IADB/BIS Workshop on "Cross-border flows in a new economic environment: Challenges and policy options for Latin America"

Remarks for Session on Changing Patterns of Capital Flows

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My remarks are based on two papers

Decomposing International Portfolio (Equity) Flows

which is joint work with

Shaghil Ahmed (Federal Reserve Board),
Stephanie Curcuru (Federal Reserve Board) and
Andrei Zlate (FRB Boston)

Currency Matters: Analyzing International Bond Portfolios

which is joint work with

John Burger (Loyola University Maryland)
Veronica Cacdac Warnock (UVA-Darden)

The Fed disclaimer applies to the first: *The views in this paper are solely the responsibility of the authors and should not be interpreted as reflecting the views of any other person associated with the Federal Reserve System.*

A Useful Framework

Decomposing stocks (specifically, changes in portfolio weights)

Change in the portfolio share of asset *i*

(a1) a passive valuation effect

(a2) active portfolio reallocations (a residual)

follows Grinblatt Titman Wermers 1995

Decomposing flows

(a2) capital flows

(b1) portfolio growth flows

(b2) reallocation flows (a residual)

follows Kraay and Ventura (2000, 2003) and Tille and van Wincoop (2010)

A third decomposition of portfolio reallocations: <u>Normalized Relative Weight</u>

Three Decompositions of Flow- and Stock-Based Measures of Portfolio Flows

Underlying Data	Measure		
Flows	Capital Flows	Portfolio Growth *flows from allocation of new savings based on past weights*	Reallocations *flows to change portfolio composition*
Stocks	Change in Portfolio Weights	Passive Portfolio Reallocations *due to relative price changes*	Active Portfolio Reallocations *defined relative to buy-and-hold weights*
Stocks	Change in Normalized Relative Weight		Active Portfolio Reallocations *defined relative to a benchmark*

Flow data has portfolio growth (due to new savings) and reallocation components.

If instead have stock data, portfolio weights can change for passive reasons (relative price changes) or from active decisions (switching, defined relative to buy-and-hold weights). Isolating the active reallocations requires good returns data.

Normalized Relative Weight, a new measure, isolates active portfolio reallocations (and the data requirements aren't onerous).

Decomposition of Flows:

Flow-based data into portfolio growth and reallocation components

inspired by Kraay and Ventura (2000, 2003) and Tille and van Wincoop (2010)

Can consider portfolio flows (and, hence, the flows EMEs experience) as having two components: (i) *the allocation of new savings based on existing weights* and (ii) *active portfolio reallocation*.

