Monetary Policy, Volatility Spillovers to Emerging Market Economies and Impact of Exit Strategies

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Research Idea

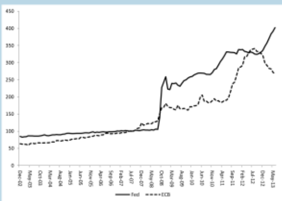
Measure the volatility spillover from the increases in the Federal Reserve and the European Central Bank's balance sheet to emerging market economies.

Intuition

Since the financial crisis started in 2008, Central Banks in developed countries have significantly increased their balance sheets by buying assets and embarking on other unconventional monetary policies in an attempt to revive their economies. However, the impact of these unconventional monetary policies is likely to have spread beyond developed countries to emerging market economies. The impact of unconventional monetary policy have been previously discussed by the literature but limited attention has been paid to the volatility spillover from developed to developing countries. We find that there are volatility spillovers from the increases in those Central Banks' balance sheets by building on the results of the recent literature.

CBs Balance Sheet Expansion

- The recent crisis and the fall in asset prices, have prompted Central Banks to take unprecedented measures
- Measures are likely to have had an impact beyond exchange rates, to affect the prices of assets held by emerging market Central Banks and private individuals.
- International trade and output linkages between developed and emerging countries we have observed comovement of output during the crisis.
- Central Banks in the developed world to stimulate their economies, by increasing their balance sheets and intervening in asset markets.



Data

- Fed & ECB total size of balance sheets from 2003M1 to 2013M6.
- EME: BRICS.
- Bilateral exchange rate dollar and Euro, stock market index, EMBI spreads, industrial production & consumer price index.
- Monthly data to capture volatility spillover.

Empirical Model

Two-step GARCH specification to assess the impact of unconventional monetary policies in developed countries, on emerging market economies. Specification of GARCH(1,1):

$$r_t = \sqrt{\sigma_t^2} z_t \quad z_t \sim D(0,1) \tag{1}$$

r_t is the $\Delta\%$ in CB's balance sheet and D is a distribution with mean 0 and variance 1 and:

$$\sigma_t^2 = \omega + \alpha r_{t-1}^2 + \beta \sigma_{t-1}^2 + \epsilon_t \tag{2}$$

We take the innovations from our first regression and add it as an explanatory variable in the second GARCH(1,1) regression for BRICS.

$$R_{i,t} = \beta_{i,0} + \beta_i R_{i,t-1} + \gamma_{i,t-1} r_{CB,t-1} + \varepsilon_{i,t} \tag{3}$$

and the variance is defined as:

$$\sigma_t^2 = \omega + \alpha r_{t-1}^2 + \beta \sigma_{t-1}^2 + \epsilon_t \tag{4}$$

$$\varepsilon_{i,t} = e_{i,t} + \phi_{i,t-1} e_{CB,t} \tag{5}$$

The ratio of the volatility of the variables in the developing countries that is explained by the volatility in the developed countries Central Banks' balance sheet is calculated as:

$$VR_{i,t}^{CB} = \frac{\phi_{i,t}^2 \sigma_{CB,t}^2}{h_{i,t}} \tag{6}$$

Results

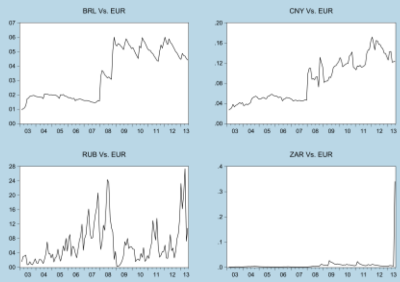
FED Coefficient

	ER	STOCK	EMBI	IP
BRAZIL	0.230993*	-0.381501*	-15.49712*	0.025985*
RUSSIA	-0.061035*	-0.349664*	5.910268	0.047331*
INDIA	0.104957*	-0.359999*	-0.207347*	-0.014871
CHINA	-0.000561	-0.372367	-1.568501	-0.009231*
S. AFRICA	0.281307*	-0.232456*	-18.50562*	-0.073161*

ECB Coefficient

	ER	STOCK	EMBI	IP
BRAZIL	0.171038*	-0.428231*	-15.68627*	-0.034303
RUSSIA	0.131122*	-0.576674*	5.303911	0.018246
INDIA	-0.035402	-0.363983	-0.210433	-0.015725
CHINA	-0.147878*	-0.638132*	-3.027506	-0.007183
S. AFRICA	0.059852*	-0.314157*	-16.2156	0.015814

- ECB had significant volatility spillover to BRICS exchange rate



Policy Implications

- Most affected countries have been the ones who have had a more open capital account.
- Exit, has an important effect on the volatility of BRICS.

Conclusion

- We demonstrate that there have been indeed volatility spillovers from the actions of the ECB and the Fed to BRICS countries.
- Volatility emanating from the ECB is generally less pronounced.
- Volatility spillovers from the Fed had much more far reaching implications for BRICS countries.