

Monetary Policy in the North and Capital Flows in the South

Roundtable on Emerging Market Topics

Cross Emerging Markets Unit

BBVA Research

Madrid

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Summary

Motivation

- Developing a Model to analyze the effects of Monetary Policy in Developed countries on Portfolio Flows to Emerging Markets
- Understand a unique situation: Both Big Central Banks involved in different paths (“exit and entry”) of Unconventional Monetary Policies (UMP)

Data & Model

- Mixing High Frequency Data (EPFR) with Official Balance of Payments (BoP) data through Nowcasting
- The DFM-FAVAR models combining Macroeconomics and Flows factors
- Designing six alternatives scenarios for the FED and the ECB policies

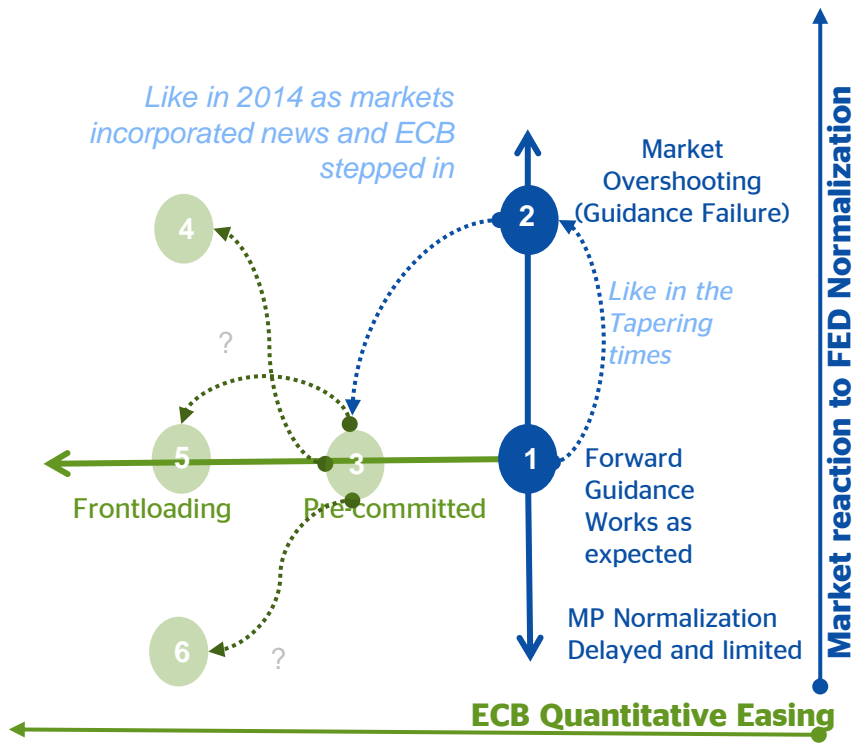
Key Results

- A drop in portfolio flows to Emerging Markets is highly likely
- The magnitude will depend on markets anticipation and the response of GRA
- FED Dominance: The offsetting role of the ECB to the normalization policy in the US will be limited
- Regional Asymmetry: Latam & Asia more affected than EM Europe

Summary: Scenarios & Results

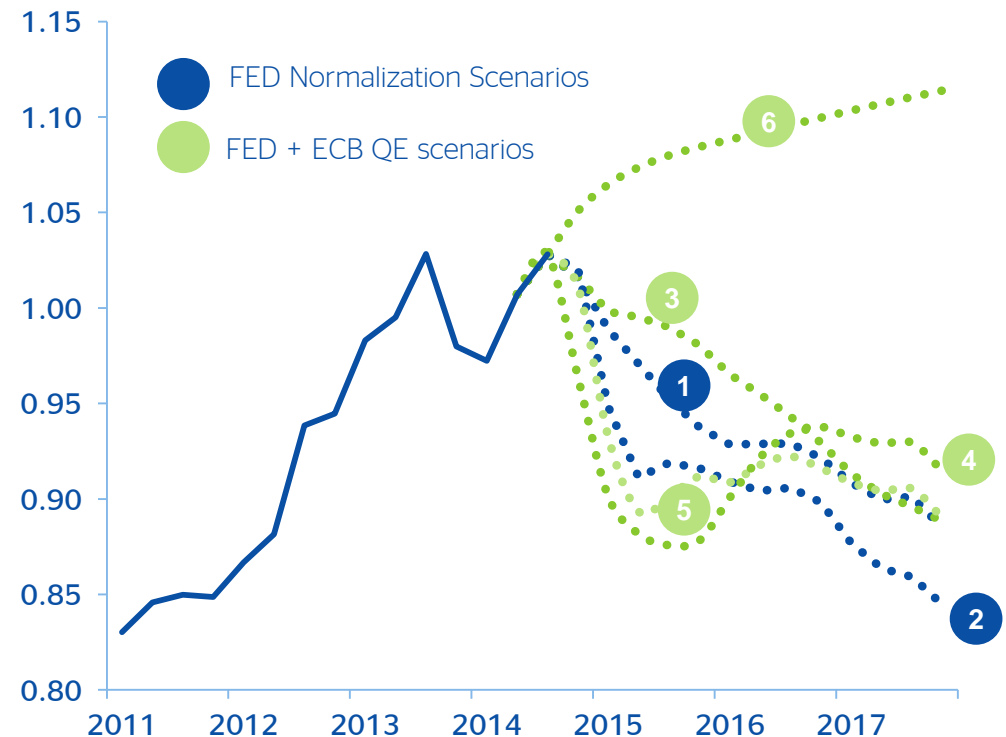
Monetary Policy in The North

(Alternative Scenarios)



Capital flows response in the South

(Cumulative Response of Portfolio Flows in US bn)



