

Benchmarking Portfolio Flows

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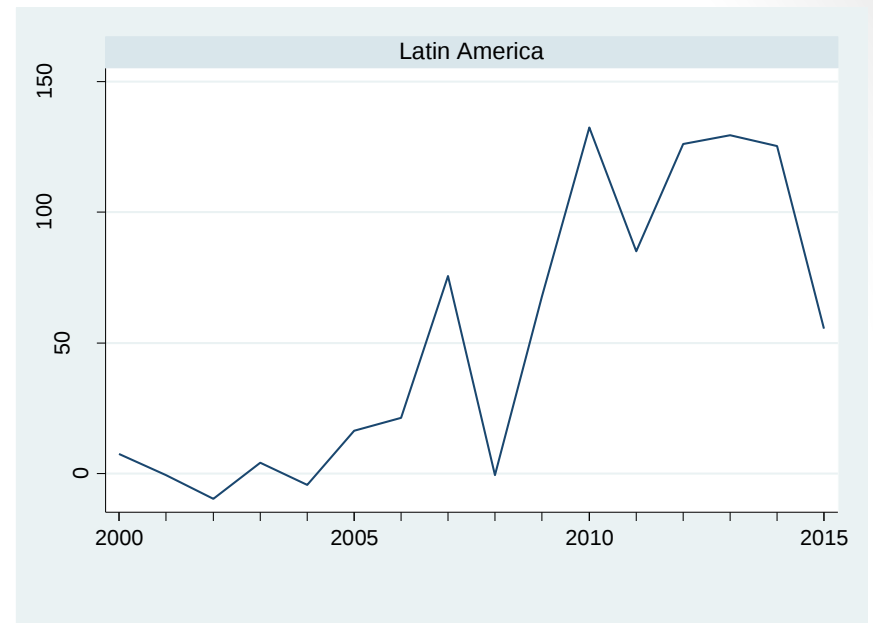
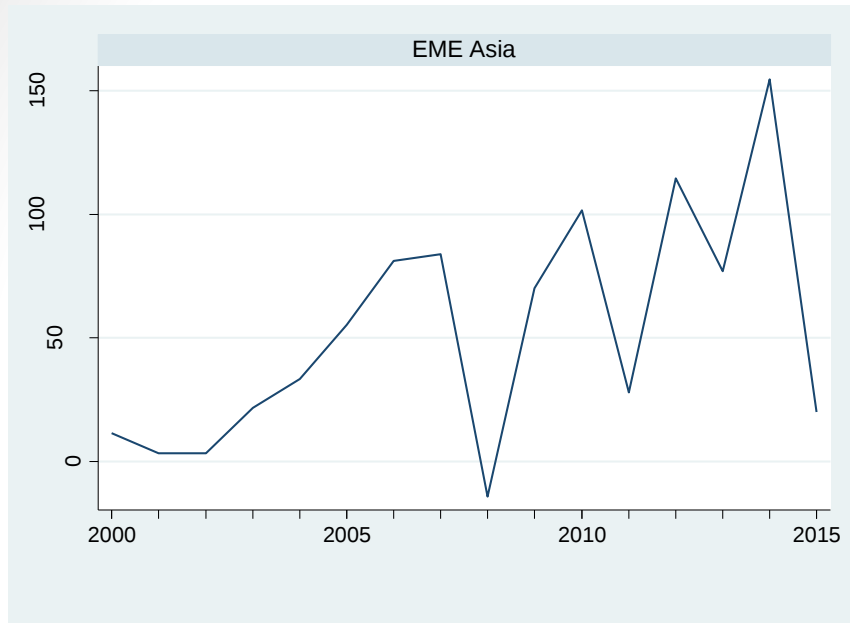
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Outline

- Motivation
- Creating a benchmark
- The BWW benchmark and actual flows
 - Graphs
 - Implications
- Performance of the BWW benchmark
 - Cointegration tests and error correction models
 - Out-of-sample forecasting
- This paper is in the Sept 2018 issue of *IMF Economic Review*. All code and data files are in a zip file available posted on <https://doi.org/10.1057/s41308-018-0062-8>.

Motivation:



Plotted are annual gross portfolio inflows in billions of USD.

In 2016, a question: Was the sharp decrease in EME portfolio inflows temporary or likely to persist?

