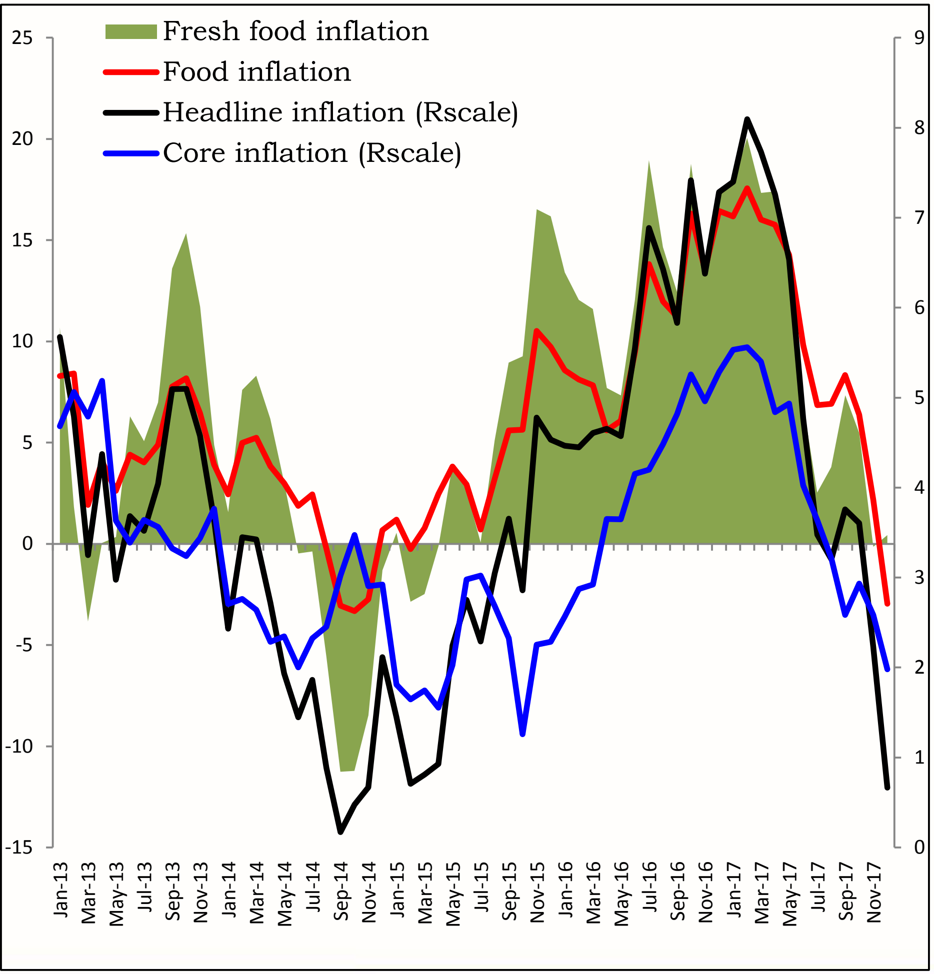
Second round effect of food and energy prices to inflation in Rwanda

