



BANK FOR INTERNATIONAL SETTLEMENTS

Dealing with capital flow volatility

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Bank for International Settlements

G-24 Technical Group Meeting

Colombo, Sri Lanka, 28 February 2018

The views expressed are those of the presenter and not necessarily those of the Bank for International Settlements.



Recent developments in capital flows to EMEs

- Cross-border bank lending to emerging market economies (EMEs) rose for three consecutive quarters until Sep 2017.
 - During Q3 2017, cross-border claims on EMEs from BIS locational banking statistics increased by \$66 billion.
 - During Q3 2017, the increase was more broad-based.
 - Before Q3 2017, it was driven mainly by lending to China.
- International bond issuance by EMEs remained strong in 2017 in terms of both the residency and nationality of borrowers
 - After sharp drop in issuance volume in second half of 2015, volume continued to increase and surpassed pre-2015 level.
- Even though US long-term bond yields started to rise and further rate hikes by the Fed in 2018 are expected, the weak US dollar and persistent search for yield supported by the still large stock of global liquidity generate capital inflows to EMEs.

Cross-border claims, by borrowing region

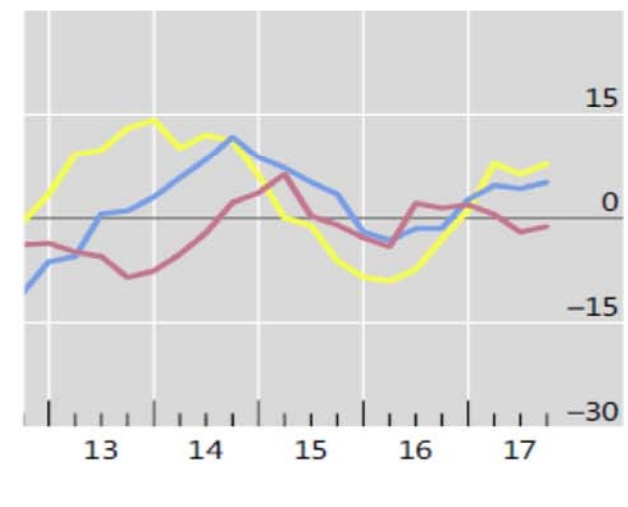
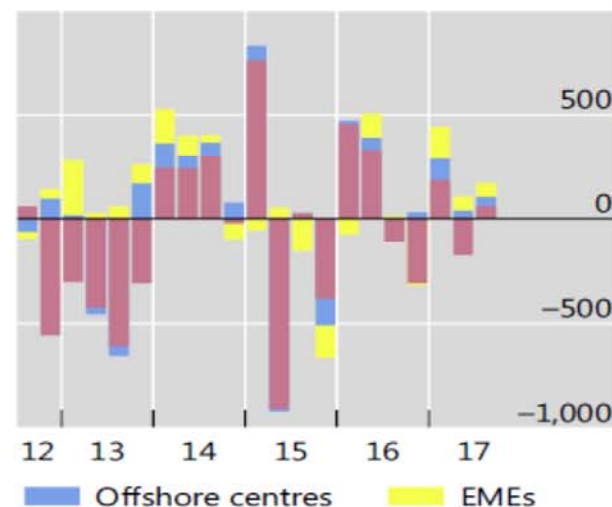
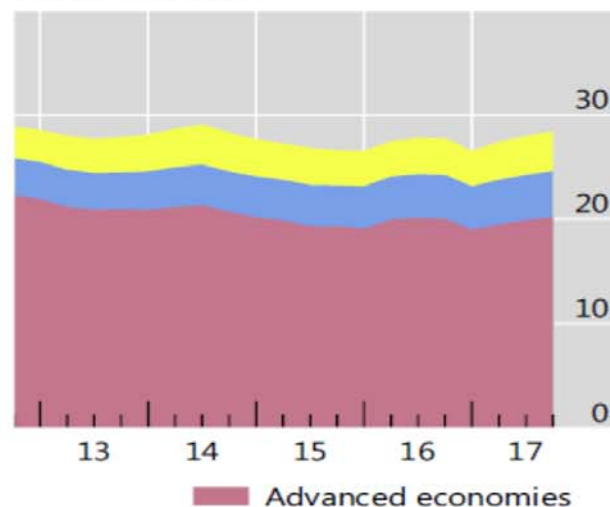
Graph A.2