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The Data and the Model

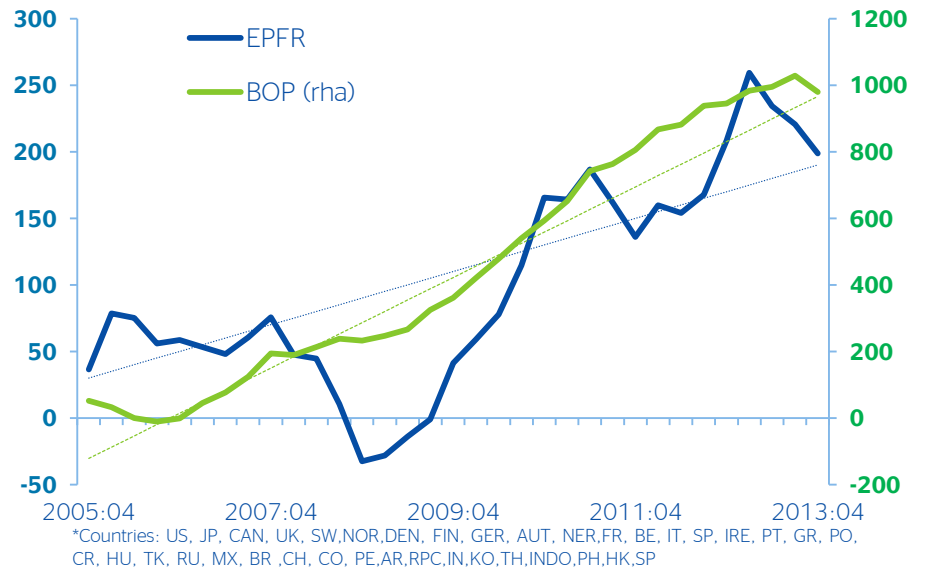
Data: EPFR good for Short Run analysis but BoP better for long run simulations. We use both

| | Balance of Payments Data | EPFR Data |
|------|-----------------------------------|--|
| PROS | Consistent/Official Data | High Frequency |
| | Global (all flows) | Timely (last Wed 23rd) |
| | Long time series (scenarios) | Fair Representat. (investment appetite) |
| CONS | Low Frequency (concealing shocks) | Short time series |
| | Delay 2Q /3Q (starting point=) | Mutual Funds |
| | Concealing Shocks | Sampling bias to EM Institutional* Bond Investors less to Equity and DMs |

Portfolio Flows (BoP and EPFR) since 2005

In US bn Cumulative of Developed and Emerging Countries*)

Source: BBVA Research, IMF and EPFR data



- Working sample will be 2005Q1 to 2014Q3 of **N=40 countries** (equal share DM/EM). Variable will be **‘Net Portfolio Flows to Cumulated assets’** (stationarity and comparability)
- We will use an **extended BoP data base** updated up to 3Q2014 (Nowcasting using EPFR and the DFM/FAVAR model).
- **Same stylized features in response to global shocks** (see impulse Response on both EPFR and BoP)

Combining latent -factor model & Macroeconomics push/pull factors*: A two steps approach DFM/FAVAR model

(1) The Dynamic Factor Model of Flows (DFM) to extract the capital flows factors

Measurement Block Relates Factors (F_t) and Flows (X_t)

$$x_t = \mu + \Lambda f_t + \xi_t$$

Transition Block allows for flows (F_t) dynamics as AR

$$f_t = \Phi_1 f_{t-1} + \dots + \Phi_p f_{t-p} + \varepsilon_t$$

The **Noise to Signal Ratio** is maximized, errors are iid.

The process is estimated using a Kalman Filter

.....

Flows assumed to conceal a structure of **latent factors** (Λ) (**Global, Regional and Idiosyncratic**), Each factor is **orthogonal** and follows an **AR(p)** process ($\phi(L)$).

$$PF(t)_i = \beta_{1i} * Global(t) + \beta_{2i} * EME(t) + \beta_{3i} * IDIO(t)_i + U(t) \text{ (emerging)}$$

$$PF(t)_j = \beta_{1j} * Global(t) + \beta_{4j} * DME(t) + \beta_{5j} * IDIO(t)_j + U(t) \text{ (developed)}$$

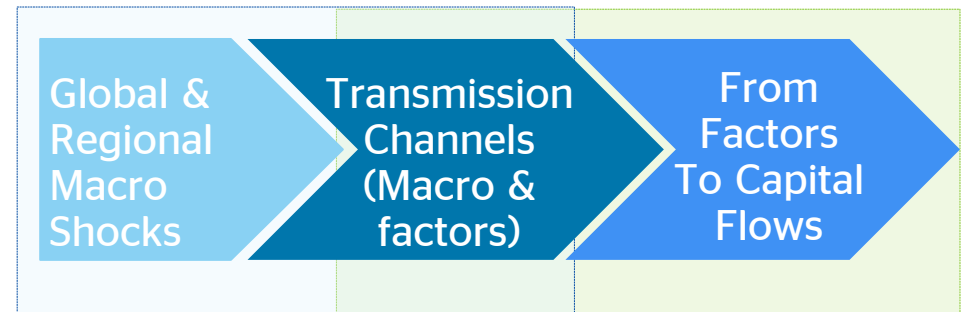
$$PF(t)_k = \beta_{1k} * Global(t) + \beta_{4k} * DME(t) + \beta_{5k} * SH(t) + \beta_{6k} * IDIO(t)_k + U(t) \text{ (SH)}$$

(2) Factor Augmented Model (FAVAR) to combine Macroeconomic variables and Factors (and Flows)

$$\begin{bmatrix} Y_t \\ F_t \end{bmatrix} = A(L) \begin{bmatrix} Y_{t-1} \\ F_{t-1} \end{bmatrix} + \eta_t \quad F = \{ F^{SF}, F^{DM}, F^{EM}, F^G \}$$

$$Y = \{ y^{DM}, y^{EM}, i^{US}, i^{EZ}, VIX, i^{EMbi} \}$$

Exploiting time relations between the extracted latent factors and a set of selected global macro variables (2) and recovering flows by means of the measurement equation block in the DFM.



SHOCK

- Risk Aversion (VIX /EMBI)
- Monetary Policy (Fed, ECB rates)
- Growth differentials

TRANSMISSION

- To Global the Global factor
- To Specific Markets (DM,EM, SH)

REACTION

- Retrenchment
- Reallocation
- Flight to Quality
- etc.

* See Doz, Giannone, Reichlin (2006), Watson, Reis (2010), Agrippino and Rey, H. (2013) Fratzscher 2013, Rey (2012), Puy (2013) among others

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FED & ECB

Scenarios and

Results

Scenario Design: Combining The FED and the ECB

... From already observed scenarios

[1] Benchmark Forward Guidance and no ECB QE (as seen pre tapering)

[Fed] forward guidance maintained: 10y rates +50bps 2014 +50bps 2015 and fed funds c.a 2% by mid -2016
 [ECB] as pre Draghi and reactive: term premium follows suit.
 [GRA] decreasing risk appetite (VIX to long term avg.)