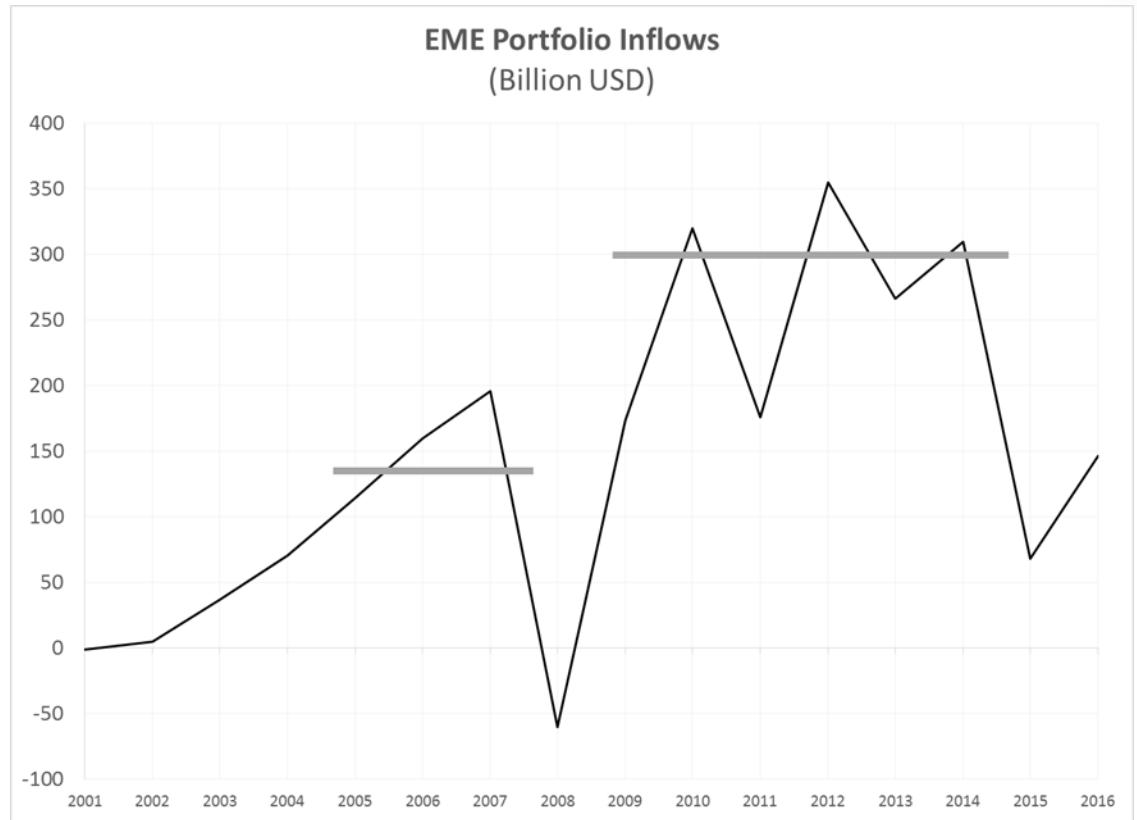
Can one develop a benchmark to assess in real time whether the decrease—or any sharp change in capital flows—is an aberration or the new normal?

Related literature:

There are many studies that attempt to understand sharp changes in international capital flows...

- Milesi-Ferretti and Tille (2011) “The **great retrenchment**: international capital flows during the global financial crisis” studied the changes in flows pre-, during and immediately after the GFC.
- Bussière, Schmidt and Valla (2016) “International financial flows in the **new normal**” compares recent (2013/14) flows to earlier periods and wonders if we’re in a new normal.
- McQuade and Schmitz (2016) “The **great moderation** in international capital flows: a global phenomenon?” does the same and wonders the same.
- Lane and Milesi-Ferretti (2017) “International Financial Integration in the Aftermath of the Global Financial Crisis” compares int’l investment positions in 2007 and 2015 and declares that the growth in cross-border positions in relation to world GDP has **come to a halt**.

...such papers
are in essence
picking two
periods and
determining
what correlates
with changes...



...but none helps us gauge in real time whether flows are excessive or about right.

- Bussière et al. (2016, page 16), echoing the ECB's Benoit Coeuré, puts it well: “it is hard to gauge if the pre-crisis properties...of flows...will prevail in the ‘new normal’...The changes that have taken place since the global financial crisis may correspond to a simple normalization...after rather ‘exuberant’ times in the pre-crisis period.”

Getting this right matters for policy.

For example, macroprudential policies and capital controls have been advocated by the IMF to temper the impact of volatile capital flows. But how does one determine when flows are “excessive”?

The questions we ask (and answer):

What is normal when it comes to capital flows?

What level of portfolio flows can a country expect to receive?

What is the benchmark?

Note: The data we use are annual gross portfolio inflows from 'rest-of-the-world' (ROW) for 45 countries (28 EMEs, 17 AEs) for the period 2000 to 2017.

Creating a benchmark for capital flows

- In this first attempt at a benchmark for capital flows, we wanted it to
 - Be simple and intuitive. Our benchmark is the amount of ROW's new money available for international capital flows (that is, ROW savings) allocated according to past portfolio weights.
 - Be consistent with theory. Our benchmark is consistent with the Tille and van Wincoop (2010) DSGE model.
 - Serve as a baseline around which actual flows fluctuate. Especially for EMEs, we show that actual portfolio flows adjust strongly toward the benchmark and the benchmark helps predict 1-year-ahead changes in inflows.
- In practical terms, our benchmark helps assess large movements in portfolio flows by distinguishing between movements *toward* the benchmark (i.e., back to the normal level) and movements *away from* the benchmark (which should be short-lived).

How to think about a benchmark for portfolio flows

- *Is there a natural rate of portfolio inflows?*
- For guidance we looked to other benchmarks, such as purchasing power parity, natural rate of unemployment, potential GDP, natural rate of interest (r^*).
 - Each has origins in economic theory, each is an estimate subject to discussion and debate, and each serves as a benchmark to which measured data can be compared.

Constructing Benchmark Flows

Our benchmark flows are the amount of new funds available for capital flows (ie, ROW savings) allocated at past portfolio weights.