Amounts outstanding, in USD trn¹

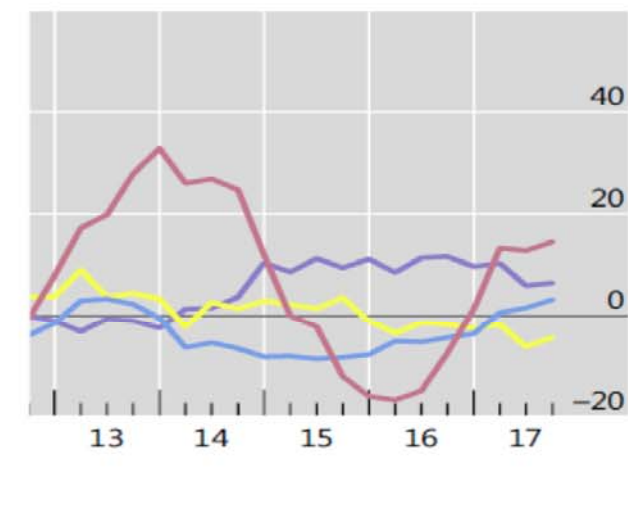
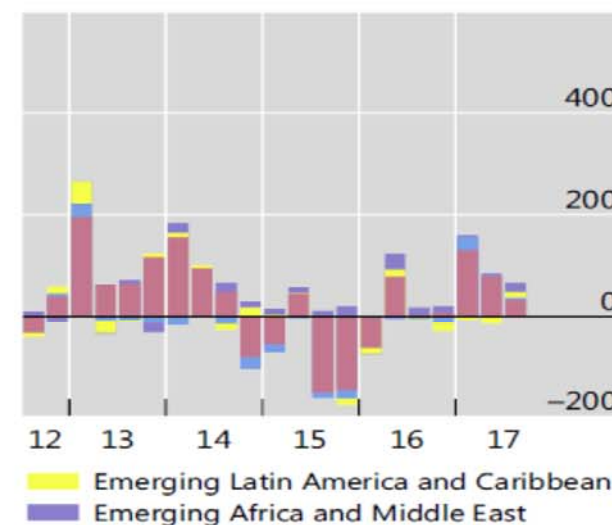
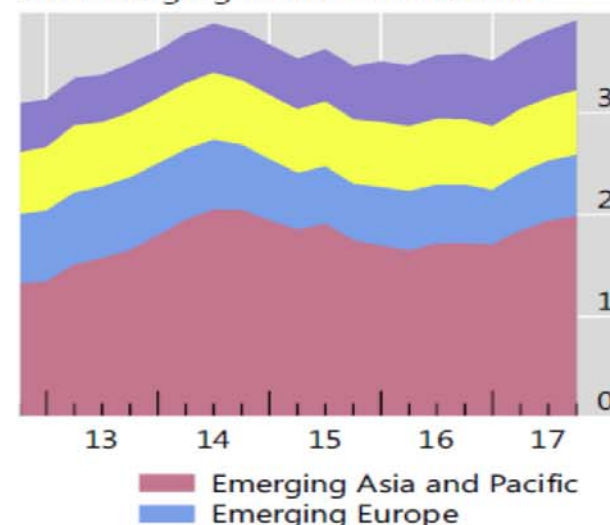
Adjusted changes, in USD bn²

Annual change, in per cent³

On all countries



On emerging market economies



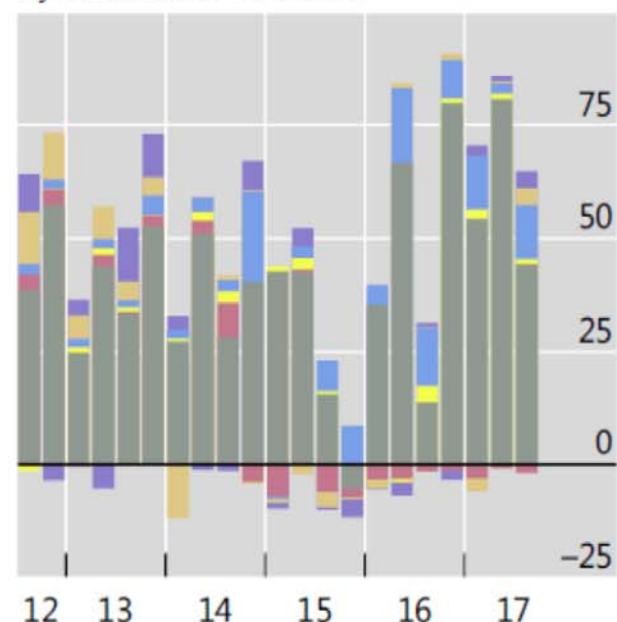
¹ At quarter-end. Amounts denominated in currencies other than the US dollar are converted to US dollars at the exchange rate prevailing on the reference date. ² Quarterly changes in amounts outstanding, adjusted for the impact of exchange rate movements between quarter-ends and methodological breaks in the data. ³ Geometric mean of quarterly percentage adjusted changes.