[2] Overshooting Fed (as seen when tapering)

[Fed] Policy overshoot: 10y rates +150 bps in 2 quarters
 [ECB] Reactive as in Scenario 1: 10y Bund follows 10y Tbill
 [GRA] Spike to EZ crisis times but rapid normalization

[3] ECB Pre-commits (as seen with Draghi's speech)

[Fed] Forward guidance maintained as in Scenario1
 [ECB] -20bps per quarter until end 2015
 [GRA] gradually decreasing risk appetite as in Scenario1

... To new ones involving the ECB

[4] Fed Overshooting & ECB Pre committed

[Fed] Overshooting 10y rates +150bps in 2 quarters
 [ECB] -20 bps per quarter until end 2015
 [GRA] Spike but rapid normalization as Scenario 2

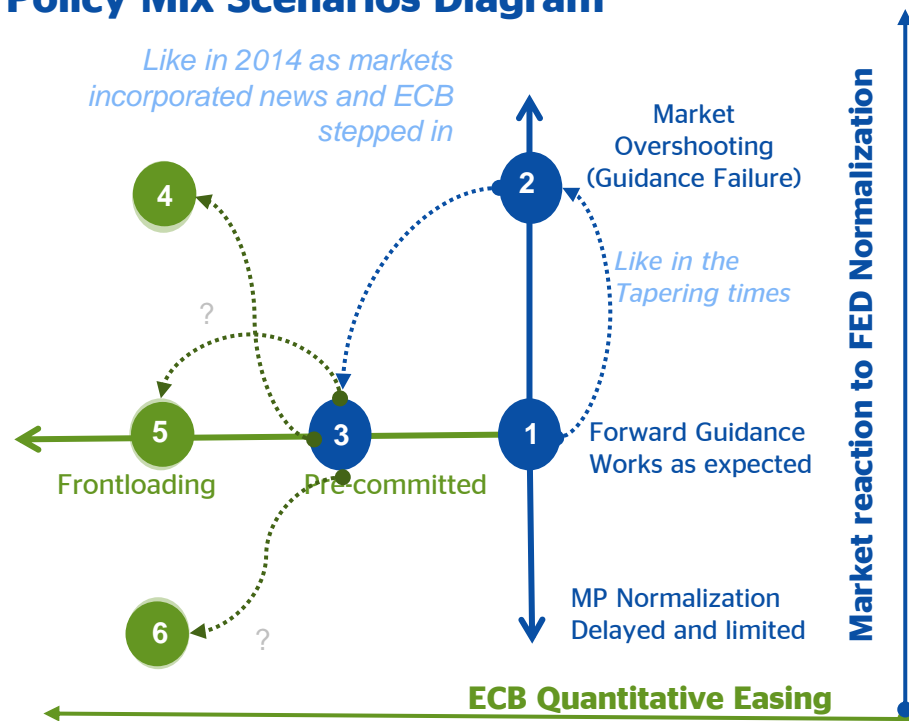
[5] Fed Overshooting & ECB Frontloaded

[Fed] Overshoots as in S.4
 [ECB] Frontloads QE: -50bps in one/two quarters
 [GRA] ViX spikes for two quarters and returns to normality thereafter

[6] Fed Delays and Limits Normalization & ECB exert a frontloaded QE

[Fed] 10y rates reach 2% by end 2016 (a half of the central scenario), [ECB] as in Sc. 5, Risk appetite remains

Policy Mix Scenarios Diagram

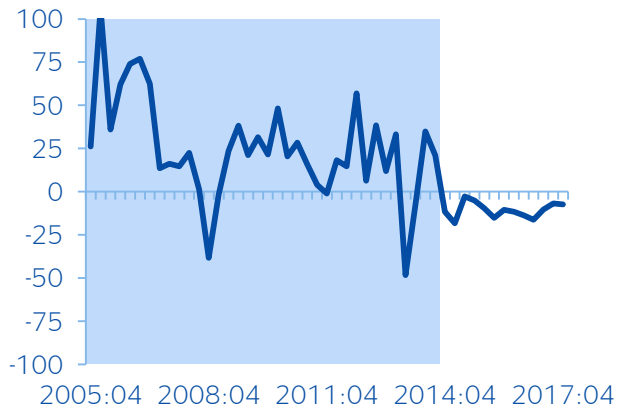


Results: [1] Fed's Guidance followed but No ECB-QE

- **Simulation:** Fed's Monetary Policy is fully anticipated bringing a gradual increase in risk aversion while ECB only follows
- **Flows Transmission:** The Global factor carries the bulk of the adjustment, EM factor contracts while DM and SH factors improve: Portfolio re-allocation with mild net negative effects on EMEs portfolio flows
- ❑ **Results: Portfolio flows to EMEs steadily loose ~11 US\$ bn per quarter. This accrues to near 140 US\$ Bn by the end of 2017 or ~3.6% of the median GDPs.**

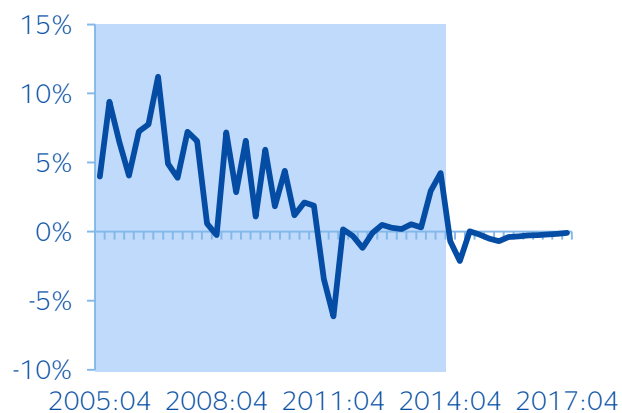
Emerging Portfolio Flows

(Median Data, BoP data in US\$ Bn)



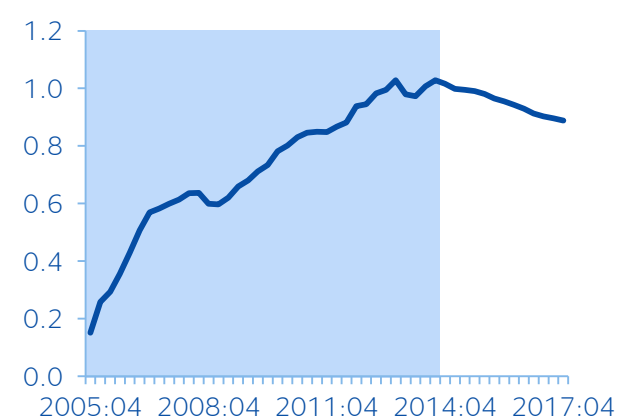
Emerging Portfolio Flows

(Median Data, as % of GDP)



Emerging Portfolio Flows

(Cumulated, in US\$ Bn.)

