



The SEACEN Centre

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Discussion of Lee et al. (2018)

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The paper in a nutshell

- This paper contributes to the empirical literature that evaluates spillovers from US monetary policy to emerging and developing market economies
- By employing an established two-step GARCH methodology, it looks at **volatility** spillovers from changes in the size of the Federal Reserve's balance sheet on sales and purchases of non-US long-term securities to and from emerging market economies by US residents
- The authors are well aware of additional bells and whistles

Main (preliminary) findings

- The main (preliminary) findings are:
 - limited evidence of volatility spillovers from changes in the size of the Federal Reserve's balance sheet on capital flows to emerging market economies;
 - sales of non-US long-term securities to emerging market economies by US residents are more vulnerable to volatility spillovers than purchases of non-US long-term securities from emerging market economies by US residents; and
 - more volatility spillovers are observed for sales and purchases on non-US bonds than stocks

The data (1)

- Novel (to my knowledge) use of the US Treasury's International Capital (TIC) data in the context of volatility spillover analyses
- TIC is a set of monthly statistical reports from the US Treasury that shows nearly all the flows of money into and out of the US for purchases and sales of US securities and financial instruments by institutions, governments, central banks, corporations and many other entities – it includes short- and long-term transactions, such as stocks, bonds, derivatives, currencies, options, forwards, swaps, bank transactions and other cross-border transactions

The data (2)

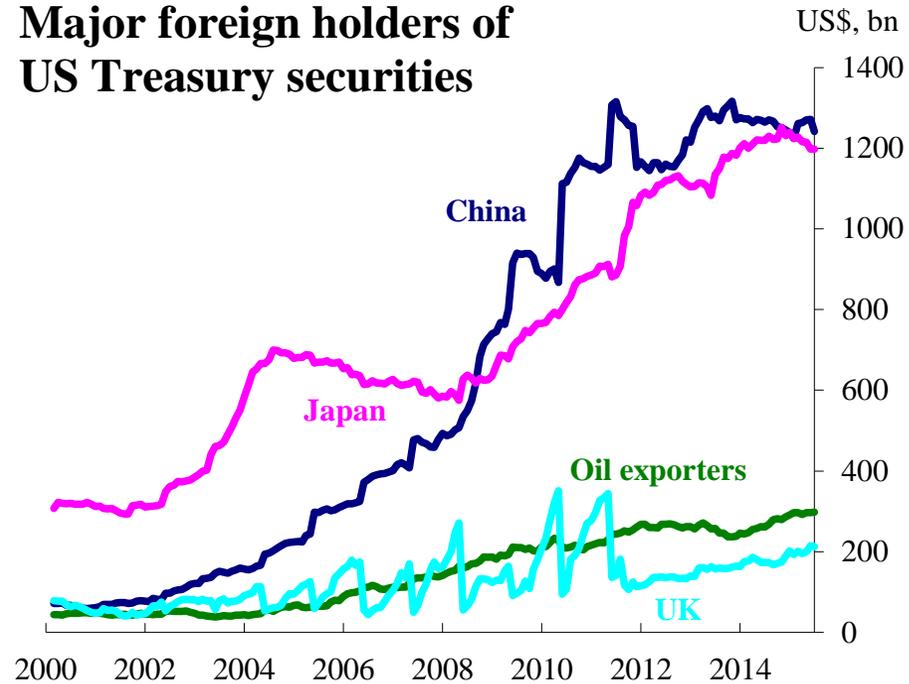
- Monthly data from January 2003 to April 2018, i.e., data **before** the US Federal Reserve's balance sheet expansion, which began in November 2008, and **after** its stabilisation (October 2014), for which volatility will be (more or less) zero
- (The data are prone to frequent – but generally minor – revisions, so this should not constitute a problem for estimation)

The data (3)

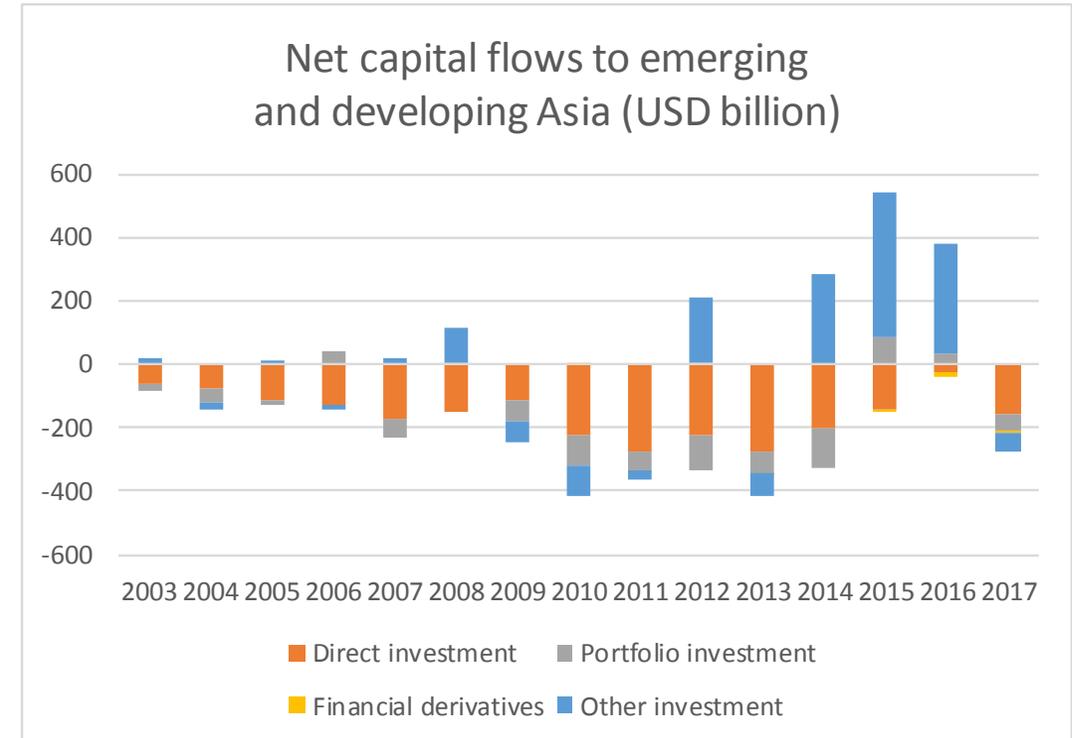
- Limitations of the TIC data (cheap shot):
 - if a US Treasury security purchased by a foreign resident is held in a custodial account in a third country, the true ownership of the security will not be reflected in the data;
 - the custodial data will also not properly attribute US Treasury securities managed by foreign private portfolio managers who invest on behalf of residents of other countries; and
 - foreign countries may hold US dollars and other US assets that are not captured in the TIC data

