

7<sup>th</sup> International Research Conference

Bangko Sentral ng Pilipinas

# Benchmarking portfolio flows

by Burger, Warnock and Warnock  
(IMF Economic Review, 2018)

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23 September 2018

# Outline

- ***Motivation***: There is a continuous ebb and flow of cross border capital flows. Would like to know whether increases in inflows, particularly if sudden and large, are likely to reverse. Comparing actual flows to a benchmark may give insights. The paper proposes such a benchmark.
- ***Contributions of the paper***. (1) Fresh perspective on the benchmark. (2) Instructive use of recently available data (3) Insights on the empirical relationship between actual portfolio flows and the benchmark
- ***Questions or comments***. (1) How to interpret the benchmark? (2) Data issues (3) Possible enhancements to proposed benchmark.

## Benchmark intuition, construction and data sources (1)

- Two components of capital flows. (i) Portfolio growth (pg) component in which according to the solution to a dynamic optimization problem, new savings are invested at steady state portfolio shares, including across borders (ii) Portfolio reallocation, in which shocks drive investors to change the composition of their portfolios (Tille and van Wincoop 2011, result 1, p. 163).
- **Portfolio growth component motivated the design of the benchmark.**

### Benchmark version 1. Bilateral approach

- New savings generated in O origin (o) countries in the current period allocated as cross border gross capital flows (GCF) to destination (d) countries according to zero order (see later) portfolio weights
- $GCF_{Od,t}^{bmark\_pg} = \sum_{o=1}^{o=O} \omega_{od,t} S_{O,t}$  for  $o \neq d$  (2)
- $\omega_{Od,t}$  portfolio bilateral weights.
- **Can be created using holdings data from IMF CPIS dataset (bilateral portfolio (bond and equity) holdings of about 60-80 origin countries starting 2001**
- $S_{O,t}$  national saving to GDP in current USD billion from IMF WEO

## Benchmark intuition, construction and data sources (2)

### Benchmark version 2. ROW approach

- Can instead create country d's total benchmark inflows by using aggregate rest of the world (ROW) data vis a vis individual destination countries
- $GC F_{d,t}^{bmark\_pg} = \omega_{ROWd,t} S_{ROW,t}$
- $\omega_{ROWd,t}$  weight of destination country in ROW portfolio.
- **Estimated using Milesi Ferretti 2017 data on stock of portfolio equity and portfolio debt liabilities (start date 1995)**

### Smoothing

- Take **5-year lagged moving average of portfolio weights (section 2.2.1)**. Seen as a way to approximate the zero order component of the series, or that component of portfolio weights when volatility of shocks becomes arbitrarily small.

Note: Scaling factor

Country total stock of financial assets (TFA) McKinsey Global Institute. Size of country portfolio = TFA + NFA (latter subtracts foreigner claims on country TFA adds country claim on other countries' TFA)

ROW version. Subtract destination country from global TFA and global savings.

Some contributions of paper

# Fresh perspective on appropriate benchmark

- Focus on supply of changes in capital flows, specifically portfolio growth driven by saving. Relationship of saving to portfolio flows (equations 2 and 3 earlier) motivated by the results of a dynamic general equilibrium model that includes portfolio allocation decisions.
- Much of the analysis of capital flows refers only indirectly to general equilibrium models or is derived from partial equilibrium models.
- Also many benchmarks in use tend to focus on the characteristics of investable assets (risk and return) rather than the supply of investable resources from saving.

# Instructive use of data

- Discussion of whether to use ROW or bilateral approach sheds light on important issues of implementation of the analysis.
  - Impact of changes in saving in an origin country on foreign portfolio investment in a destination country depends on the weights assigned to the destination country in the origin country's portfolio. Bilateral approach is preferable, as different origin countries' weights to a given destination country may differ considerably. The ROW approach weights the savings of all countries based only on the allocation of all origin countries together, and this would generally be less accurate.
  - Authors select ROW approach due to the limitations in available bilateral CPIS data: (1) exclude official holdings; (2) geographic bias due to international financial centers (3) incomplete set of origin countries. End 2015, world cross-border portfolio liabilities \$13.8 trillion greater in LMF dataset than in CPIS data
- Exclude China, which accounts for large proportion of ROW but relatively small proportion of portfolio investment.