International debt securities issued by borrowers from emerging market economies¹

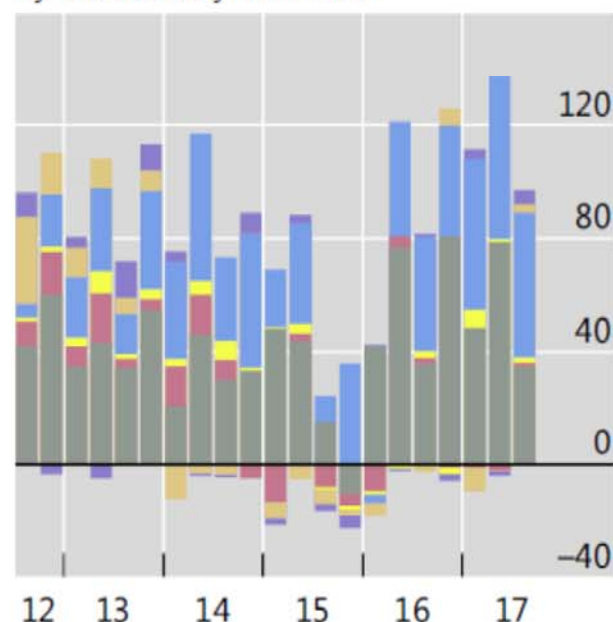
Net issuance, in billions of US dollars

Graph C.4

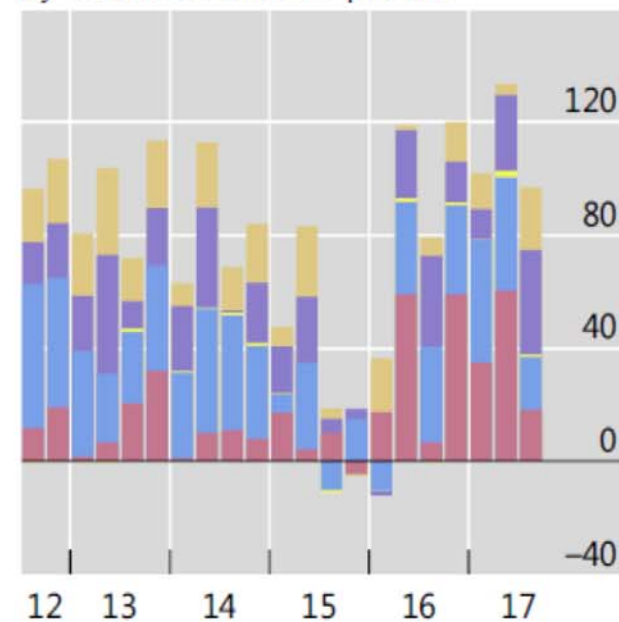
By residence of issuer²



By nationality of issuer³



By sector of issuer's parent⁴



BR
CN
IN
KR
RU
Other

Government: GG
Financials: FI
Non-financials: NFI

BR = Brazil; CN = China; IN = India; KR = Korea; RU = Russia.

FI = financial corporations; GG = general government; NFI = non-financial corporations.

Further information on the BIS debt securities statistics is available at www.bis.org/statistics/secstats.htm.

¹ For the sample of countries comprising emerging market economies, see the glossary to the *BIS Statistical Bulletin*. ² Country where issuer resides. ³ Country where issuer's controlling parent is located. Includes issuance by financing vehicles incorporated in offshore financial centres with parents based in an emerging market economy. ⁴ By nationality, ie issuers with parents based in an emerging market economy. Issuers are grouped by sector of their parent.

Sources: IMF; Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; BIS debt securities statistics.

Supply and demand factors of capital flows

- Takats (2010): cross-border lending to EMEs during the GFC
 - International lending fell substantially, but there was a slight increase in domestic currency loans provided by international banks to local affiliates.
 - Supply factors were the main drivers of the fall.
 - Demand also declined, but played much smaller role.
 - Contrasts with a more balanced impact prior to the GFC.
- Amiti, McGuire and Weinstein (2017)
 - “All healthy credit relationships are alike; each unhealthy credit relationship is unhealthy in its own way.”
 - During non-crisis years, bank flows are well explained by a common global factor and a local demand factor.
 - During times of crisis, flows are affected by idiosyncratic supply shocks to a borrower country’s creditor banks.

Supply and demand factors of capital flows (cont'd)

- I Shim and K Shin (2018, in progress)
 - Consider bilateral banking flows from 27 lender countries (mostly AEs) in consolidated international banking statistics to 67 EME as borrower countries over 2001-2017
 - 3 proxies for financial stress in lender countries/banks
 - (i) USD corporate bond spread
 - (ii) sovereign CDS spread
 - (iii) average bank CDS spread
 - Financial stress in lender countries is a major driver of banking outflows from EMEs.
 - This is true even after the global financial crisis.
 - Cross-border claims on EMEs are more susceptible to financial stress in lender countries (AEs) than local claims in foreign currency, which is more susceptible than local claims in local currency.

US monetary policy is a key global driver of capital flows

Table 3 - Locational baseline regressions (by borrowing country) with structural breaks

