

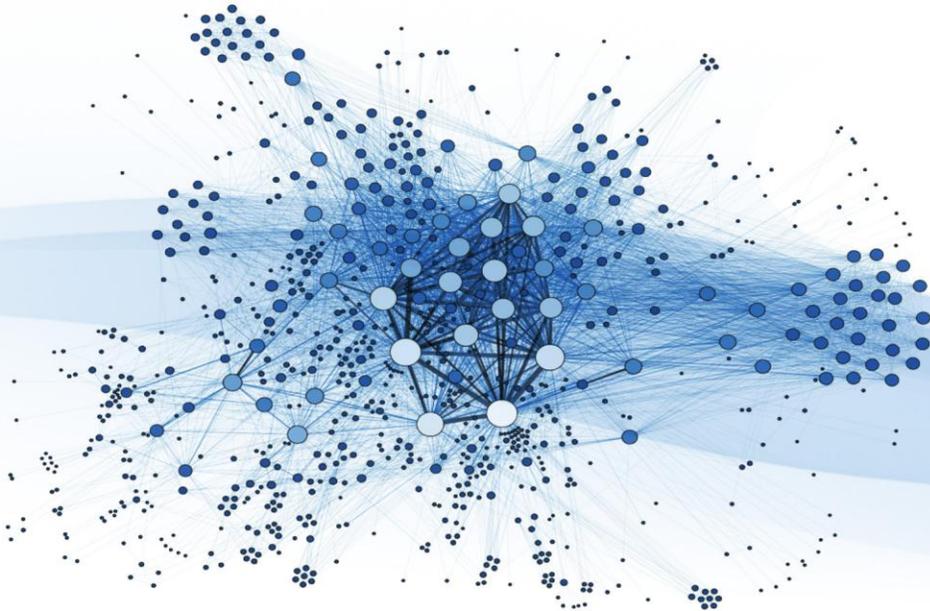
Flows & Assets Report

A Quarterly Visual Guide to Capital Flows & Asset Prices
First Quarter 2015

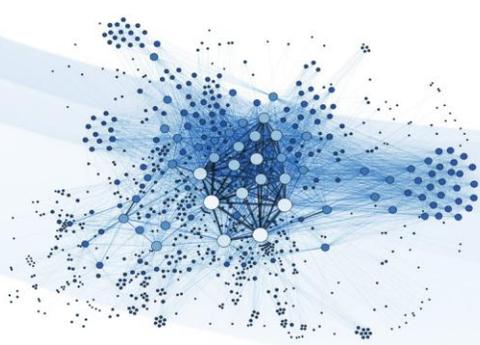
BBVA Research

Gonzalo De Cadenas & Alvaro Ortiz (**Cross Emerging Markets Unit**)

Sonsoles Castillo, Alejandro Neut, Irene Roibas & Cristina Varela (**Financial Scenarios Unit**)

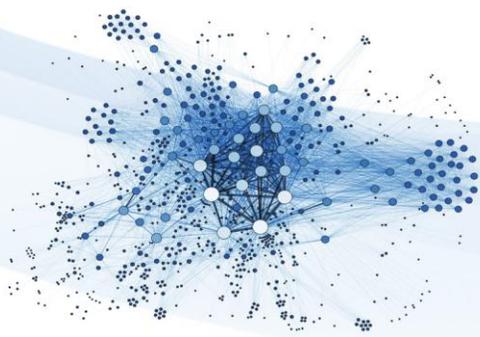


Data updated up to 27 March 2015



Why to read this report

- 1. The increasing globalisation has rendered **Capital Flows a key ingredient in the financial and economic performance of developed and emerging countries****
- 2. Official capital flows data from BoP statistics often lag 6-12 months. We have developed a DFM-FAVAR model to now-cast/forecast international portfolio flows to close this gap** (see Appendix)
- 3. Beyond other trackers, the model will also help us to understand the drivers behind the swings in international portfolio flows**
- 4. The joint analysis of economic and financial drivers allows to simulate the reaction of international flows to alternative macro economic scenarios** (including alternative monetary policies, risk aversion and growth paths)
- 5. We complement this framework with analytical tools to analyse “hot topics”** in order to assess their potential impact on international capital flows



1. Key Messages

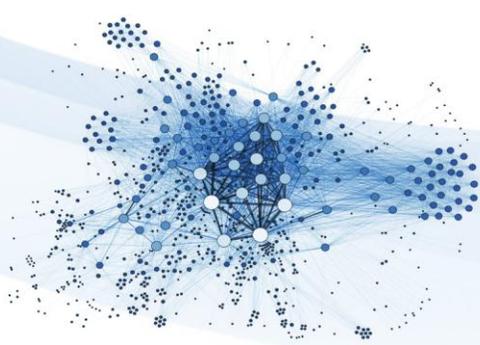
2. Portfolio Flows & Asset Prices: stylised facts, drivers and now-casts