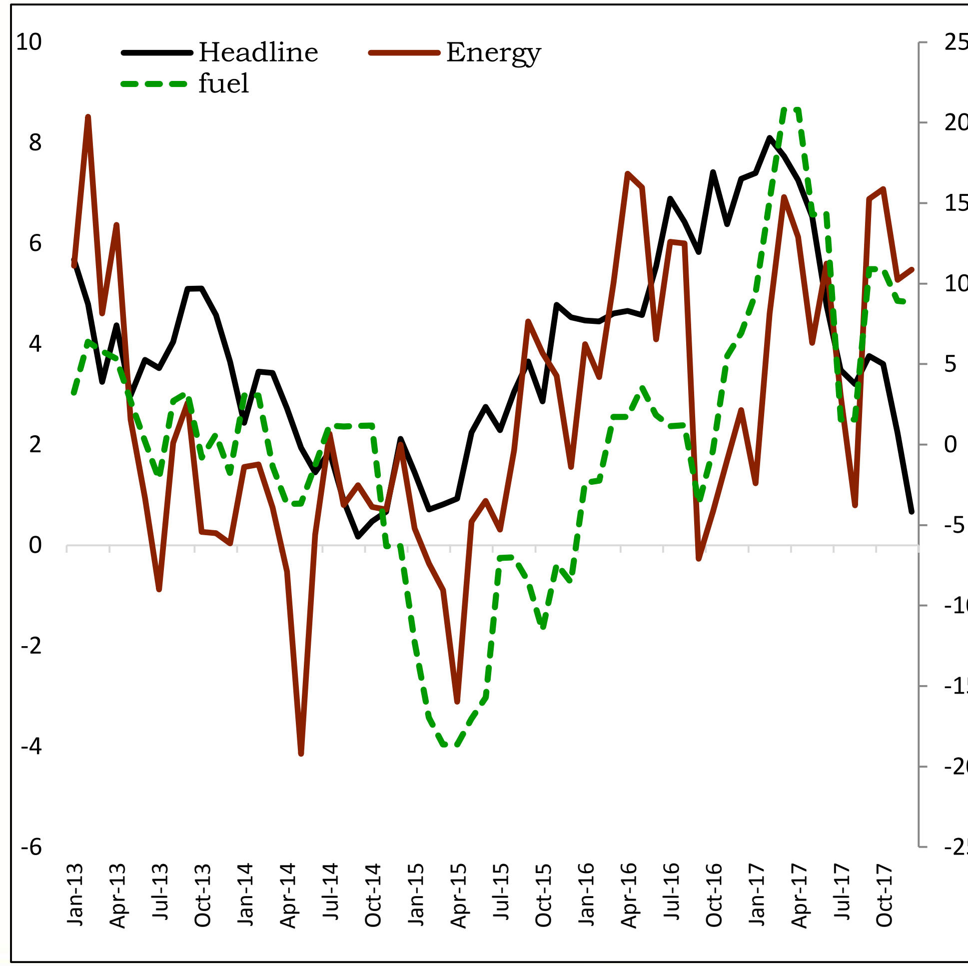
January, 2018

I. INTRODUCTION

- **The Key mandate of CB: Price stability:**
  - CB uses 2 inflation: headline & core
  - Core exclude price component beyond the control of monetary policy
    - i.e Food and energy prices:
      - High volatility & driven by supply shocks
- **Generally monetary policy is supposed to not react to food and energy price supply shocks:**
  - However, what if these price have an impact on core inflation?
  - In case the impact exists, monetary policy would be inefficient
- **Thus, this paper seeks to:**
  - Test the existence second round effect from food and energy prices;
  - Evaluate the duration of a shock on headline and core inflation.

II. Trends of Food, energy, core and headline inflation





III. Literature review

– **There is 2 schools of economic thoughts:**

1. Advocates for **No reaction of Monetary policy** in case of food and energy prices shocks (see Aoki, 2001, Alper et al. 2016).
   - Due to Transitory and volatility nature of those shocks
   - Inefficient monetary policy reaction
2. Advocates **the reaction of monetary policy** (see Dureval et al. 2013)
   - Possible second round effect
     - through costs: direct impact to firms marginal cost
     - Expectations when shock are perceived to be permanent
   - Mainly in countries with large shares of food and energy items in consumer basket.

III. Literature review...

MODEL	VARIABLES	AUTHORs
GAP Model	Headline inflation, core inflation, non-core inflation(the difference between headline and core)	Cecchetti and Moessner (2008), Rhee and Lee (2012), Misati and Munene (2015), Šoškić (2015)
VAR	Headline inflation, core inflation, food prices, oil prices, interest rate, money in circulation, GDP, exchange rate	Munir and esteban (2011), Mija et al. (2013)
SBVAR	core inflation, Relative food and energy price, imported inflation, Real GDP, unit labor cost, Repo rate and nominal effective exchange rate	Ruch and Plessis (2015)
Dynamic rational expectations model	GDP, real interest rate, exchange rate, GDP deflator, headline inflation, administered prices, imported inflation, foreigh demand, risk premium, money market rate	HLÉDIK (2004)

Most empirical studies used the gap model

IV. Methodology

– The GAP MODEL:

- **Eqn 1: Test if food and energy prices shock is transitory or not**

$$\pi_t^{headline} - \pi_{t-i}^{headline} = \alpha + \beta\left(\pi_{t-i}^{headline} - \pi_{t-i}^{core}\right) + \varepsilon_t$$

  - **Eqn show the reaction of headline inflation to non-core inflation**
  - **If the shock is transitory β should have a negative sign**
  - **If β is positive, the shock is permanent**

- **Eqn 2: Test the second round effect**

$$\pi_t^{core} - \pi_{t-i}^{core} = \alpha + \delta\left(\pi_{t-i}^{core} - \pi_{t-i}^{headline}\right) + \varepsilon_t$$