	Dependent variable: Δ Cross-border loans †			Dependent variable: Δ International debt securities ‡			Dependent variable: Δ Total cross-border flows (loans and debt securities)		
	All	to banks	to non-banks	All	by banks	by non-banks	All	to banks	to non-banks
Pre-break									
Δ FF (1)	-3.19*** (0.49)	-3.44*** (0.81)	-3.42*** (0.56)	-1.42 (1.03)	-1.26 (1.36)	-0.90 (1.20)	-2.07*** (0.36)	-2.57*** (0.71)	-2.09*** (0.37)
VIX (2)	-3.94*** (0.94)	-4.43*** (1.63)	-4.36*** (1.07)	-1.09 (1.28)	-5.63** (2.66)	-0.21 (1.56)	-3.11*** (0.67)	-4.09*** (1.39)	-2.70*** (0.69)
Post-break - up to 2013:Q1									
Δ FF (1)	-8.07*** (1.336)	-10.79*** (2.088)	-6.16*** (1.188)	-8.17*** (2.510)	-20.23 (12.75)	-8.00*** (2.542)	-7.96*** (1.00)	-11.50*** (1.96)	-6.44*** (0.93)
VIX (2)	-2.68** (1.071)	-2.12 (1.671)	-2.87*** (1.063)	-3.07** (1.476)	-5.60 (5.225)	-2.51* (1.517)	-3.14*** (0.83)	-2.73* (1.61)	-2.88*** (0.79)
Post-break - up to 2015:Q4									
Δ FF (1)	-3.68*** (0.71)	-5.56*** (1.02)	-2.29*** (0.72)	-5.19*** (0.92)	-9.82*** (3.79)	-4.88*** (0.93)	-4.37*** (0.47)	-5.84*** (0.84)	-3.85*** (0.49)
VIX (2)	-0.32 (0.81)	0.77 (1.27)	-0.99 (0.77)	-1.55 (1.06)	-1.25 (3.12)	-0.83 (1.04)	-1.18* (0.60)	0.41 (1.18)	-1.13* (0.58)

Notes: The sample includes quarterly data for 64 recipient countries over the period 2000:Q1 - 2015:Q4. Robust standard errors in

Avdjiev, Gambacorta, Goldberg and Schiaffi (2017)

Monetary policy, exchange rate and capital flows

- Net exports channel of exchange rates
 - Exchange rate pass-through to inflation
 - Appreciation reduces net exports, so contractionary.
- Financial channel of exchange rates
 - Goes in the opposite direction to the net exports channel
 - Appreciation loosens domestic financial conditions
 - Appreciation can be expansionary
- Risk-taking channel of currency appreciation via bank flows
 - Bruno and Shin (2015a, 2015b)
- Risk-taking channel of currency appreciation via bond flows
 - Hofmann, Shim and Shin (2017)
- Risk-taking channel of currency appreciation for corporates
 - Kalemli-Ozcan, Liu and Shim (2018)

Findings from Bruno and Shin (2015a, 2015b)

- Focus on the quantity dimension of the risk-taking via global banks.
- Bruno and Shin (2015b)
 - An expansionary shock to US monetary policy increases cross-border bank capital flows through higher leverage of global banks.
- Bruno and Shin (2015a)
 - An appreciation of the local currency against the US dollar is associated with an acceleration of bank capital flows to individual countries.

Findings from Hofmann, Shim and Shin (2017)

- Focus on the price and quantity dimensions of the risk-taking via global bond funds
- Exchange rate vis-à-vis USD is significant determinant of EME local currency bond market conditions
 - Appreciation is associated with looser financial conditions
 - Bond inflows increase; bond yields decrease.
 - Effect works through risk premium.
- Appreciation in trade-weighted exchange rate unrelated to USD goes in the opposite direction.
 - Financial channel of exchange rates is consistent with textbook net exports channel.
- Role of the broad US dollar index

Findings from Kalemli-Ozcan, Liu and Shim (2018)

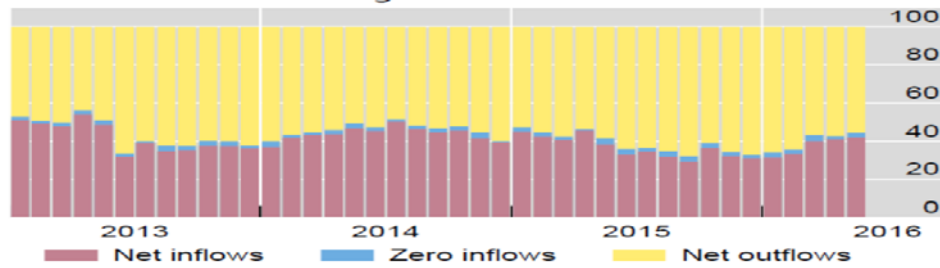
- Do firms increase leverage (loans and bonds) when their local currency appreciates?
- Data
 - ORBIS, around 50,000 listed/non-listed firms, 10 Asia EMEs, 2002–15; country-level FX debt share calculated from BIS global liquidity indicators (including FX loans and bonds)
- Main results
 - When local currency appreciates against USD, firms with large FX debt before appreciation, increase leverage more than those with small FX debt after appreciation.
 - Stronger effects for non-tradable sector firms than tradable.
- Policy implications
 - Important to monitoring corporate FX exposure
 - Procyclicality: currency↑, leverage↑, investment↑, currency↑