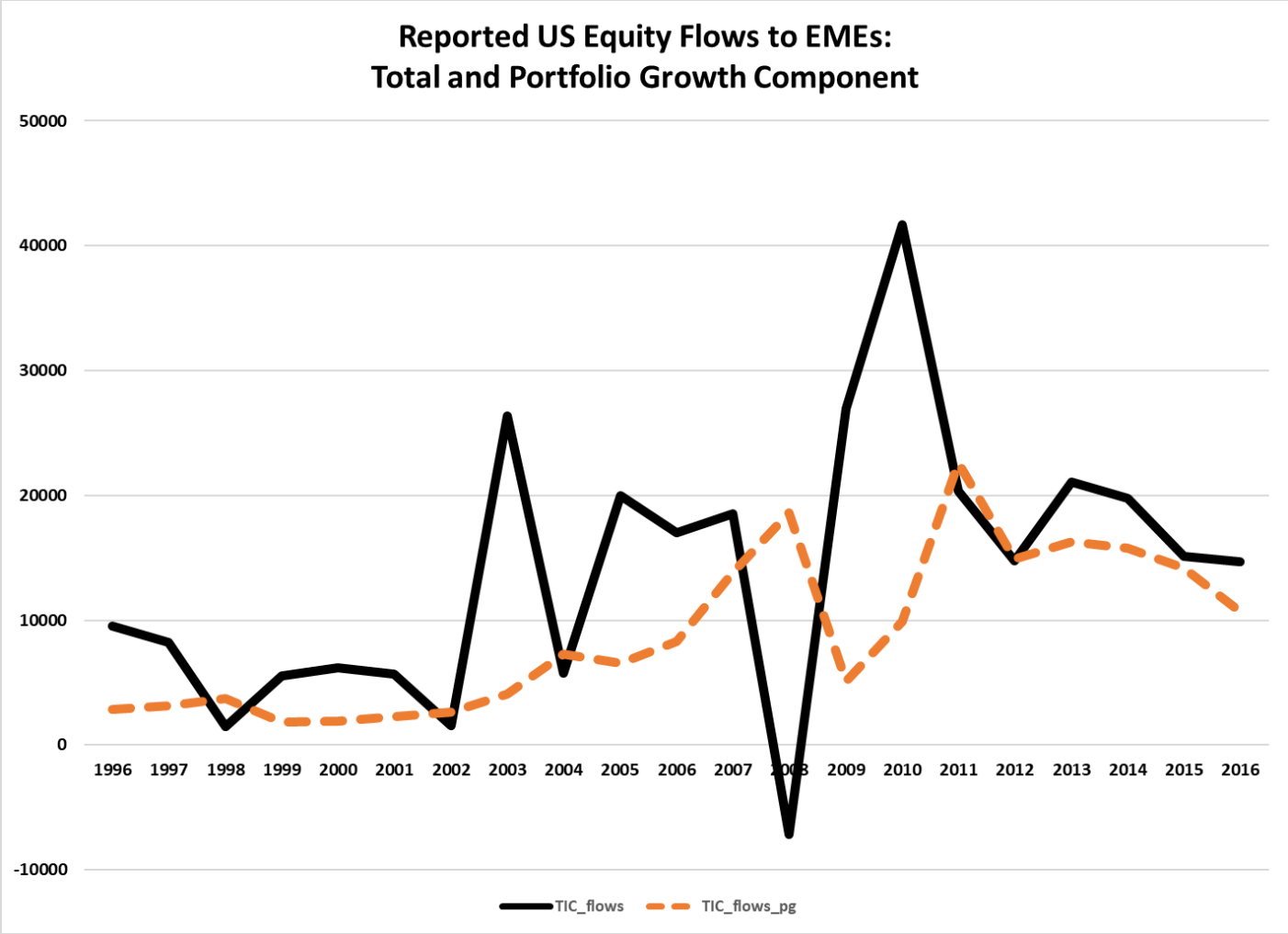
Let $CF_{i,t}$ be capital flows in period *t* to country *i*

$$CF_{i,t} = \eta_{i,t-1} * S_t + ReallocationFlow_{i,t} \qquad (1)$$

Portfolio growth component of flows are those due to new savings, S_t, allocated passively based on existing portfolio weights ($\eta_{i,t-1}$).

Reallocation Flows are the residual.

Portfolio growth flows can be substantial (although the period-to-period variation is driven by reallocation flows)



Annual data, USD millions. US equity flows to eighteen EMEs: Argentina, Brazil, Chile, Colombia, and Mexico; India, Indonesia, Korea, Malaysia, Philippines, Taiwan, and Thailand; Czech Republic, Hungary, and Poland; and Israel, Turkey, and South Africa.

Decomposition (2): Stock-based data into active and passive components

ΔPortfolio Share = $\omega_{i,t} - \omega_{i,t-1}$

Can be rewritten as:

ΔPortfolio Share = Passive Change + Active Change

$$= \omega_{i,t-1}(R_{i,t}/R_{P,t} - 1) \quad + \quad \omega_{i,t} - \omega_{i,t-1}(R_{i,t}/R_{P,t})$$