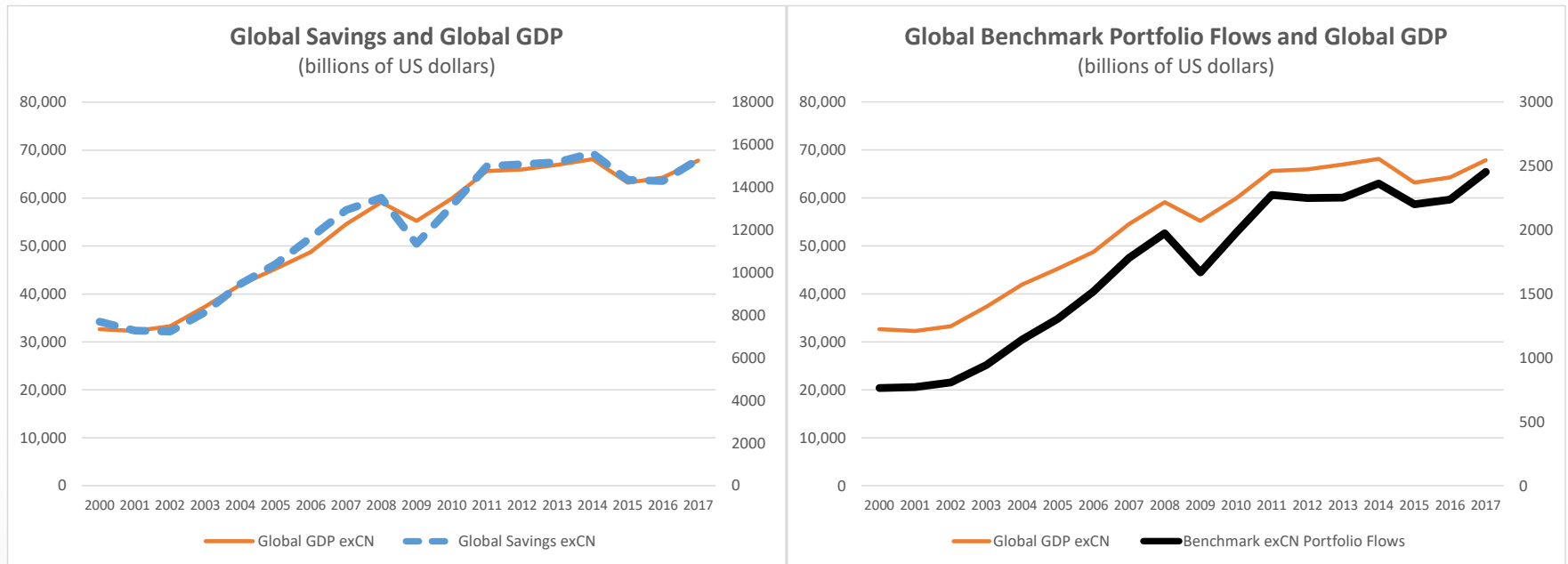
$$\text{Benchmark Inflows}_{d,t} = \omega_{ROW,d,t} S_{ROW,t} \quad (3)$$

Data requirements aren't onerous

- Flow of savings is available from World Bank/IMF. ROW portfolio holdings are from IIP data or the Lane and Milesi-Ferretti (2017) External Wealth of Nations II dataset. Scale factors—the size of ROW's overall portfolio—can be computed from data on the stock of total financial assets (TFA) available from McKinsey Global Institute (MGI).

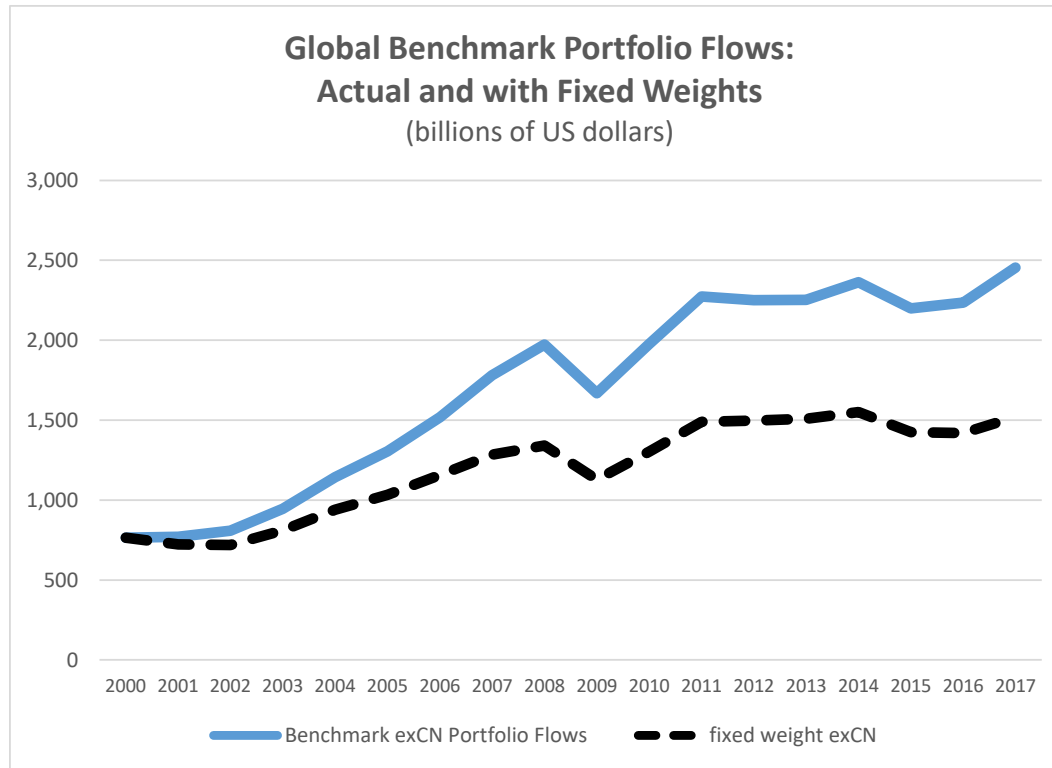
Other flows occur. Investors can sell assets in one country (even their own) and purchase assets in another country, creating additional capital flows and hence deviations of actual flows from our benchmark. These deviations tend to be larger when local growth is strong and local equity returns are high, and when US Treasury yields and global risk measures are low.

Our benchmark flows, governed by the amount of new funds available (i.e. ROW savings), are intimately connected to ROW macro conditions.



Benchmark flows arise from the flow of ROW savings, which is closely related to ROW income.