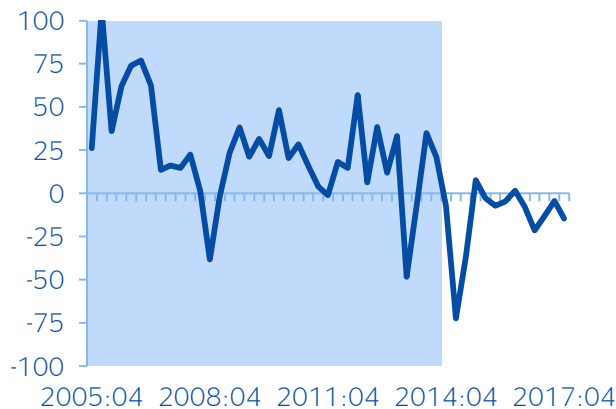


Results: [2] Market overshoots Fed's Guidance & no ECB -QE

- **Simulation:** Fed's Monetary Policy is not anticipated bringing an overshooting in the term premium and a spike in Global Risk Aversion
- **Flows Transmission:** Strong Portfolio re-allocation with increase risk aversion and relative higher yielding securities in DMs. Flow dynamics geared by slumping global and EME factor and exacerbated DM and Safe Haven response
- ❑ **Results: Sudden EMES portfolio flow slump -117 US\$ Bn. in 2 quarters pulled back into Safe Haven and DM assets as GRA spikes. Normal reallocation dynamics follow thereafter. All in all EME flows contract ~ 183 US\$ Bn. or 5.6% of the GDP by the end of 2017.**

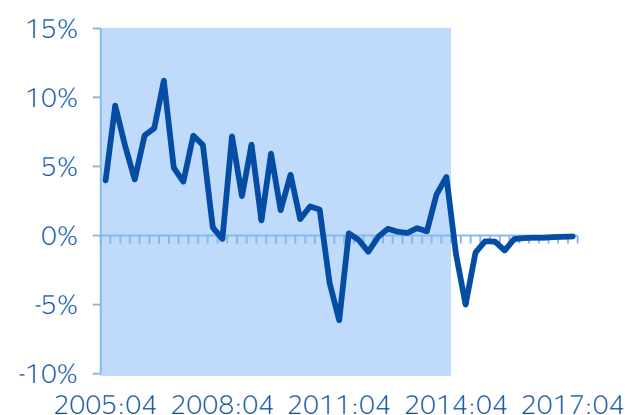
Emerging Portfolio Flows

(Median Data, BoP data in US\$ Bn)



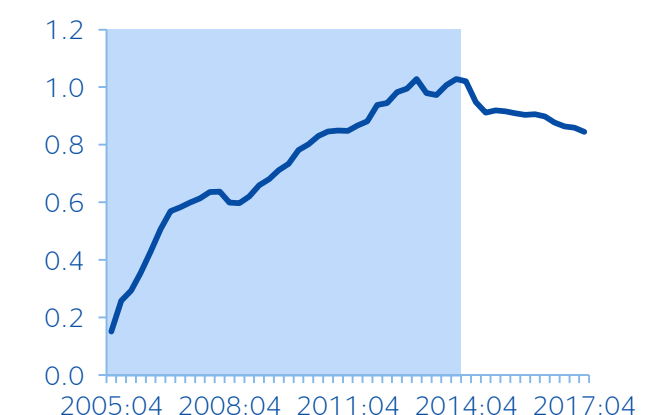
Emerging Portfolio Flows

(Median Data, as % of GDP)



Emerging Portfolio Flows

(Cumulated, in US\$ Bn.)

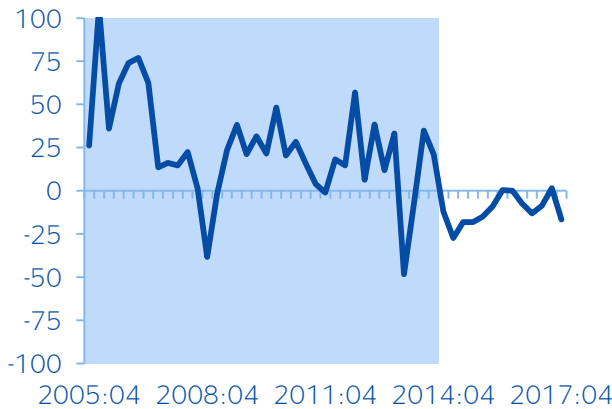


Results: [3] ECB pre-commits-QE & Fed's Guidance works

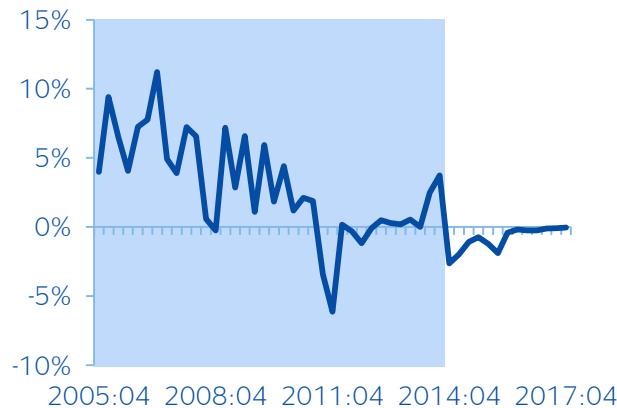
- **Simulation:** Stimuli are withdrawal in orderly manner, 10y rates to increase reaching 4.5 by the end of 2017. The ECB stimuli reduce the term premium (Bund) by 15bps per quarter until end 2015 where it stays. Risk aversion (appetite) normalizes gradually to long run levels.
- **Flows Transmission:** Portfolio re-allocation is mitigated thanks to the ECB action but the offsetting ability of the ECB is limited and relates only to EMEs in Emerging Europe. Safe Havens cast part of the pressure on the 10y bund by ECB but the rest remains in EMEs

□ **Results: Portfolio flows to EMEs steadily loose ~ 105 USD Bn. by sample end. Most of it before ECB QE kicks in and the drain is partially offset. All in all EMEs flows contract ~ 1.7% of the GDP.**

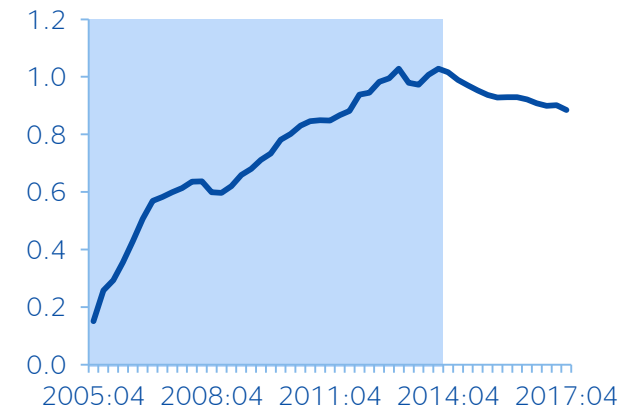
Emerging Portfolio Flows
(Median Data, BoP data in US\$ Bn)