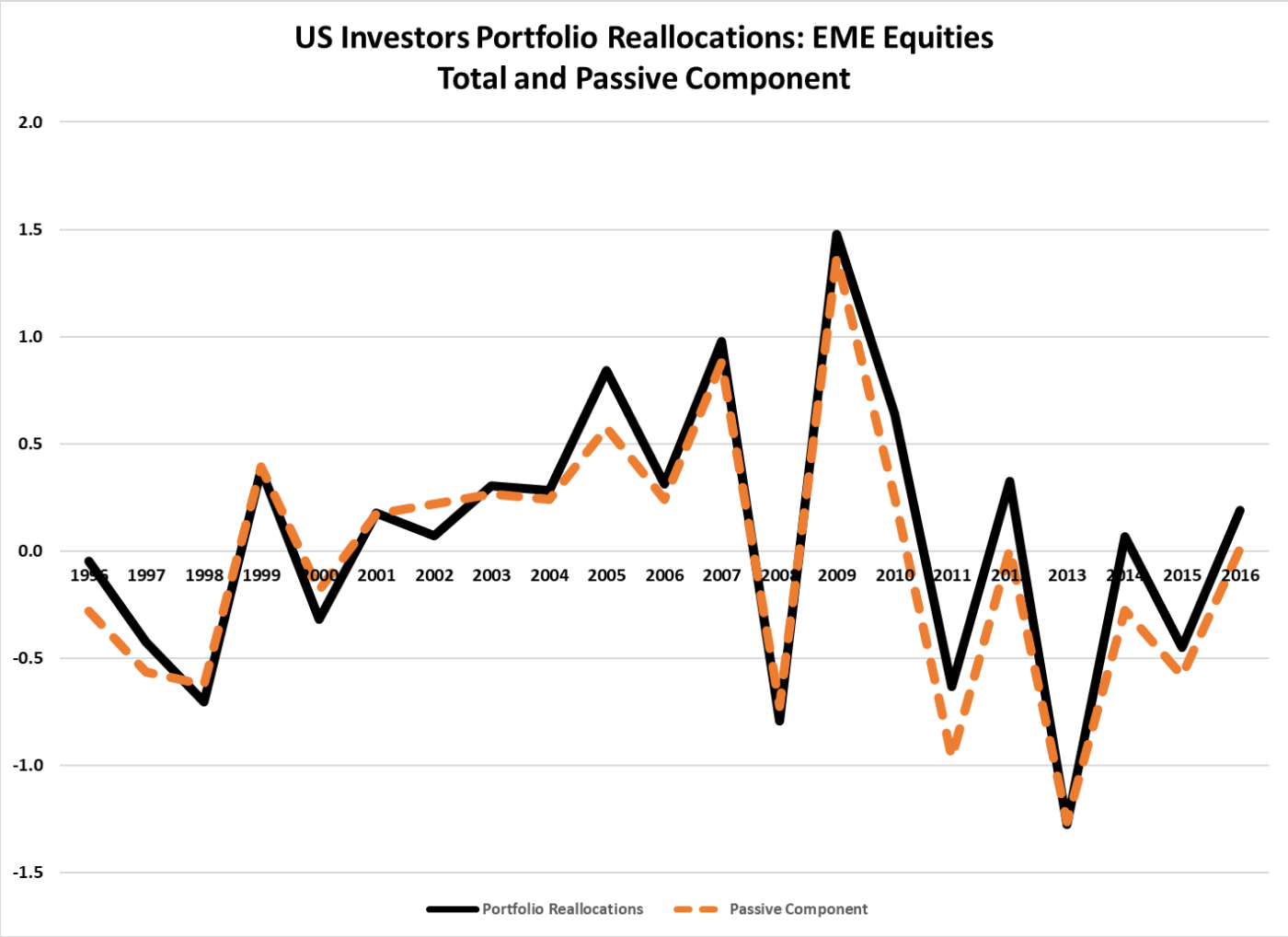
where R_i and R_P are gross returns on country *i* equities (for example) and the entire portfolio, respectively.

<u>Off-the-shelf portfolio share data will combine the two components (passive and active reallocations).</u>

With portfolio share data one can isolate active reallocations as long R_i/R_P can be computed. This is what Ferson and Khang (2002), Badrinath and Wahal (2002), and Curcuru et al (2011, 2014) do.

Reallocations within US investors' global equity portfolios

Active reallocations into EME equities are quite small. Portfolio reallocations are almost all passive (i.e., due to relative price changes).