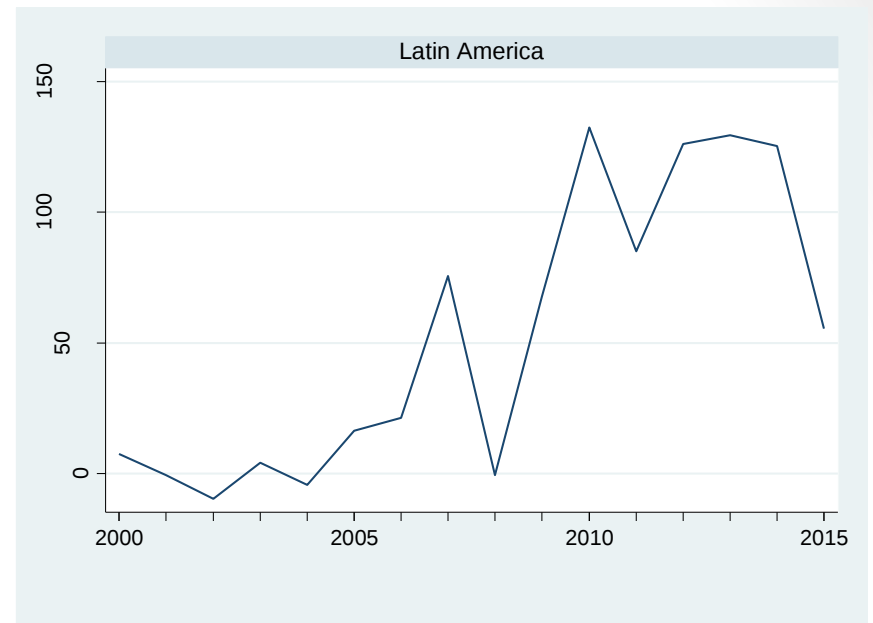
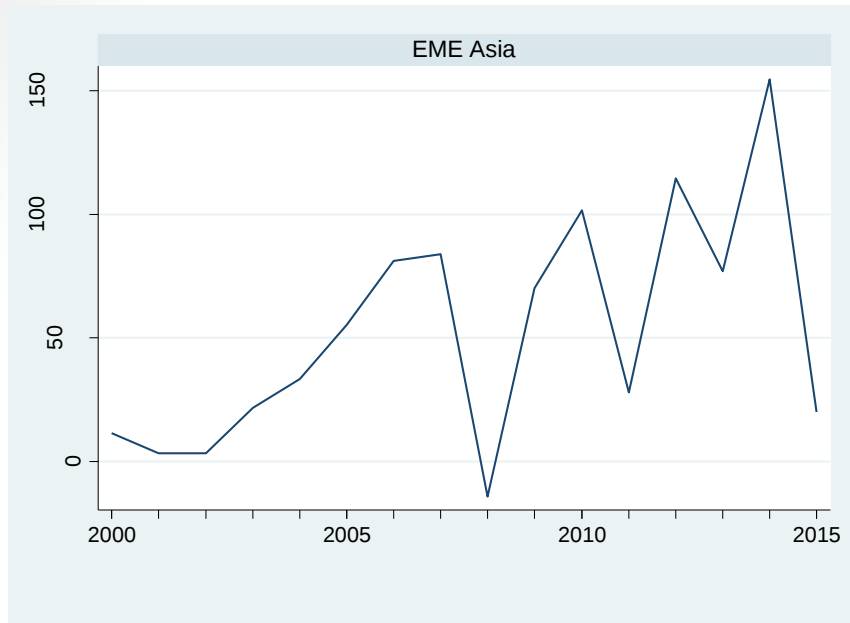
Of course, the slow erosion of the home bias—that is, increased ROW portfolio weights—also influences our benchmark.



From 2000 to 2017, global benchmark inflows increased by \$1689 billion.

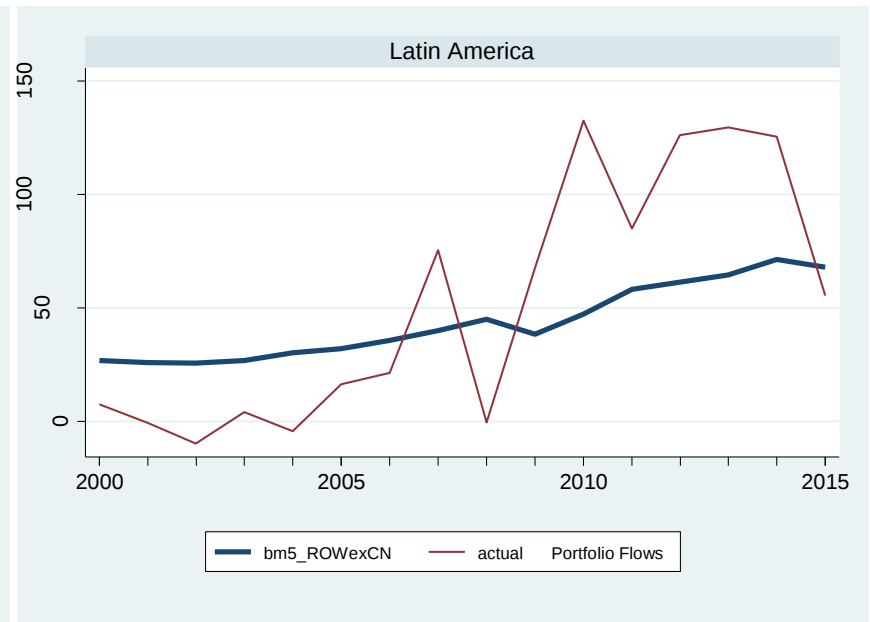
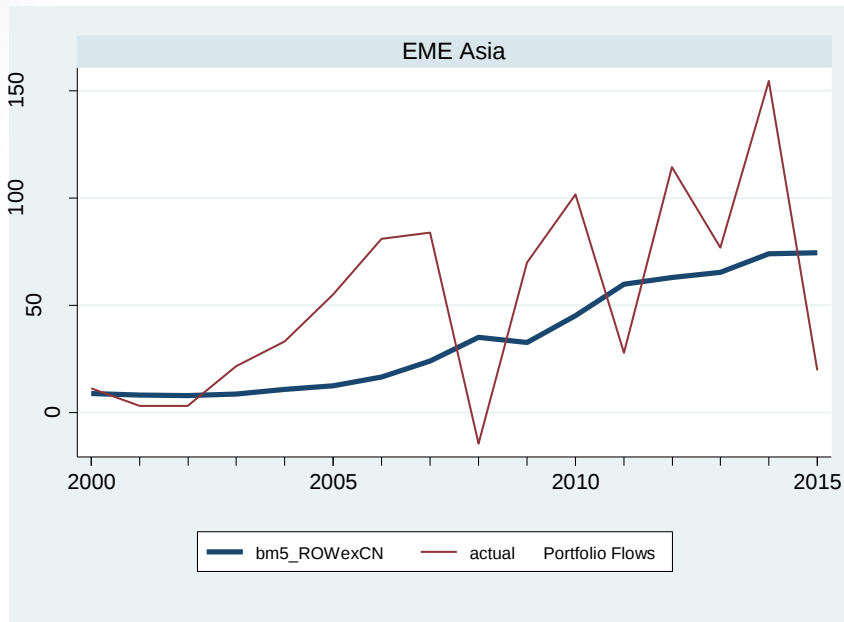
\$756 billion was due to increased global savings and the other \$933 billion was due to increased ROW portfolio weights (from 10% in 2000 to 16% by 2017).