Emerging Portfolio Flows
(Median Data, as % of GDP)



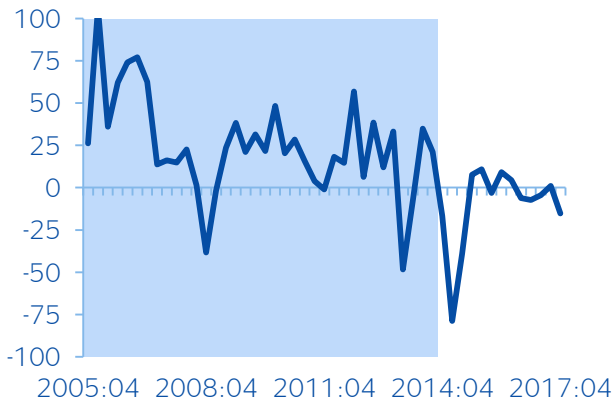
Emerging Portfolio Flows
(Cumulated, in US\$ Bn.)



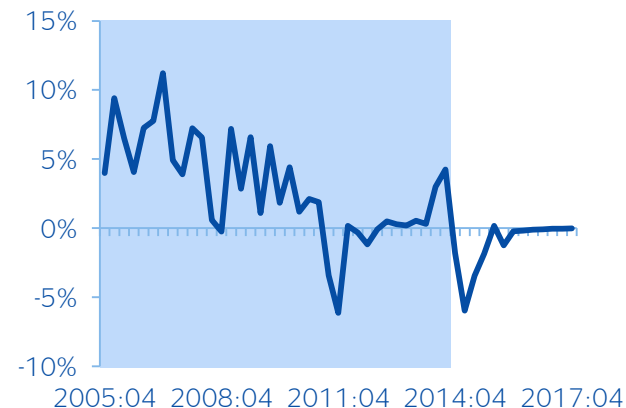
Results: [4] ECB pre-commits-QE and Market Overshoots Fed's Guidance

- **Simulation:** The ECB stimuli reduce the term premium (Bund) by 15bps per quarter until end 2015. But market overreaction to Fed signals brings an overshooting of the expected term premium increase: 10y rates hike 150bps in just two quarters. Global Risk aversion eventually hikes to EZ crisis times for 1Q.
- **Flows Transmission:** Portfolio re-allocation and flight to quality mitigated thanks to the limited ECB action with sharp short run adjustments and stabilization.
- **Results: Portfolio flows to EMEs shortfall ~ 6% of GDP in two quarters followed by some recovery and stabilization. 138 USD Bn. Would have been lost by the end of the forecasted period. All in all in the end the net loss of Capital flows would be ~ 3.7% of GDP**

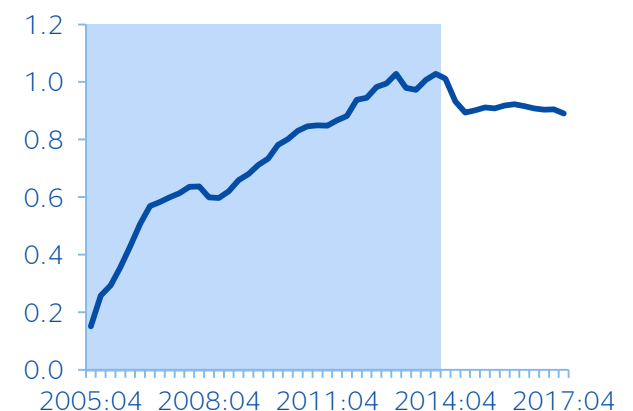
Emerging Portfolio Flows
(Median Data, BoP data in US\$ Bn)



Emerging Portfolio Flows
(Median Data, as % of GDP)



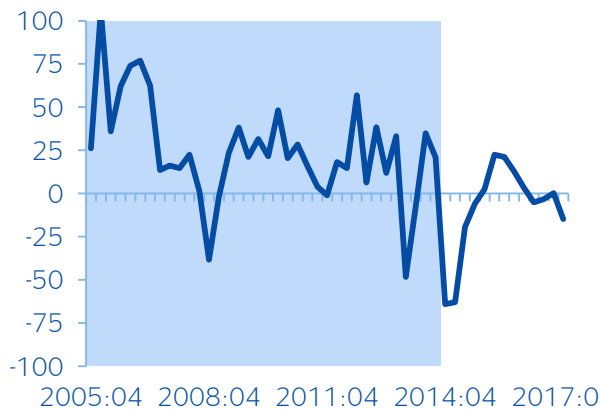
Emerging Portfolio Flows
(Cumulated, in US\$ Bn.)



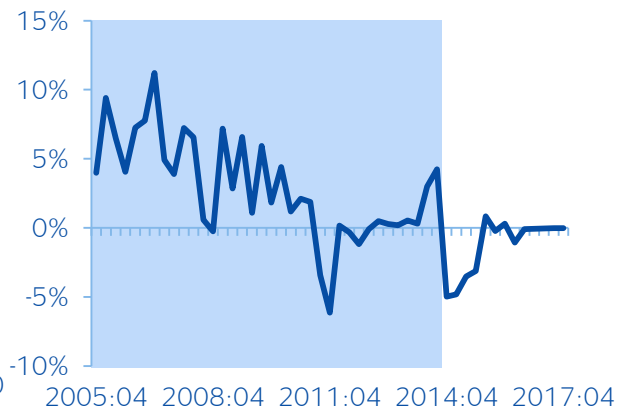
Results: [5] ECB Frontloads the QE and Market Overshoots Fed's Guidance

- **Simulation:** Market overshoots Feds Policy goal and reacts negatively to ECB frontloading. Risk aversion brought back to EZ crisis times but for longer time. Triggering a transitory mid-size flight to quality
- **Flows Transmission:** Safe Havens and DM factors cast all the EM portfolio slump during the first year but as the news are incorporated opposite effects kick in offsetting part of the slump (but not all)
- **Results: Portfolio flows to EMEs slump ~ 150 US\$ Bn in one year but recover halfway in 2016 and stabilize in the draining zone until the end of the horizon. EMEs would loose ~ 113 USD Bn. by sample end., ~ 3.9% of the GDP**