Decomposition (3):
Isolating portfolio reallocations using *Normalized Relative Weight*

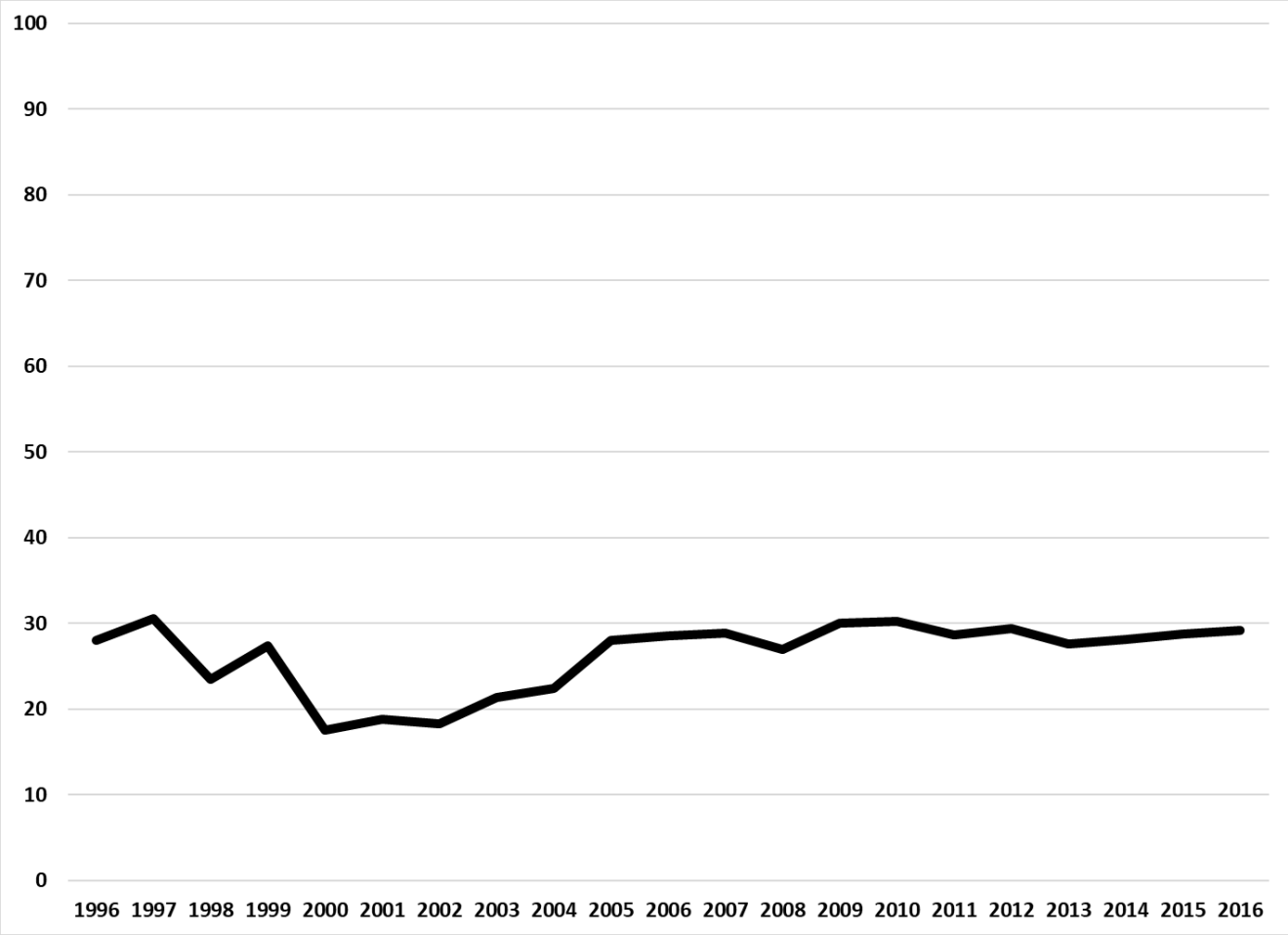
A measure, consistent with theory (Int'l CAPM), that isolates a set of investors' active reallocations is relative weight, defined here as a country's share in the investors' portfolios divided by the country's share in the global market.