Behaviour of global EME bond funds

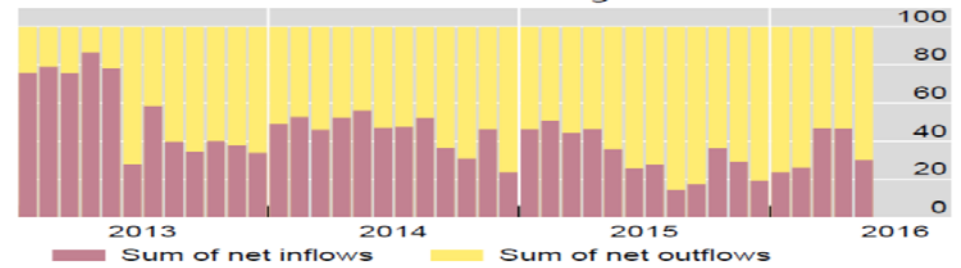
- Miyajima and Shim (2014): **cross-sectional** co-movement
 - Simultaneous investor redemptions across funds
 - Fund managers tend to sell at the same time.
 - EME bond funds tend to closely follow a relatively small number of benchmarks which are similar to each other.
- Shek, Shim and Shin (2018): **procyclical** sale of EME bonds
 - When investors sell bonds, fund managers also sell.
- Morris, Shim and Shin (2017): **cross-sectional** co-movement and **procyclical** selling behaviour interact via market liquidity
 - Bond funds investing in less liquid bonds exhibit
 - (i) higher degree of cross-sectional co-movement in flows
 - (ii) larger amount of discretionary selling by fund managers
 - (iii) stronger price-flow interactions over time.

Global DM bond funds (478)

Share of the number of funds facing net inflows and the number of funds facing net outflows

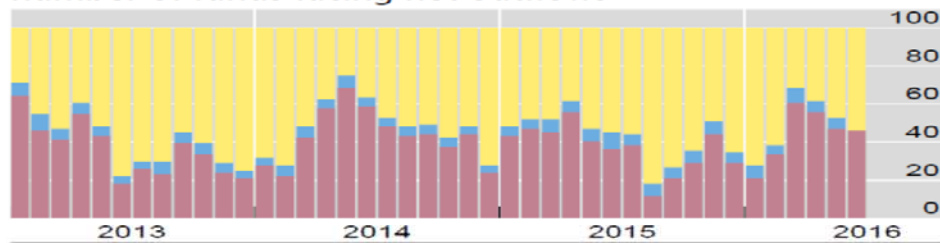


Share of sum of inflows for funds facing net inflows and the sum of outflows for funds facing net outflows

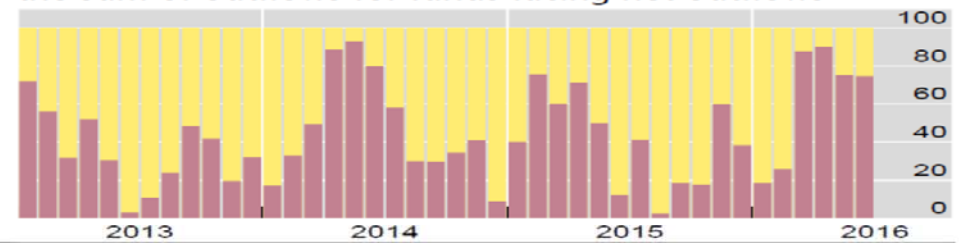


Global EME international government bond funds (104)

Share of the number of funds facing net inflows and the number of funds facing net outflows

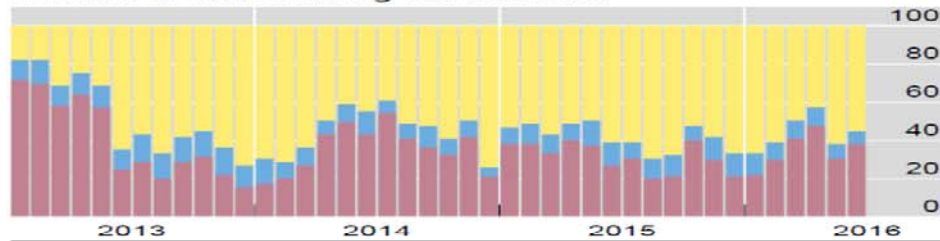


Share of sum of inflows for funds facing net inflows and the sum of outflows for funds facing net outflows

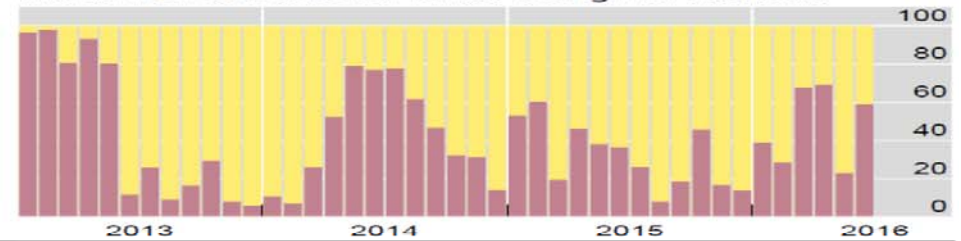


Global EME local currency government bond funds (105)

Share of the number of funds facing net inflows and the number of funds facing net outflows