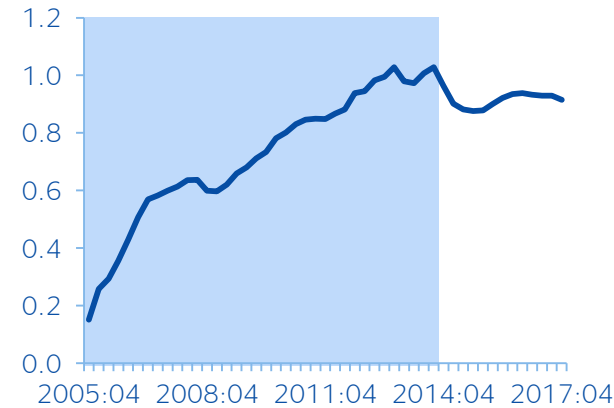
Emerging Portfolio Flows
(Median Data, BoP data in US\$ Bn)



Emerging Portfolio Flows
(Median Data, as % of GDP)



Emerging Portfolio Flows
(Cumulated, in US\$ Bn.)



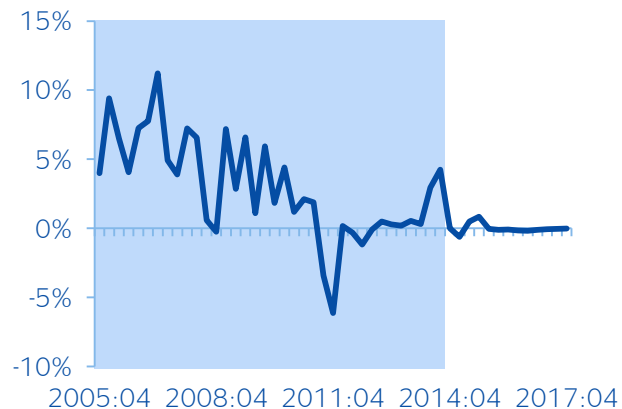
Results: [6] ECB Frontloads QE & Fed delays and Reduces the magnitude of stimuli withdrawal

- **Simulation:** A watered down Fed Policy and aggressive QE under mild Risk Aversion
- **Flows Transmission:** This dynamic would allow further expansion of portfolio flows into EMs. A kick forward of the current imbalance situation.
- **Results: In this case, flows would correct gradually from the currently high levels without experiencing a retrenchment but an orderly correction. By the end of the forecasted period they would amount 86 US\$ Bn. or 1.7% of the GDP**

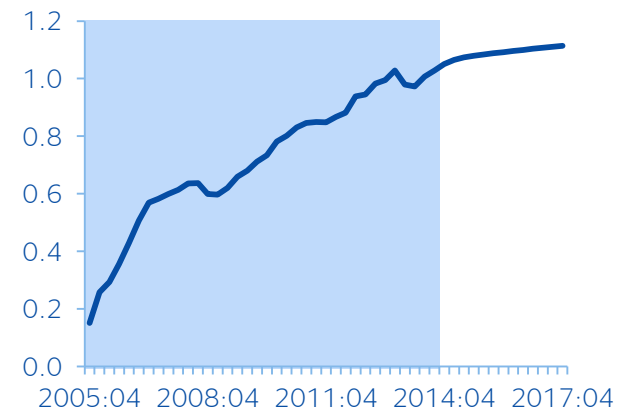
Emerging Portfolio Flows
(Median Data, BoP data in US\$ Bn)



Emerging Portfolio Flows
(Median Data, as % of GDP)



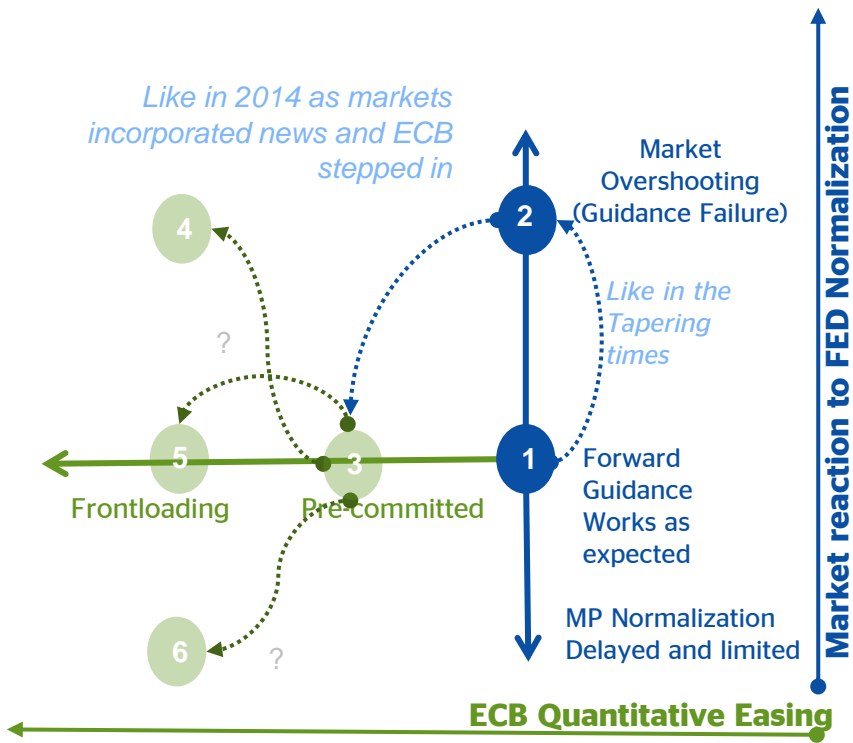
Emerging Portfolio Flows
(Cumulated, in US\$ Bn.)