For US investors the relative weight on country *i*'s equities:

$$RW_i^{US} = \omega_i^{US} / \left(\frac{MC_i}{MC_{world}}\right) \qquad (5)$$

The level of (5) is essentially a standard home bias measure, used in Ahearne et al (2004) and many others, with home bias defined relative to a benchmark.

Relative weight measure suggests US investors actively increased EME equity portfolio weights through 2004, but little to no increase since then.



US investors have about a 30% weighting (compared to the market weighting) on EME equities.

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Normalized Relative Weight isolates active portfolio reallocations (and the data requirements aren't onerous).

The variation in flows is due to active components (hard to model), while the variation in portfolio reallocations is primarily due to relative price changes.

	Depvar: Flows/MktCap		Portfolio Reallocation (Global)	
Independent Variable		R2		R2
Portfolio Growth Flows	-0.2673	0.039	-0.0599***	0.076
	(0.2099)		(0.0146)	
Reallocation Flows	0.9240***	0.944	0.0153***	0.076
	(0.0154)		(0.0020)	
Portfolio Reallocation: Passive	-0.0795	0.032	0.2548***	0.760
	(0.1342)		(0.0113)	
Portfolio Reallocation: Active	5.7951***	0.329	0.2158***	0.113
	(0.4360)		(0.0480)	
Change in NormRelWgt	0.3215***	0.415	0.0062***	0.051
	(0.0299)		(0.0012)	

Reported are results from 10 different pooled OLS regressions with panel corrected standard errors (reported in parentheses) that allow for heteroscedasticity across countries and autocorrelation. Smpl is 18 EMEs, 2002Q1-2012Q4. **Regression of flows on set of push and pull factors yields an R2 of 0.039.**

Some conclusions from Ahmed Curcuru Warnock Zlate

Ahmed, Curcuru, Warnock and Zlate decompose flows and portfolio reallocations to gain insight into the top-line aggregates.

The level of flows is reasonably well approximated by "portfolio growth" flows – that is, the flow of new savings allocated according to last period's weights – but the variation in flows comes from active portfolio reallocations.

This poses a challenge for empirical work on flows, as active reallocations are difficult to model.

Modelling portfolio reallocations is quite easy…anything correlated with current returns differentials will shine. (Modelling active reallocations…a bit more difficult.)

Switching Gears (briefly) to

Burger Warnock Warnock Currency Matters

Dataset is on US investors' international bond portfolios. Annual data 2006-2011 for a broad sample (40 destination countries), 2006-2015 for an EME sample. Focus is on active portfolio reallocations.

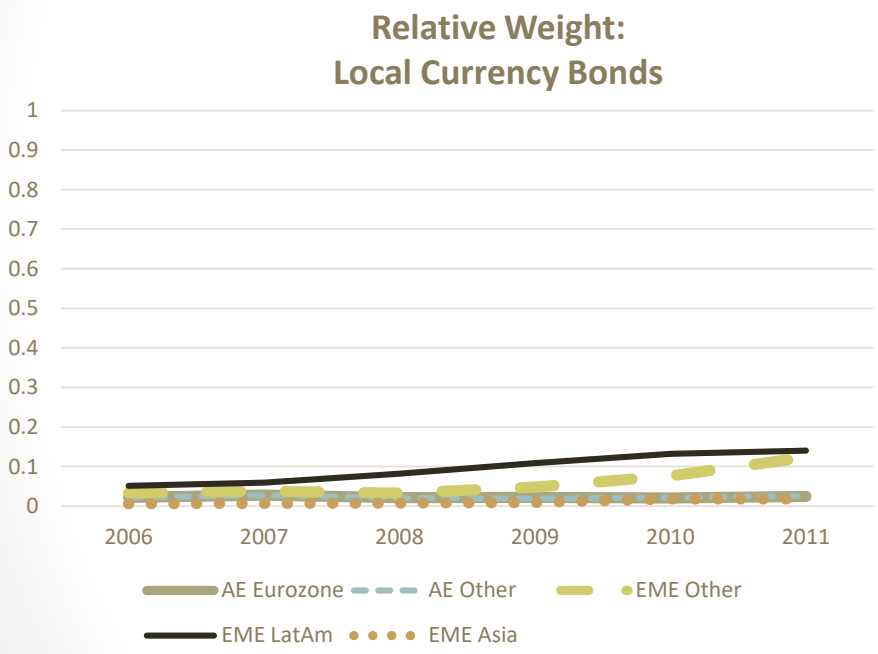
BWW find strong evidence of a *home currency bias* in international bond portfolios.