Recall:



In 2016, a question: Was the sharp decrease in EME portfolio inflows temporary or likely to persist?

Using the BWW benchmark we can differentiate sharp changes **toward the benchmark** (i.e., back to the normal level) from movements **away from the benchmark** (which should be temporary).

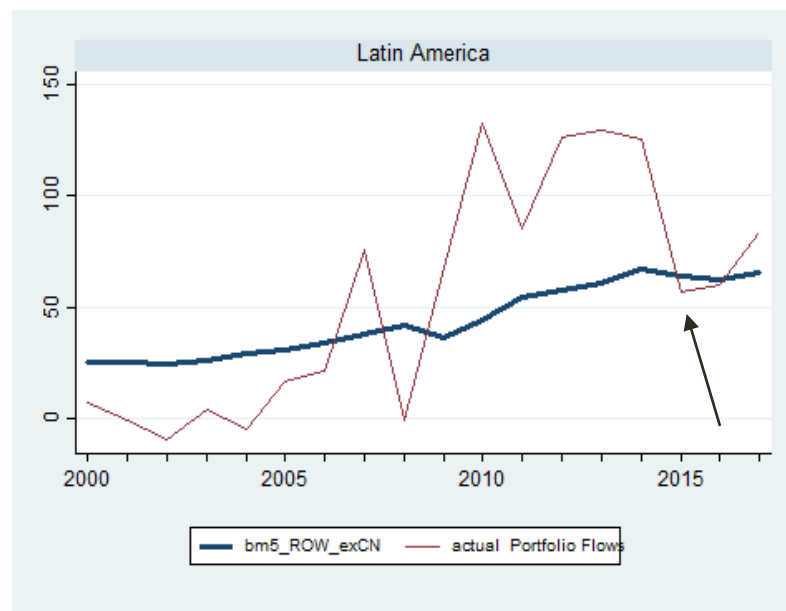
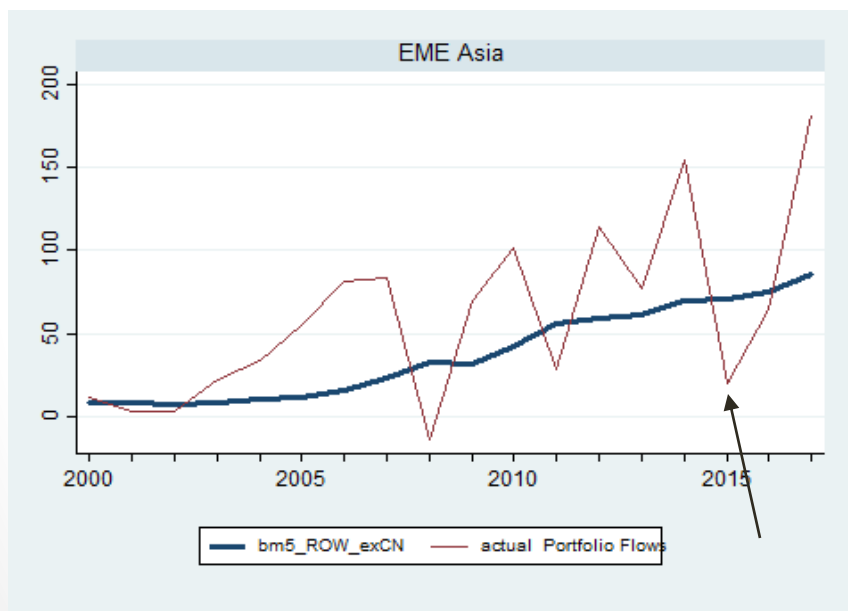


The BWW benchmark suggested that the 2015 decline in EME Asia's inflows overshoot and that inflows there should increase thereafter. In contrast, the decline in Latin America's inflows was a return to normal levels.