Summary: Scenarios & Results

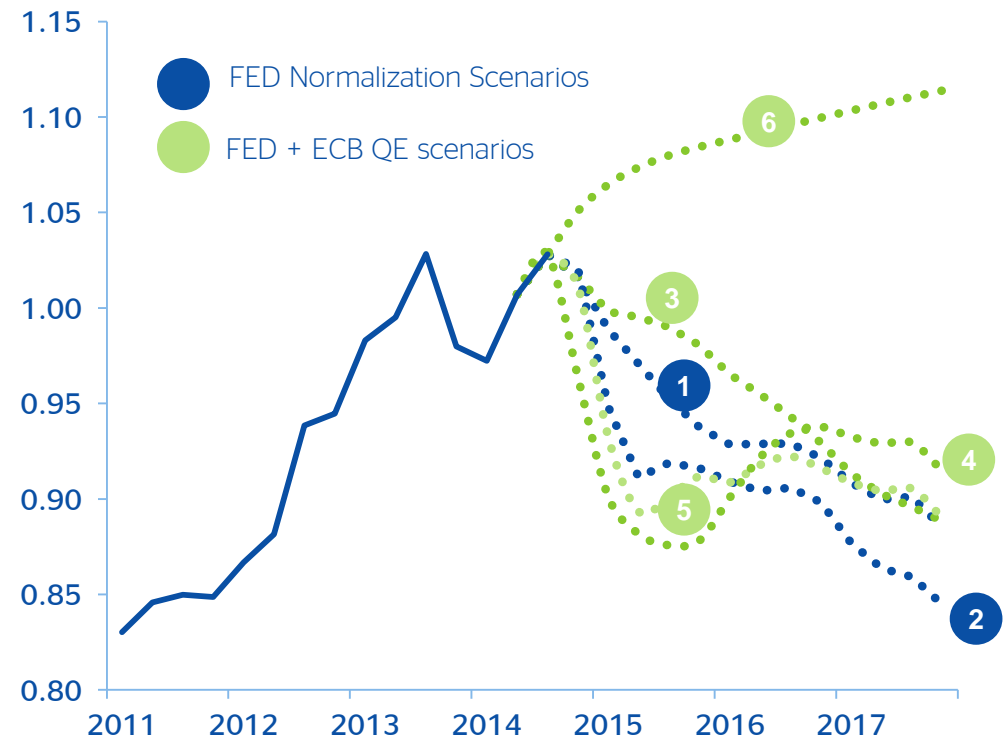
Monetary Policy in The North

(Alternative Scenarios)



Capital flows response in the South

(Cumulative Response of Portfolio Flows in US bn)



3

Key Takeaways

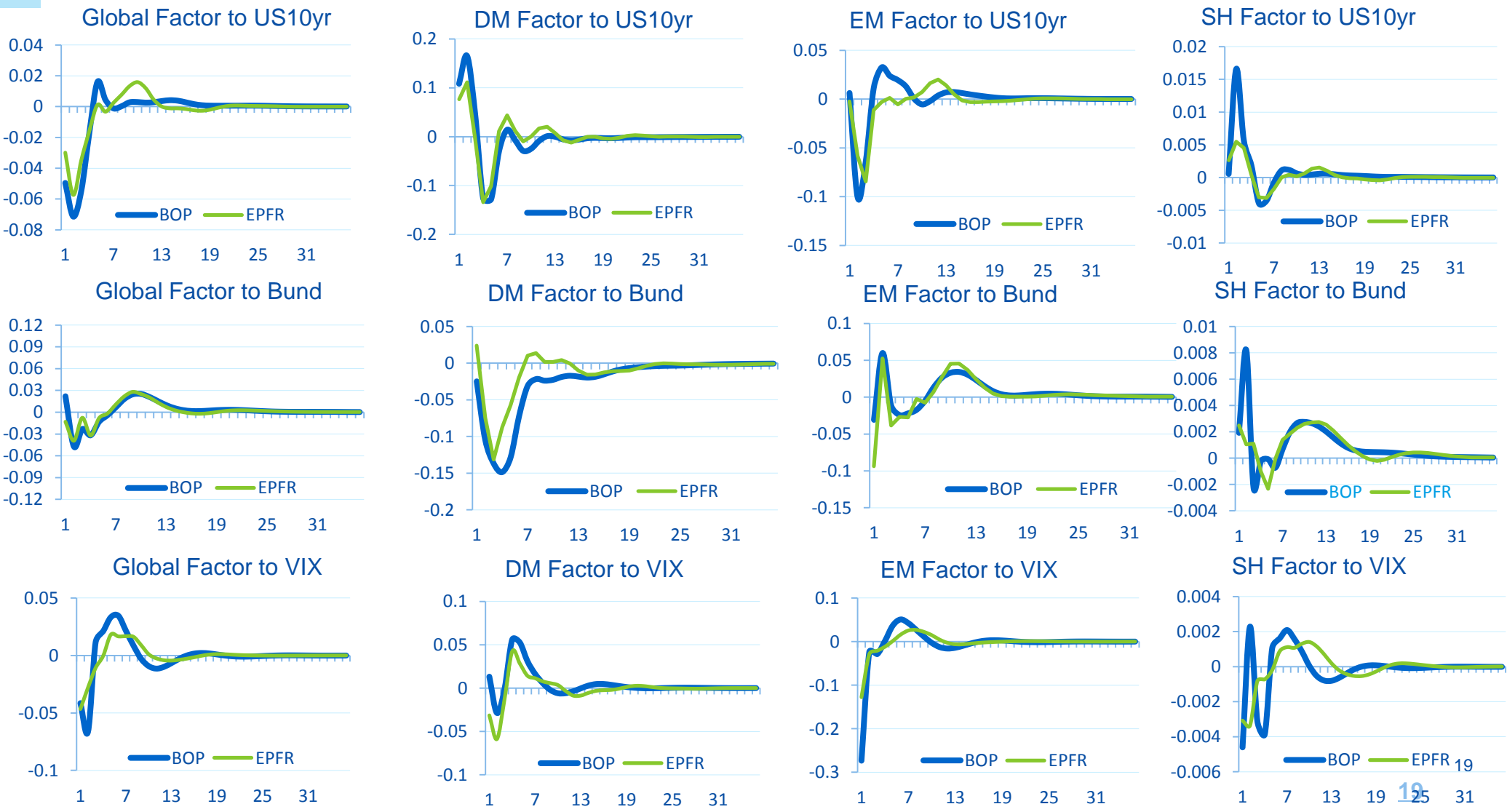
Takeaways

- ❑ **Portfolio flows to Emerging Markets will contract in the event of Monetary Policy Normalization of the Fed no matter the offsetting effort of the ECB.**
- ❑ **The magnitude of the expected shortfall will depend on the market anticipation & risk aversion response.** Our estimated range is between -1.7% in the lower shortfall scenario and -5,6% of GDP in an exacerbated scenario.
- ❑ **The normalization of monetary policy in will have different effects in different regional markets** (depending of Markets Integration). LatAm and Asia flows more affected with some buffer for Emerging Europe by the offsetting role of the ECB
- ❑ **Federal Reserve Dominance:** Feds monetary policy carries global effects while ECB only regional.
- ❑ **Delaying and watering down the Fed's Monetary Policy Normalization together with Frontloading ECB QE is the only way to sustain the current pace in EMEs portfolio flow accumulation**