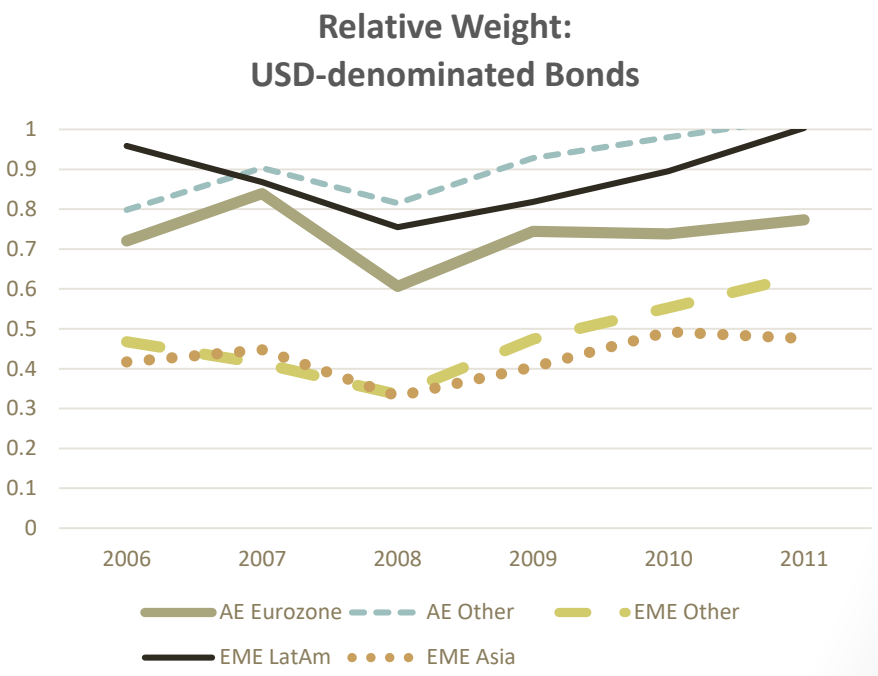
There are many regressions in the BWW paper, but four (or maybe 6) pictures convey the main point.

Current version is at http://www.nber.org/confer//2017/IFMf17/Burger_Warnock_Warnock.pdf

Home Currency Bias:

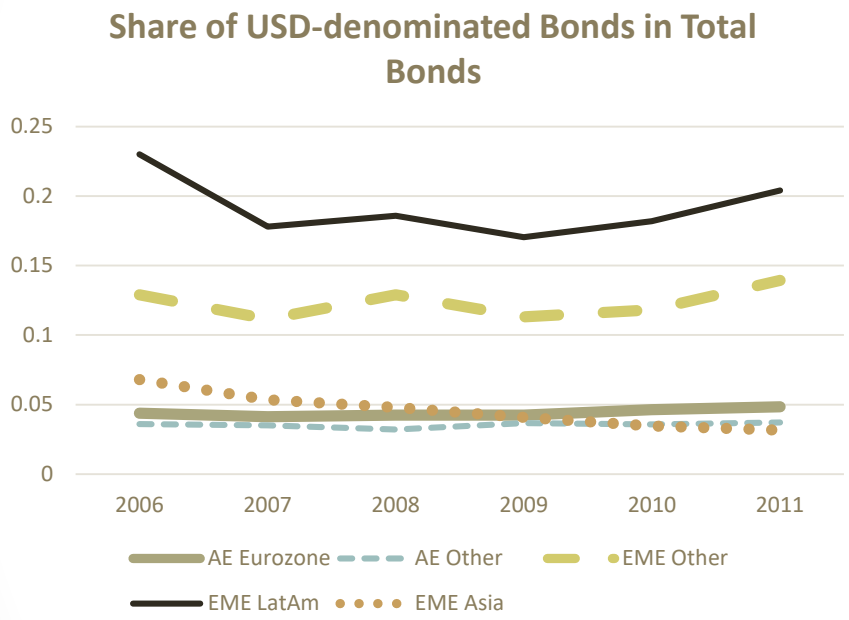
For US investors, traditional home bias for bonds denominated in the issuer's currency ("local currency bonds"), but USD-denominated bonds are in US portfolios at near market weights