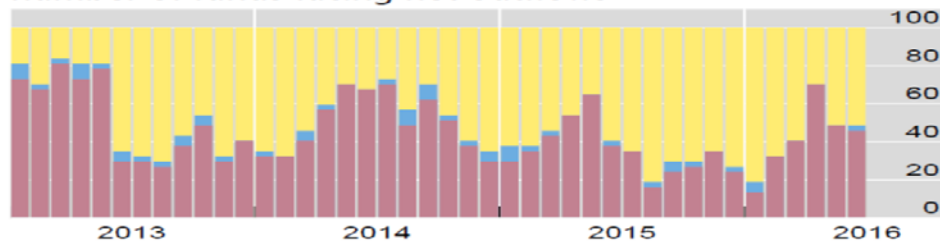


Share of sum of inflows for funds facing net inflows and the sum of outflows for funds facing net outflows

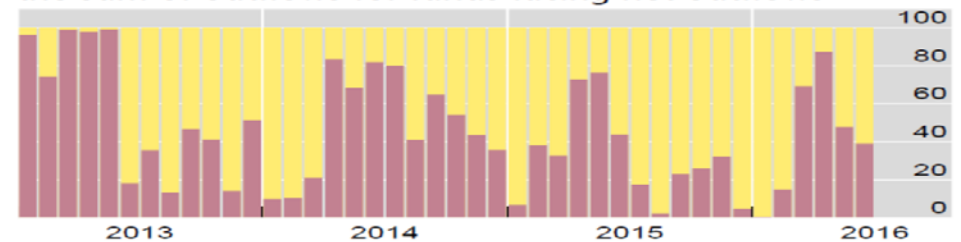


Global EME corporate bond funds (37)

Share of the number of funds facing net inflows and the number of funds facing net outflows



Share of sum of inflows for funds facing net inflows and the sum of outflows for funds facing net outflows



- Active share: the sum of the absolute value of deviations of the fund's country weights from those of the benchmark

$$Active\ Share_i = \frac{1}{2} \sum_{c=1}^N |w_{ic} - w_{ic}^B|.$$

Active share of actively managed global and regional EME bond funds

Table 7

	Number of funds	Number of benchmarks	Average value of the active share	Median value of the active share
Global EME local currency bond funds	28	3	17.7	17.3
Global EME international bond funds	31	4	18.5	16.7
Global EME mixed currency bond funds	11	4 ¹	23.9	20.9
Regional EME bond funds ²	5	4	10.3	9.6
Total	75	11	18.5	17.2

¹ All benchmarks in this category overlap with those for global EME local currency and international bond funds. ² Includes two Asia ex-Japan, one emerging Europe and two Latin America funds. In the EPFR database, no currency breakdown is available for these funds.

Sources: EPFR; JPMorgan Chase; authors' calculations.

Panel regressions of fund country weight on benchmark weight, by currency

Table 9

Benchmark weight and median peer weight

	Local currency bond funds (32)		International bond funds (43)	
Benchmark weight	0.83 ^{***} (0.05)	0.82 ^{***} (0.05)	0.82 ^{***} (0.11)	0.81 ^{***} (0.11)
Median peer weight		0.64 ^{***} (0.09)		0.47 ^{***} (0.07)
Observations	13,340	13,340	21,675	21,675
R-squared	0.70	0.71	0.84	0.84

Buy-and-hold and exogenous components of benchmark weights

	Local currency bond funds (32)		International bond funds (43)	
Buy-and-hold component		0.83 ^{***} (0.05)		0.82 ^{***} (0.11)
Exogenous component		0.51 ^{***} (0.13)		1.16 ^{***} (0.23)
Observations		12,463		21,590
R-squared		0.71		0.84

Explanatory variables not reported here include fund-country fixed effects and fund-time fixed effects. Median peer weight is the median weight for a country at a point in time among all bond funds in each category. Panel estimation does not contain observations where both fund country weight and benchmark weight are zero. Standard errors are in parentheses. The errors ε_{ict} are clustered at the benchmark-time level. */**/** denotes statistical significance at the 10/5/1% level.

Sources: Raddatz, Schukler and Williams (2014) (for regression specifications); EPFR; JPMorgan Chase; authors' calculations.