# Findings on empirical relationship between actual portfolio flows and the benchmark

- **Long run relationship, actual vs benchmark flows. Persuasive evidence of long run relationship for EMEs only.** EME experiencing inflows exceeding benchmark flows by USD 10 billion would expect decline in flows of USD 7.51 billion in following year. There is some adjustment of benchmark to actual flows, but most of the adjustment is from actual flows to benchmark.
- **Forecasting portfolio flows using gap between actual flows and benchmark.** Correlation between actual and forecast changes in flows 0.57
- Directional forecasts. **Benchmark correctly forecasts the direction of change in portfolio inflows for 65.5% of all observations (somewhat more for AEs than EMEs).**
- **Factors associated with short-term deviations in capital inflows from the benchmark are examined (EMEs only, Table 6).** “...higher than normal EME portfolio inflows occur when growth is strong, equity returns are high and US and Treasury yields and risk measures are low. High equity returns associated with stronger than normal equity flows. US Treasury yields and risk (VIX) measures are more closely linked to bond flows.



Questions or comments

# Interpreting the benchmark

- Equilibrium (optimal portfolio allocation). Tille and van Wincoop (JIE, 2010) develop and solve a two-country dynamic general equilibrium model that includes portfolio allocation. Because the optimization decision cannot be solved analytically, the solutions are approximated by taking series expansions. These decompose series such as portfolio allocation into sums of zero order (arbitrarily small volatility), first order (proportional to model innovations or expected returns) and second order, proportional to the variance or product of model innovations) components.
- Benchmark in paper. Portfolio weights to different destinations are estimated (using 5-year lagged moving averages) from Lane-Milesi Ferretti dataset. Changes in benchmark (partly) reflect changes in saving allocated according to those portfolio weights.

## Questions

- Under what conditions do moving averages of actual portfolio weights used in the benchmark reflect optimal or equilibrium portfolio allocation and its adjustment in response to capital flows. **Can it be assumed that the path of the benchmark is the equilibrium which would explain why actual capital flows are cointegrated with the benchmark?**
- the authors interpret their benchmark as representing the zero order component of the portfolio shares resulting from the portfolio allocation. Why is a moving average of portfolio weights a suitable proxy for the zero order component? How is this better than extracting the lower frequency or trend component of the estimated portfolio shares or weights?
- Table 6. Interesting results on factors that explain deviations of actual portfolio flows from the benchmark, including indicators of returns and measures of risk or implied volatility (eg the Vix). Versus Tille and van Wincoop result that these types of variables explain differences in portfolio allocation across countries. How are the two approaches related?

# Data issues

- Is analysis of the available bilateral CPIS data feasible? Could a comparison with the ROW data approach be informative?
- How much do official reserves or sovereign wealth funds matter for portfolio weights in origin countries? Do official investors optimize portfolios in the same way as private investors or are there certain biases (eg a higher preference for liquidity, lower risk tolerance etc.). Implications for the benchmark and its usefulness?
- Decisions are made by individual investors in origin countries, not by a country per se. Is there any room to perform a related analysis by looking at more disaggregated data, for example the behavior of certain investors, such as asset managers?

# Possible enhancements to proposed benchmark

## **May be useful to find ways to analyse portfolio investment data at higher frequencies**

- *Data at annual frequency may be more appropriate for longer terms investments.* A discussion of what these are and implications. For example, FDI is often a very large long term investment but is outside the scope of the analysis. As for longer term portfolio investments, such instruments may be illiquid or unavailable and it is likely that they will not be included in international indices often used to guide portfolio allocations. This may limit the ability of investors to optimize their portfolios.
- Investors and authorities often base decisions on high frequency data. In some jurisdictions, authorities track financial flows daily. During periods of speculative pressure, investors in emerging market economies may seek to track flows frequently to assess the adequacy of foreign reserves or market liquidity. Individual country analyses with higher frequency data might be possible with the agreement and help of authorities. Also some commercial databases that track flows at daily or weekly frequencies might provide better insights.

## **Analysis could be extended to focus on relationship between capital flow divergences from benchmark and exchange rates and asset prices.**

- Investors and policymakers arguably care more about exchange rate and asset price changes which can influence liquidity and solvency, in turn affecting returns and volatility of investments, and economic and financial stability of the economy in destination countries. So it may be useful to clarify in future research how flow data can be useful in understanding these variables, for example by helping clarify how asset prices and exchange rates are related to capital flows and the availability of external financing.