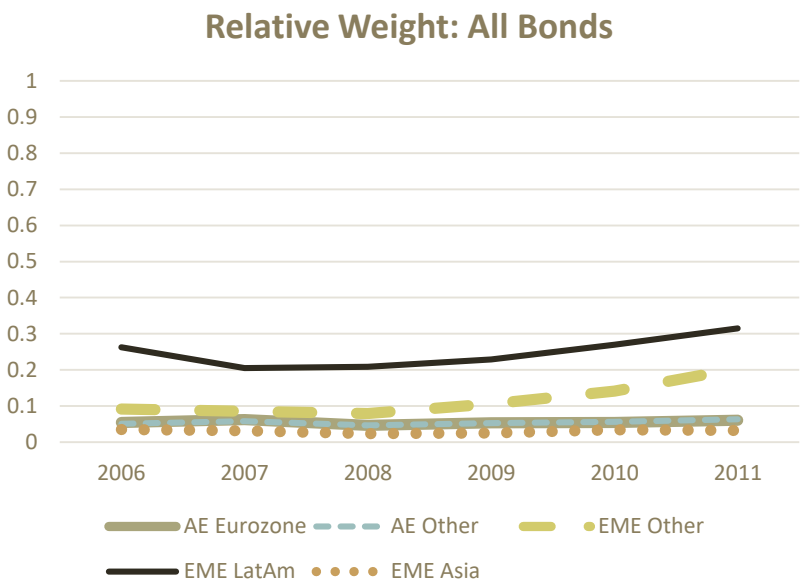




Relative weight of 1 means portfolio and market weights are identical, no bias.

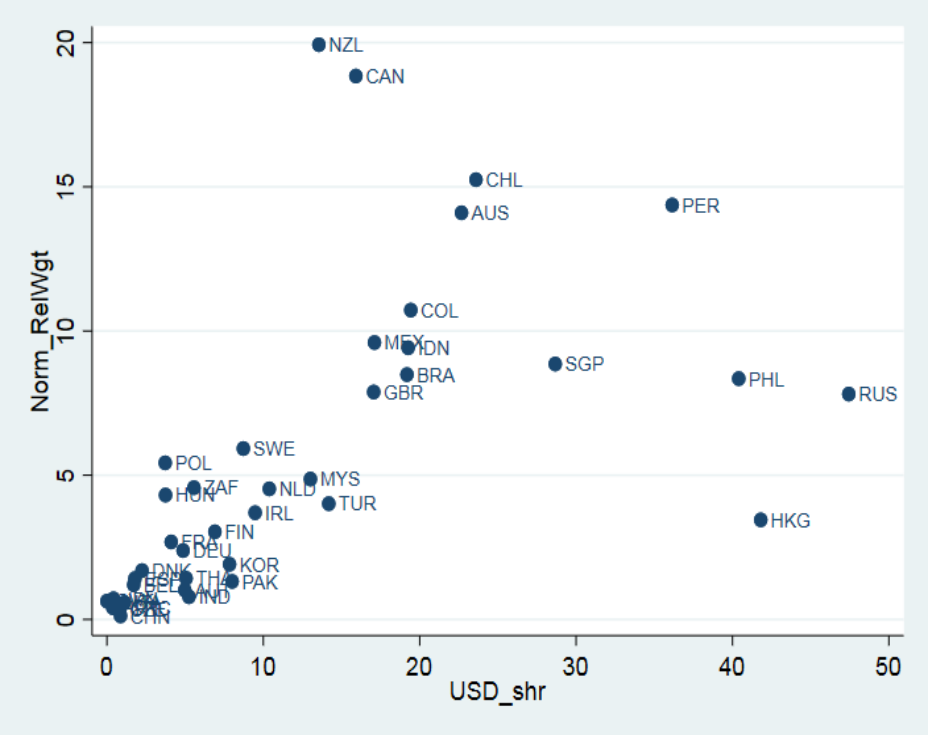
It follows that US investment in a country's bonds is higher if that country issues a higher share of USD-denominated bonds.