2015 Slowdown in Flows to EME Asia and LatAm: Temporary or Permanent?

EME Asia: Flows dropped below benchmark in 2015. Expected a rebound (which occurred)

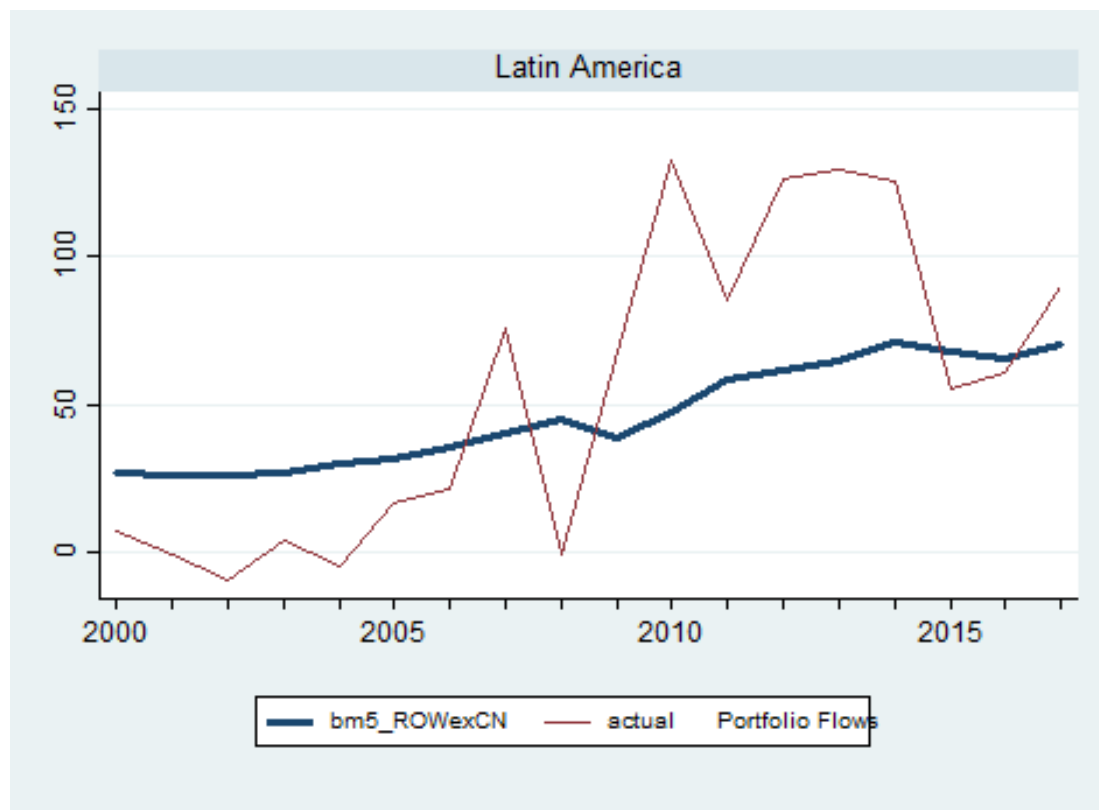
EME Latin America: 2015 drop was reversion to benchmark (back to normal).



Having a benchmark helps distinguish between movements *toward* the benchmark and movements *away from* the benchmark.

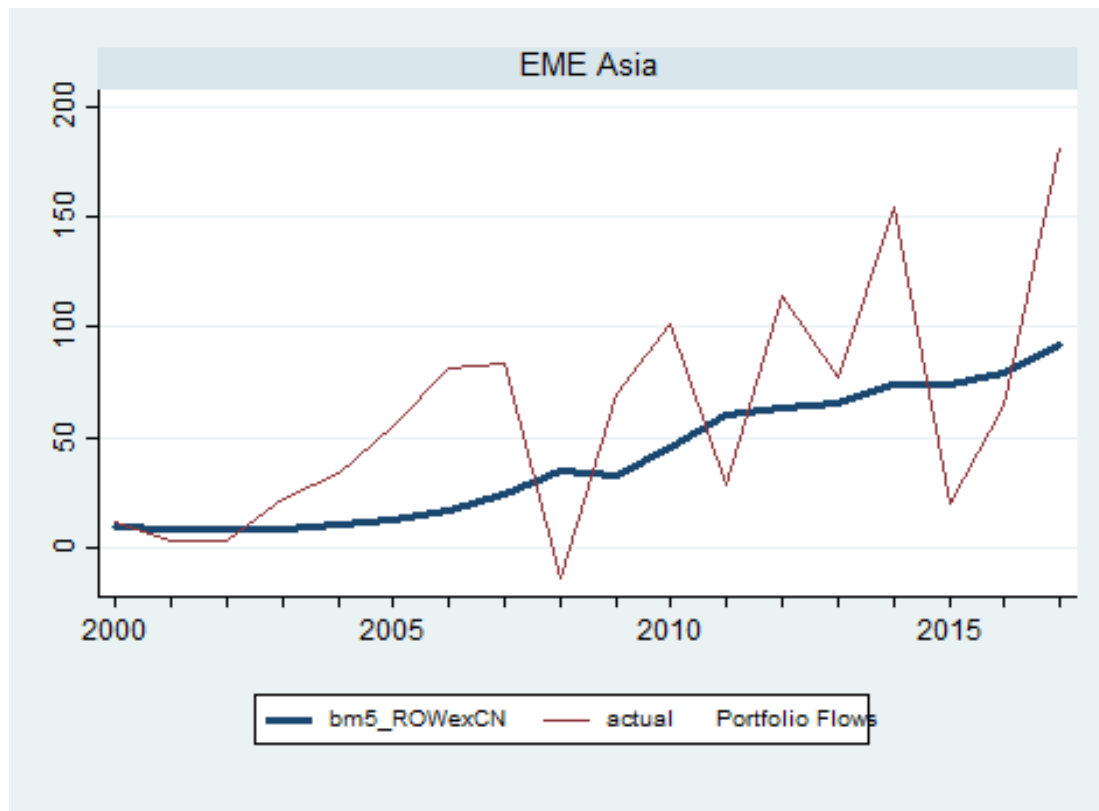
Implications of the BWW Benchmark

- Based on the BWW benchmark, we'd argue that the 2015/16 sharp drop in LatAm portfolio inflows was about right.
- We don't expect a rebound to the very high 2011-14 levels (which were far above benchmark levels).