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Appendix

Datasets and Sample Appendix: EPFR vs BoP Data: Impulse Response Comparison



Results – Summary I

Results: Monetary Policy in the North & Portfolio Flows in the South

(Summary results on alternative scenarios)

Source: BBVA Research, IMF and EPFR data

| (1) Benchmark Scenario (Precommitted Fed) | | | | | | (2) Overshooting Fed Normalization | | | | | |
|---|----------------|----------------|--------------------|-----------------|----------------------|------------------------------------|----------------|----------------|--------------------|-----------------|----------------------|
| | as % to TAU(1) | as % of GDP(3) | as Cum % of GDP(4) | as Cum US\$ Bn. | as share of stock(2) | | as % to TAU(1) | as % of GDP(3) | as Cum % of GDP(4) | as Cum US\$ Bn. | as share of stock(2) |
| 2014Q4 | -2.9 | -2.2% | -0.5% | -11.7 | -0.89% | 2014Q4 | -1.8 | -1.4% | -0.4% | -7.4 | -0.56% |
| 2015 | -2.2 | -1.4% | -1.9% | -47.7 | -3.63% | 2015 | -6.5 | -3.7% | -4.1% | -111.9 | -8.53% |
| 2016 | -3.2 | -1.2% | -3.1% | -98.7 | -7.52% | 2016 | -1.1 | -0.5% | -4.6% | -130.0 | -9.90% |
| 2017 | -2.6 | -0.4% | -3.6% | -139.8 | -10.65% | 2017 | -3.3 | -1.0% | -5.6% | -183.5 | -13.98% |

| (3) ECB-QE Scenario Precommitted Fed | | | | | | (4) Precommitted ECB QE Frontloaded Fed | | | | | |
|--|----------------|----------------|--------------------|-----------------|----------------------|---|----------------|----------------|--------------------|-----------------|----------------------|
| | as % to TAU(1) | as % of GDP(3) | as Cum % of GDP(4) | as Cum US\$ Bn. | as share of stock(2) | | as % to TAU(1) | as % of GDP(3) | as Cum % of GDP(4) | as Cum US\$ Bn. | as share of stock(2) |
| 2014Q4 | -3.0 | -1.2% | -0.3% | -11.9 | -0.91% | 2014Q4 | -4.19 | -2.6% | -0.7% | -16.8 | -1.28% |
| 2015 | -4.9 | -1.7% | -2.0% | -49.5 | -3.77% | 2015 | -6.22 | -3.2% | -3.9% | -116.3 | -8.86% |
| 2016 | -1.0 | 0.0% | -1.9% | -85.1 | -6.48% | 2016 | 0.27 | 0.2% | -3.7% | -112.0 | -8.54% |
| 2017 | -2.3 | 0.2% | -1.7% | -105.2 | -8.02% | 2017 | -1.63 | 0.0% | -3.7% | -138.1 | -10.52% |

| (5) Frontloaded ECB-QE Overshooting Fed | | | | | | (6) Frontloaded ECB-QE Delayed Fed | | | | | |
|---|----------------|----------------|--------------------|-----------------|----------------------|--------------------------------------|----------------|----------------|--------------------|-----------------|----------------------|
| | as % to TAU(1) | as % of GDP(3) | as Cum % of GDP(4) | as Cum US\$ Bn. | as share of stock(2) | | as % to TAU(1) | as % of GDP(3) | as Cum % of GDP(4) | as Cum US\$ Bn. | as share of stock(2) |
| 2014Q4 | -16.0 | -8.1% | -2.0% | -64.1 | -4.88% | 2014Q4 | 3.0 | 1.5% | 1.1% | 22.6 | 1.72% |
| 2015 | -5.4 | -2.2% | -4.2% | -149.9 | -11.42% | 2015 | 1.4 | 0.6% | 1.3% | 56.3 | 4.29% |
| 2016 | 3.7 | 0.5% | -3.7% | -90.4 | -6.88% | 2016 | 1.0 | 0.0% | 1.4% | 71.5 | 5.45% |
| 2017 | -1.4 | -0.1% | -3.9% | -113.4 | -8.64% | 2017 | 0.9 | 0.0% | 1.4% | 85.7 | 6.53% |

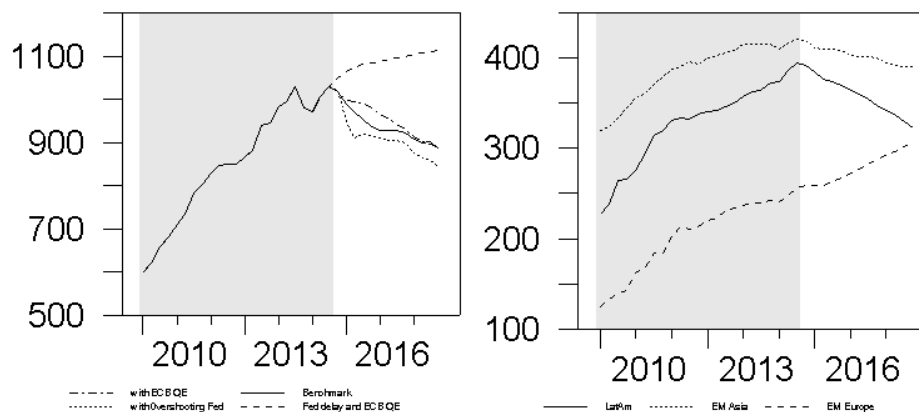
Results – Summary II

Regional Results: Monetary Policy in the North & Portfolio Flows in the South

(Summary results on alternative scenarios)

Source: BBVA Research, IMF and EPFR data

| Scenarios | EME | LatAm | E.Asia | E. Europe |
|---|-------|-------|--------|-----------|
| (1) Benchmark Scenario (Precommitted Fed) | -2.1% | -3.4% | -2.1% | 3.9% |
| (2) Overshooting Fed Normalization | -3.9% | -3.9% | -2.4% | -3.9% |
| (3) Pre-committed ECB-QE Precommitted Fed | -1.9% | -3.0% | -1.9% | 4.3% |
| (4) Pre-committed ECB QE Overshooting Fed | -2.3% | -3.7% | -2.3% | 3.5% |
| (5) Frontloaded ECB-QE Overshooting Fed | -2.1% | -3.4% | -2.1% | 5.9% |
| (6) Frontloaded ECB-QE Delayed Fed | 1.1% | 1.1% | 0.1% | 6.9% |
| Median | -2.1% | -3.4% | -2.1% | 4.1% |



Global Accumulated Portfolio Flows in US\$ Bn.

(Left are Global Flows within main scenario Bands; Right are Regional Flows in the median Scenario)