The data (4)

Major foreign holders of US Treasury securities



Source: US Treasury.



Source: IMF WEO database.

- Limitations of the TIC data

The data (5)

- The authors refer to the TIC data as **net capital flows**:
 - this is true only up to a point: TIC data measure some components and specific transactions of overall capital flows – the latter are more fully measured in the Balance of Payments;
 - I would have liked to see some – rough – metric of how important the eleven pre-selected emerging market economies under observation are to overall net TIC flows;
 - the suggested correlations/causations in Figures 1, 2 and 3 are not clear to me – maybe use cumulated net capital flows to EMEs instead?

The empirical approach (1)

- Following Ng (2000) and [Apostolos and Beirne \(2017\)](#), the authors employ a two-step GARCH approach:
 - a GARCH(1,1) model is used to ‘measure’ the volatility of the Federal Reserve’s balance sheet and to generate an innovation series; which
 - is then used as a generated regressor in the second step, more specifically as an exogenous variable in the mean equation of a second GARCH(1,1) model
- Volatility spillovers are assessed by the statistical significance of the coefficient on the generated regressor in the second step of the estimation

The empirical approach (2)

- While I am broadly happy with this two-step approach, I have a few suggestions (some of them aligned with the authors!):
 - the estimated coefficients are akin to the **average** effect of volatility spillovers over the **whole** sample period, i.e., before and after the period of balance-sheet expansion – use recursive or rolling estimation instead?;
 - the GARCH equation for the percentage change in the Fed’s balance sheet features a constant only, yet the Fed’s balance sheet expanded in waves (QE1, QE2 and QE3) – while GARCH could account for this, maybe use an AR or ARIMA mean specification or shorten the sample period to just the period of balance-sheet expansion (November 2008-October 2014)?; and

The empirical approach (3)

- While I am broadly happy with this two-step approach, I have a few suggestions (some of them aligned with the authors!):
 - if more than one GARCH specification is employed, use information criteria to decide on the ‘best’ model

The empirical approach (4)

- The authors stress the important difference between financial market effects due to the announcement of policy measures and those due to the actual operations, arguing that the latter might be more potent than the former
- It is not clear to me, however, how their empirical methodology is able to differentiate between the two
- One solution would be to use a rolling/recursive window with more high-frequency data – as the authors themselves suggest, although this would add more noise to the data

The empirical approach (5)

- Another would be to use **multivariate** GARCH approaches...
- ...essentially estimating equations (1) and (2) pairwise for the Fed's balance sheet and each of the eleven emerging market economies
- While this would mean dropping the test for the statistical significance of \emptyset in equation (4)...
- ...it would result in **time series** for cross-correlation and cross-covariance terms between the volatility of the Fed's balance sheet and the volatility of capital flows – which might allow us to separate the announcement from the implementation effect

Some – possibly stupid – questions

- In terms of the individual empirical results:
 - would we expect US residents to be actively involved in the purchase and sale of non-US stocks – more specifically, why should the coefficient on Malaysian stocks in Table 3 (slide on Empirical Results II) be significant?
 - should I worry about the overall effect – more specifically, if the results for bonds and stocks are negative, should the overall effect for long-term securities also be negative?

Conclusions

- There are (many) more things the authors can do to enhance the paper...
- ...most of which appear to be work in progress already
- While the paper presents a brief discussion of the signs of the volatility spillover coefficients (positive/negative)...
- ...the addition of a potential mechanism for the volatility spillover might be extremely valuable
- I am very much looking forward to the next round of the paper!

References

- Apostolos, A and Beirne, J (2017)**, ‘Volatility spillovers of Federal Reserve and ECB balance sheet expansions to emerging market economies’, European Central Bank *Working Paper Series No 2044*.
<https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp2044.en.pdf>.
- Ng, A (2000)**, ‘Volatility spillover effects from Japan and the US to the Pacific-Basin’, *Journal of International Money and Finance*, Vol. 19, No. 2, pages 207-233.