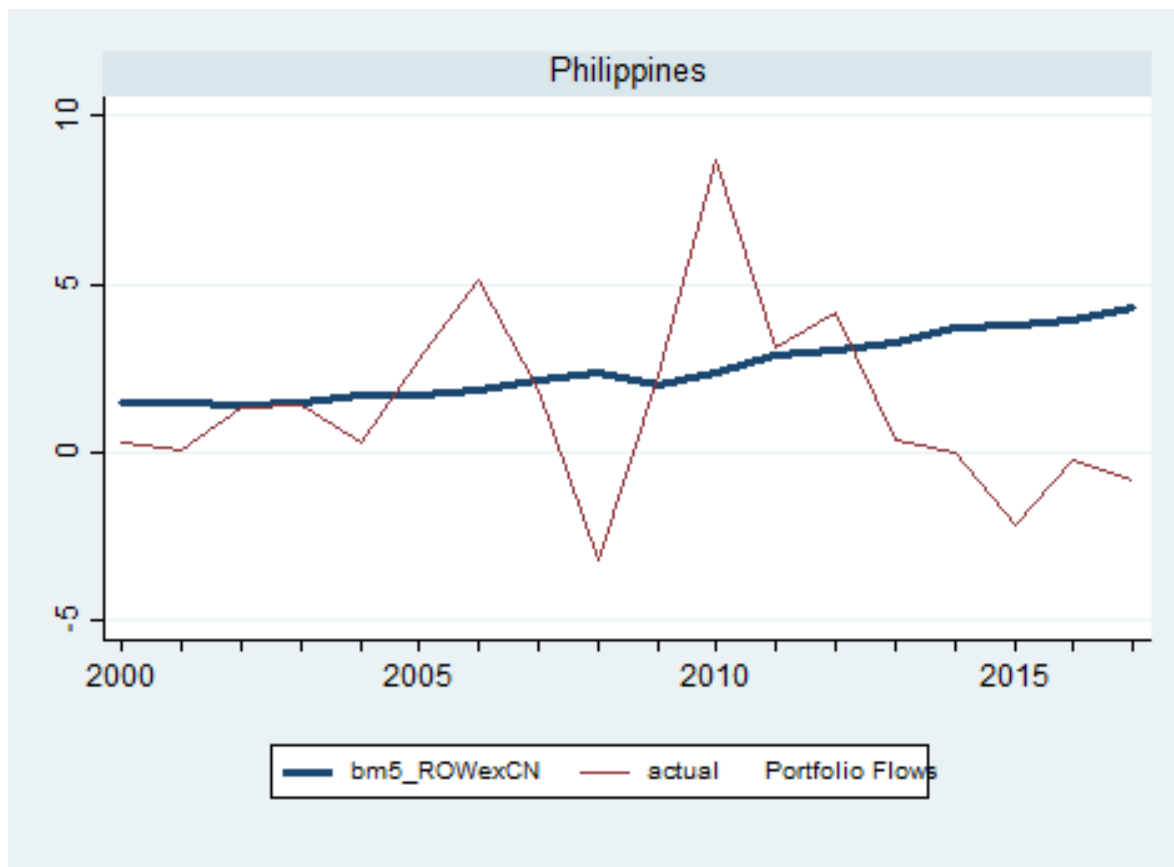
Implications of the BWW Benchmark

Flows into EME Asia were quite high in 2017, due to elevated flows into China's and Indonesia's bonds. EME Asia should see a decline in inflows going forward.



Implications of the Benchmark Philippines

Portfolio flows into the Philippines have been below benchmark levels, largely due to very low bond inflows. Going forward, our analysis suggests more bond and equity inflows.



Around the world:

2017 flows and BWW benchmark

- Too high...Countries that received abnormally high inflows in 2017 (ie were at or above all their benchmarks in 2017)
 - Canada, Argentina, China, South Africa and Turkey
- Too low...Countries that received abnormally low inflows into both bonds and equities in 2017
 - Brazil and Philippines
- And just right...Countries that were near benchmark levels for portfolio inflows and both components (bonds and equities)
 - Australia, UK, Mexico, and Poland
- A number of countries had strong bond inflows and weak equity inflows
 - India, Indonesia, Thailand (strong bond inflows more than offset weak equity inflows)
 - Japan and Russia (strong bond inflows just offset weak equity inflows)

How much confidence do we have in the BWW benchmark?

Statistical tests

- Analogous to the PPP literature, we evaluate whether actual and benchmark flows are cointegrated using Kao and Pedroni tests
 - Both tests indicate that portfolio flows are cointegrated with the benchmark.
 - Splitting by asset class yields mixed results.
- We also estimate error correction models:

$$\Delta flows_{it} = \alpha_i + \beta_i \Delta bmark_{it} + \lambda_i (flows_{i,t-1} - \theta bmark_{i,t-1}) + \mu_{it}$$

- For the EME sub-sample, we find evidence of a long-run relationship between flows and our benchmark (i.e., θ is not statistically different from 1) and that flows adjust quickly to deviations from the benchmark (i.e., the speed of adjustment parameter λ is negative, large and highly significant).
 - This is consistent with reversion of flows to the benchmark...periods when EME inflows exceed the benchmark are followed by slower growth in portfolio flows.
 - For example, an EME experiencing portfolio inflows that exceed benchmark flows by \$10 billion should expect, ceterus paribus, a decline in flows of \$7.5 billion in the following year.