Common and concentrated benchmarks

Share of top five benchmarks used by bond and equity mutual funds and ETFs

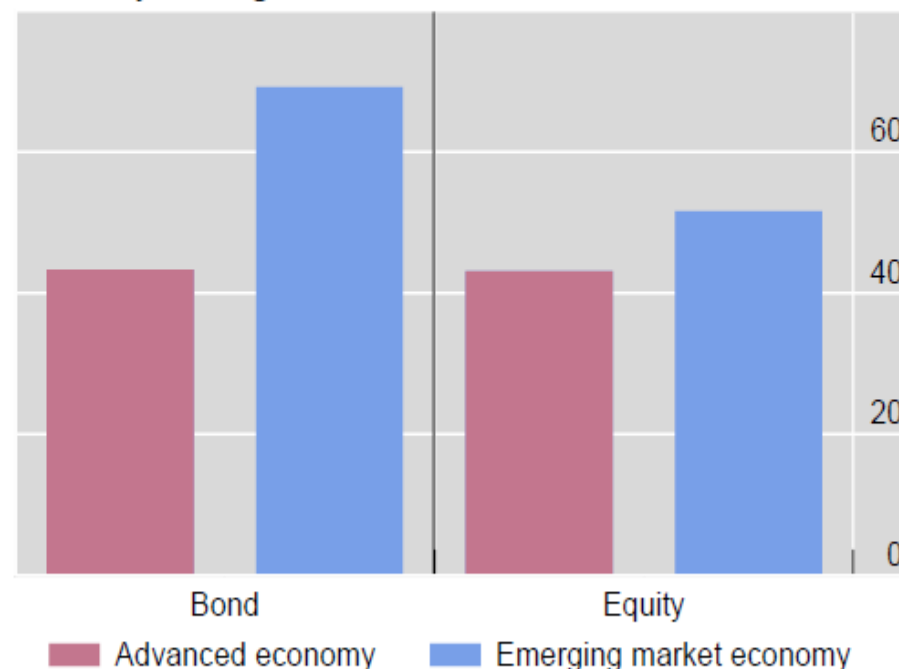
As of end-May 2014, as a percentage of total net assets

Graph 13

Actively managed funds



Passively managed funds



Sources: EPFR; authors' calculations.

Similarity across benchmarks

- Even if asset managers benchmark their performance to different indices, benchmarking may induce correlation if the indices themselves are correlated.

Measuring the degree of similarity between two benchmark indices

Table 10

Index pair	Overlap ¹	Index pair	Overlap ¹
JP Morgan GBI-EM Broad index (20) ² – Barclays Emerging Markets Local Currency Government Universal Bond index (25) ²	72	JP Morgan GBI-EM Broad index (20) ² – redefined Barclays Emerging Markets Local Currency Government Universal Bond index (20) ³	81
JP Morgan GBI-EM Global index (17) ² – Barclays Emerging Markets Local Currency Government Bond index (22) ²	62	JP Morgan GBI-EM Global index (17) ² – redefined Barclays Emerging Markets Local Currency Government Bond index (17) ³	85

¹ In per cent. $Overlap_t^{B1,B2} = 1 - \frac{1}{2} \sum_{c=1}^N |w_{ct}^{B1} - w_{ct}^{B2}|$. ² Figures in parentheses are the number of countries in each index with at least one positive value of monthly country weights since January 2011. ³ To make the JP Morgan index and Barclays Capital index comparable, we exclude five countries not included in the former from the latter, and recalculate the weights for the remaining countries in the Barclays Capital index.

Sources: Barclays Capital; JPMorgan Chase; authors' calculations.