- **Eqn show the reaction of core inflation to non-core inflation;**
- **If δ should have a negative sign: the presence of second round effect.**

V. ESTIMATION RESULTS

- **Estimation of second round effect:**
  - *Is food & energy price shock transitory? A: YES*

Dependent Variable: ΔHEADLINE		
Variable	Coefficient	P-value
DHDCORE(-12)	-1.049*	0.000
DHDCORE(-3)	-0.427*	0.000
DHDCORE(-1)	-0.122*	0.011

  - *Does second round effect exists?   A: NON*

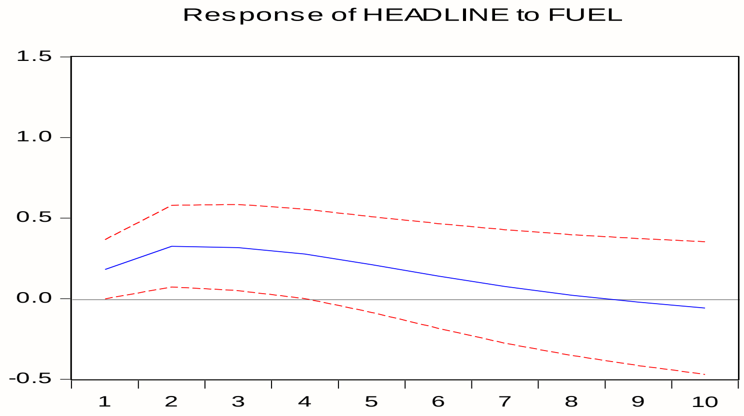
Dependent Variable: ΔCORE		
Variable	Coefficient	P-value
DCOREHD(-12)	-0.234	0.363
DCOREHD(-3)	0.101	0.286
DCOREHD(-1)	0.036	0.366

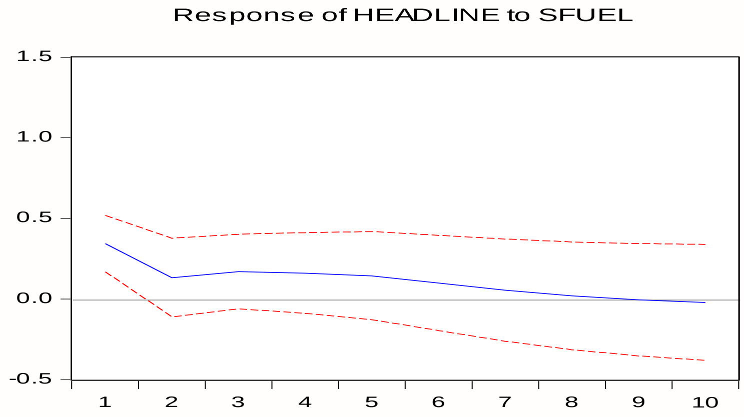
[1] * indicates that the variable is significant based on 5% significance level.

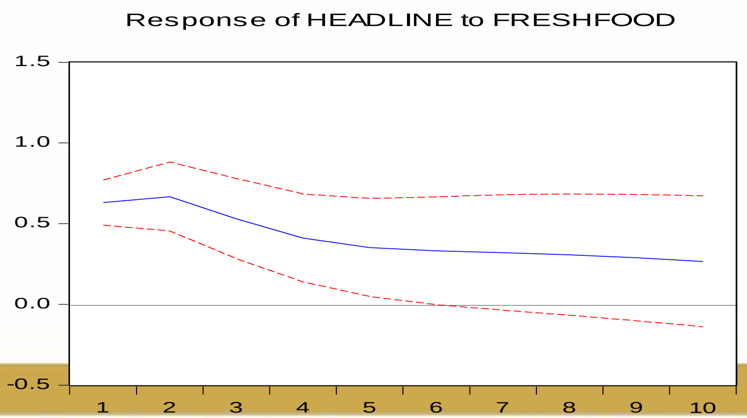
V. ESTIMATION RESULTS...

- **Impact of fresh food and solid fuel & lubricant fuel on headline inflation**

Response to Cholesky One S.D. Innovations ± 2 S.E.







VI. Conclusion & Recommendation

- **Empirical results show:**
  - Food and energy price shocks are temporary in Rwanda;
  - No presence of second round effects from food and energy price shocks.
- **Policy implications:**
  - Keeping other factors constant, monetary policy should not react to food and energy shocks.

THANK YOU