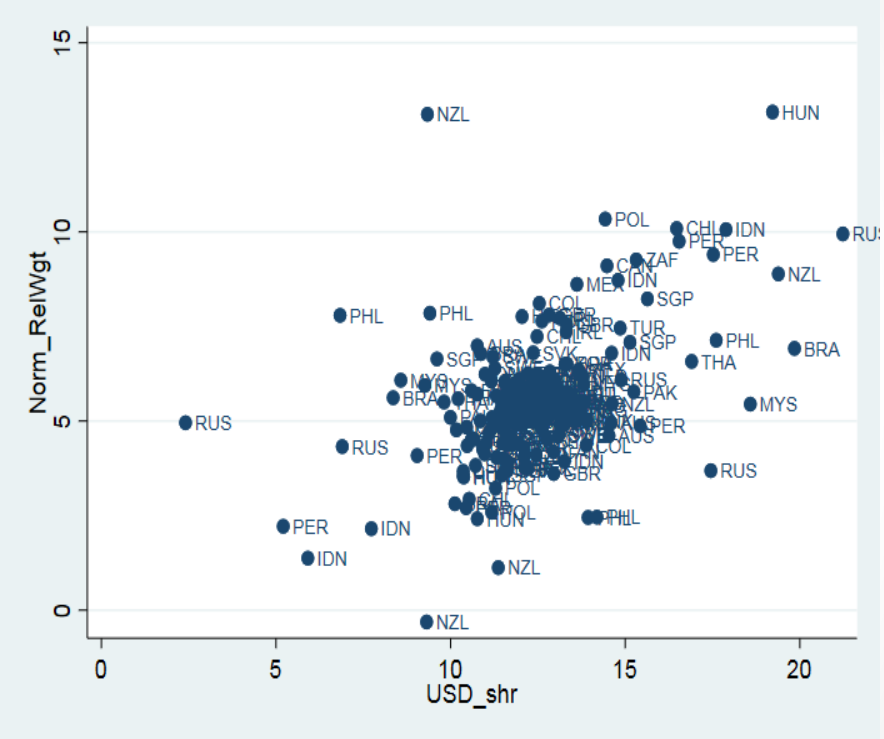


Home Currency Bias explains patterns of investment both across countries *and* through time within each country

Between Variation



Within Variation



Horizontal axis is the share of a country's bonds denominated in USD.
Vertical axis is US investors' normalized relative weight.

Home Currency Bias in Int'l Bond Portfolios

- BWW also models countries' USD issuance in a first stage regression
  - Countries with greater exchange rate volatility issue a lower proportion of bonds in USD.
    - Offers a caveat to the interpretation of previous results on exchange rate volatility…might have been acting as a proxy for foreign currency issuance.
  - EMEs issued a greater share of USD-denominated bonds in response to the Fed's UMP.
    - And US investors took some of this new USD-issuance, but US holdings did not keep pace with new issuance.

- If we are permitted to generalize, international bond portfolios and flows are heavily influenced by two "facts":

  (i) bonds issued in the investor's currency are special and

  (ii) the degree to which bonds are issued in investors' currencies varies across countries.

- We note that others are finding similar results with other datasets
  - Maggiori, Nieman and Schreger (2017), using security-level bond mutual fund data for a number of investor-countries, also find a home currency bias.
  - Boermans and Vermeulen (2016) find a home currency bias using confidential security-level data for Eurozone.

Conclusions

From ACWZ decompositions

The level of flows seem to be reasonably well approximated by "portfolio growth" flows – that is, the flow of new savings allocated according to last period's weights.

But the variation in flows comes from active portfolio reallocations.

From BWW home currency bias, international bond portfolios and flows are heavily influenced by

(i) bonds issued in the investor's currency are special

(ii) the degree to which bonds are issued in investors' currencies varies across countries