Decomposition of changes in TNA for 15 EME LC gov't bond funds

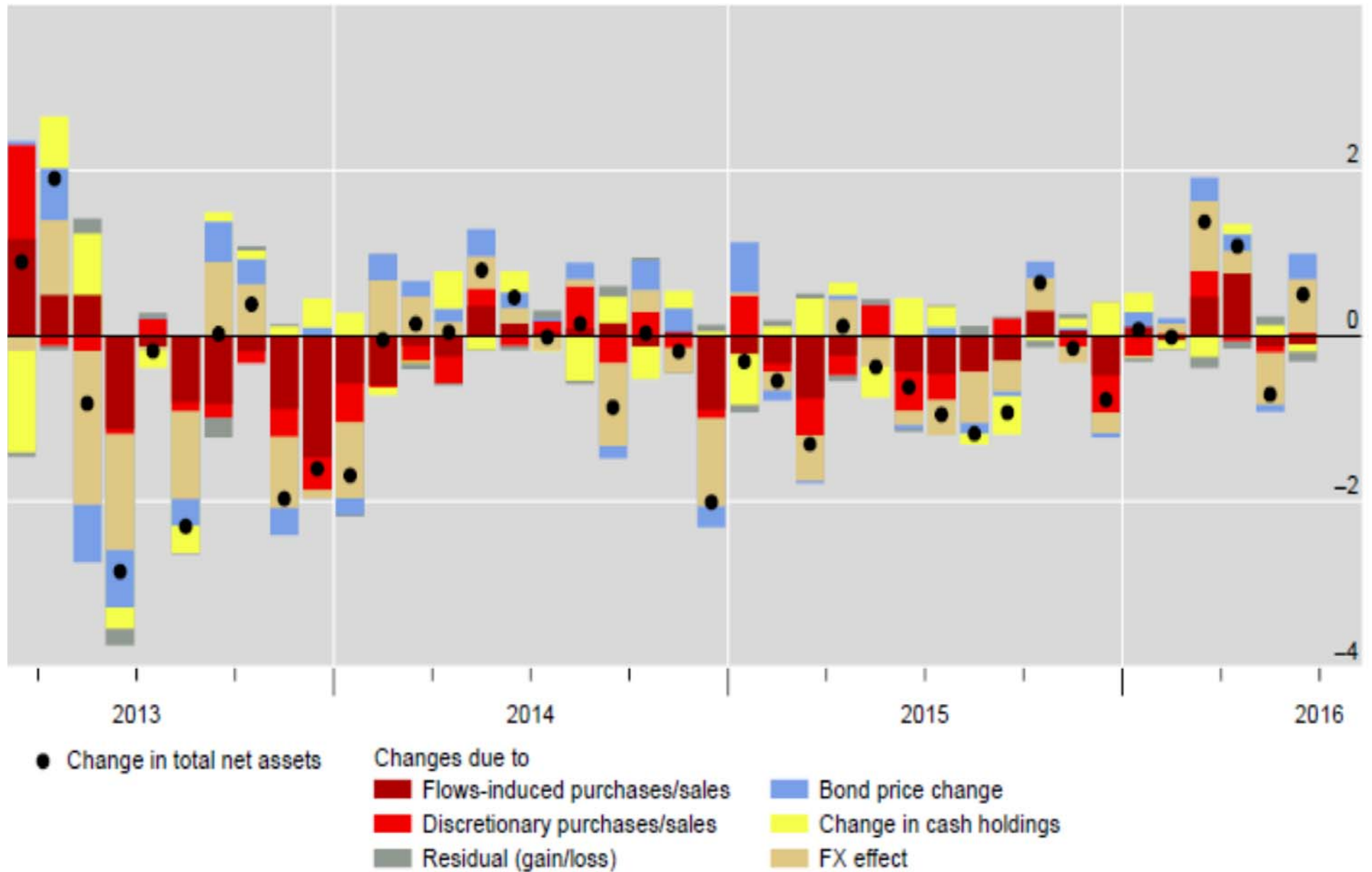


Table 3. Panel regressions of discretionary purchases on investor-driven purchases or investor flows. Coefficients on each of the explanatory variables from panel regressions with fund fixed effect. Dependent and explanatory variables are normalised by the NAV of each fund at the beginning of the month, except the VIX variable. t-statistics in brackets are calculated from standard errors clustered at the fund level. ***, ** and * represent significance at the 10, 5 and 1 percent level, respectively. Source: EPFR.

	Global DM bond funds		Global EME international government bond funds		Global EME local currency government bond funds		Global EME corporate bond funds	
Dependent variable: discretionary purchases in the same month								
Explanatory variables	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Flow-driven purchases in month t	0.030** (3.33)		0.076*** (3.35)		0.060 (1.68)		0.092** (2.73)	
Total investor flows in month t		0.014** (2.56)		0.026 (1.25)		0.041* (1.77)		0.058** (2.68)
$\Delta \log(VIX_t)$	-0.113 (-0.17)	-0.159 (-0.24)	-0.026 (-0.47)	-0.008 (-0.13)	0.034 (1.37)	0.037 (1.38)	0.040 (0.40)	0.049 (0.46)
N	8	8	13	13	15	15	6	6
$N \times T$	336	336	546	546	630	630	252	252
Adjusted R^2	-0.012	-0.018	0.034	0.011	0.034	0.011	0.034	0.011
Dependent variable: discretionary purchases in the previous month								
Explanatory variables	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)
Flow-driven purchases in month t	0.003 (0.21)		0.001 (0.09)		0.004 (0.35)		0.029 (1.56)	
Total investor flows in month t		0.016 (1.63)		0.018 (1.38)		0.024 (0.98)		0.055** (3.64)
$\Delta \log(VIX_{t-1})$	0.021 (0.75)	0.020 (0.72)	0.005 (0.08)	-0.003 (-0.04)	0.046 (1.42)	0.040 (1.31)	0.061 (0.56)	0.043 (0.40)
N	8	8	13	13	15	15	6	6
$N \times T$	328	328	533	533	615	615	246	246
Adjusted R^2	-0.015	-0.013	0.006	0.008	-0.014	-0.009	-0.011	0.002

Symptoms vs causes

- Global economy is a network of financial claims, not islands: Shin (2017).
- It is subject to procyclicality driven by global financial conditions.
- Capital flow management tools sometimes effective, but better to address the underlying *causes* than *symptoms*.
- Need to introduce prudential measures on leverage and liquidity risks with macroprudential intent
- The analyses presented so far indicate that decisions by global banks to lend to EMEs or withdraw and decisions by global bond funds to buy or sell EME bonds are important determinants of capital flows to EMEs.

Policy tools available to deal with capital flows

- Capital flow management policy
 - Include capital controls and FX-related prudential measures
 - Used by many EMEs targeting different types of flow
 - Sometimes effective on slowing down the targeted flows
 - But effects are short-lived and leakages are often found.
- FX reserves and sterilised FX intervention (as reverse QE)
 - Ghosh, Ostry & Qureshi (2018): increases in FX reserves to GDP ratio stem credit growth and offset capital inflows
 - Hofmann, Shin & Villamizar-Villegas (2018): sterilised FX intervention counters effect of capital inflows on bank lending
- Monetary policy and domestic macroprudential policy also affect capital inflows albeit via different channels.
- Global financial safety nets are also important in dealing with capital flows not only ex-post (ie after a crisis) but also ex-ante.

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