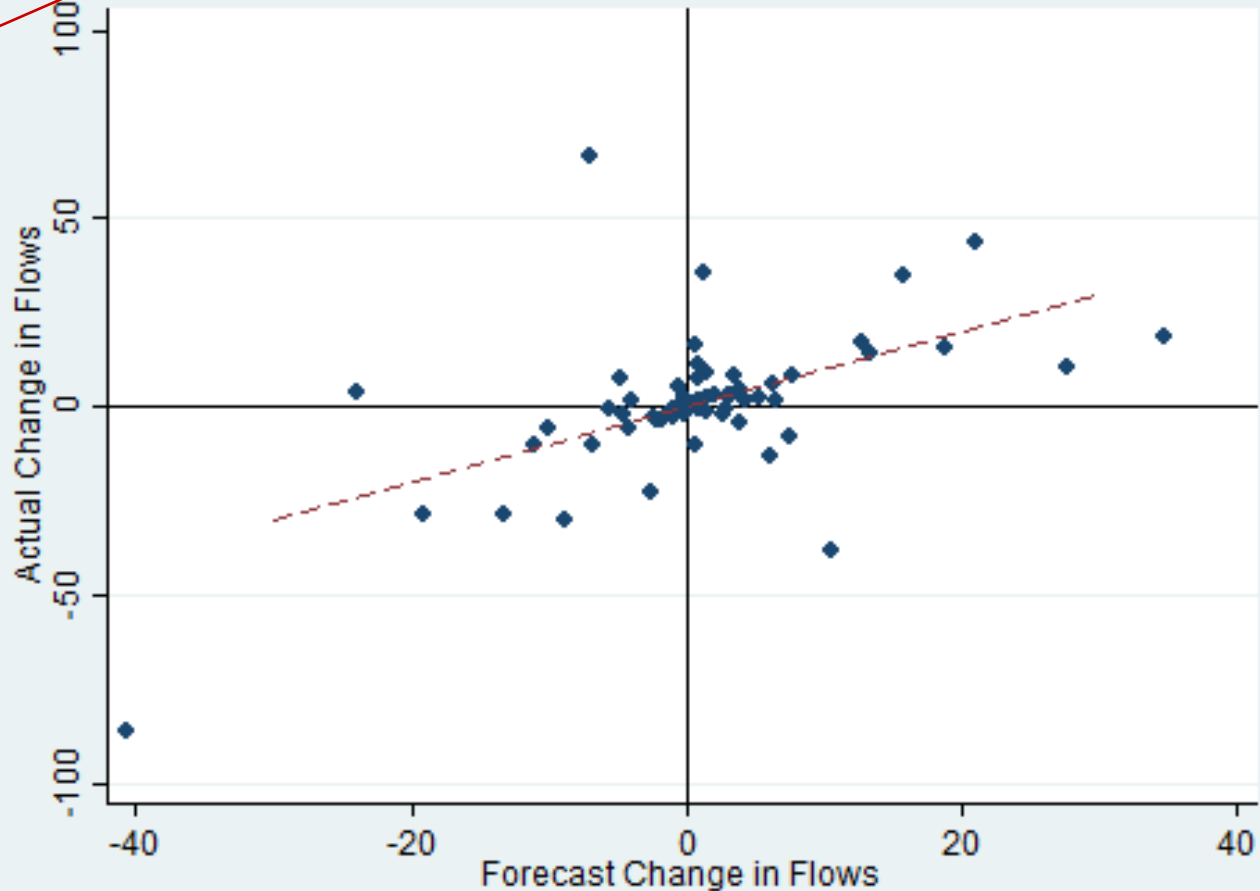
Out-of-sample forecasts

- Model-based out-of-sample forecasts by estimating the error correction model through 2014 and then forecasting flows for 2015, 2016 and 2017 (using actual data on the gap)
- Directional forecasting exercise to test if the *actual-benchmark* gap helps predict whether inflows will increase or decrease in the subsequent year
 - **In our context policy makers and market participants might value the ability to forecast whether portfolio flows received by a particular country are likely to increase or decrease from current levels.**

Model-based forecast of EME flows (2015,16,17)

$$\Delta flows^e_{i,t} = -0.705(flows_{i,t-1} - bmark_{i,t-1})$$

Coefficient based
on 2000-2014
data



Correlation between actual and forecasted change in flows is 0.56, with most (57 of 84) observations in the 1st or 3rd quadrants where ECM-based forecast gets the direction of change in flows correct. In a similar exercise for 2017, 18 of 28 forecasts get the sign correct.

Directional Forecasting

Will a country's portfolio inflows increase or decrease next year?

Benchmark-based forecast: $\Delta flows_{i,t}^e = -(flows_{i,t-1} - bmark_{i,t-1})$

Uses only pre-determined
variables, requires no estimation

		EME	AE	All
BM gap forecast	% correct	64.5%	67.1%	65.5%
	P-T stat	6.57	5.74	8.61

The Pesaran-Timmermann (P-T) statistic is distributed normally and has a null hypothesis of no directional predictive power. The 1% critical value for the P-T test is 2.33. Sample sizes are 476, 289, and 765.

The null of no directional predictive power is strongly rejected (i.e., P-T stats are large).

The benchmark gets the direction correct about two-thirds of the time.

Summary

We construct a benchmark for international portfolio flows based on the amount of new funds available for investment (ROW savings allocated according to existing portfolio weights).

Benchmark flows arise from ROW macroeconomic conditions and represent the flows that recipient countries should expect regardless of what occurs in the local economy.

Performance of Benchmark

- Long-run cointegrating relationship with actual flows (esp. EMEs)
- Strong adjustment of flows to the benchmark
- Benchmark-based forecast has predictive power for future changes in portfolio flows

When assessing large movements in portfolio flows it is informative to distinguish between movements *toward* the benchmark and movements *away from* the benchmark.