3. Scenarios: Macroeconomic and Monetary Policy and Flows Scenarios

4. Hot Topic:

- Russian Woes

5. Useful Information: Methodological Appendix



Key Messages

- **Main drivers**
 - Divergent monetary policy paths
 - US dollar: strong appreciation against all currencies
 - Low oil prices hitting a trough
- **Capital flows**
 - Now-casting signals new mild deterioration in 1Q15
 - Re-allocation from Emerging to Developed continues, but moderating
 - A temporary flight to quality during 1Q15 was followed by a search for yield
- **Asset prices**
 - ECB's policy pushes the euro down while the impact of the Fed's policy on EMs is uneven
 - Equity divergences driven by a stronger US dollar and divergent monetary policy stances.
 - Risk premia continue to ease (CDSs)
- **Forecasts & Analysis**
 - EM Portfolio flows back to neutral after corrections; DMs entering into overvaluation area
 - Dollar-block assets and currencies under stress
 - Russian assets and flows partially recovered but caution should prevail



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Capital flows

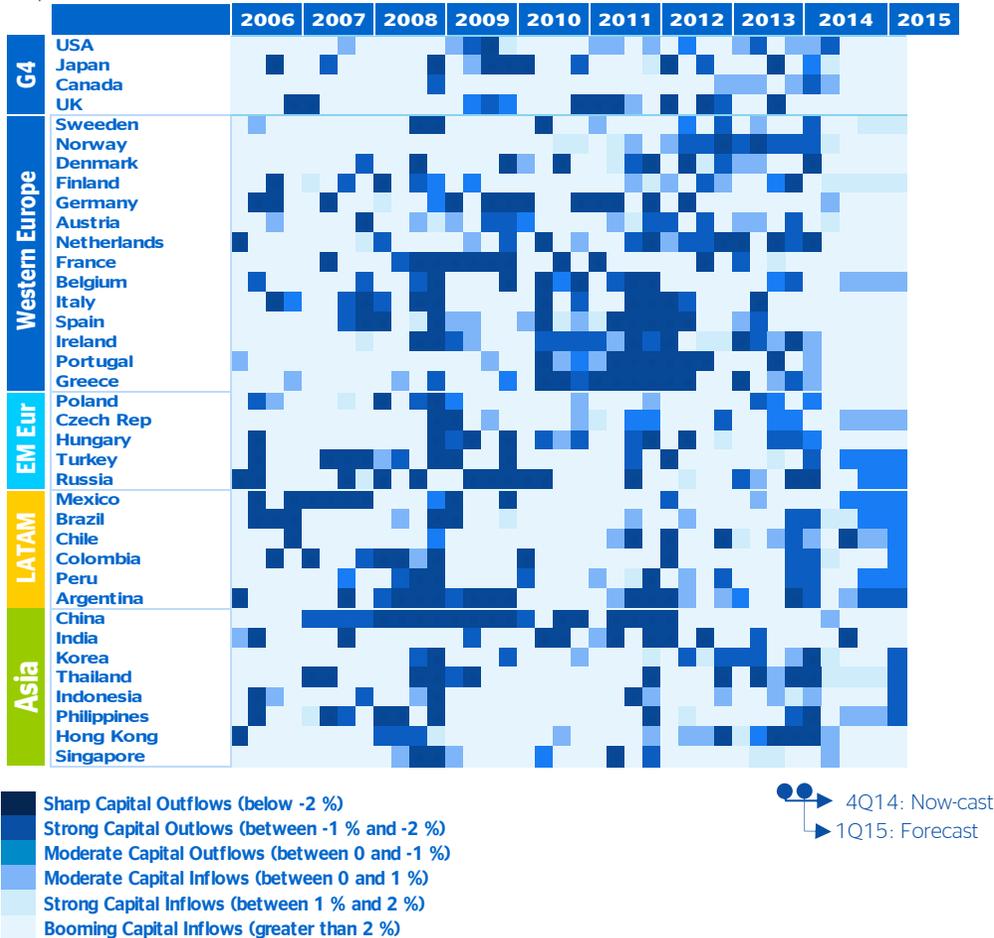
Quarterly assessment

Now-casting of 1Q15 signals a new mild deterioration from the long-term trend

BBVA Balance of Payments Portfolio Update

(Official Balance of Payments data, QoQ % change)

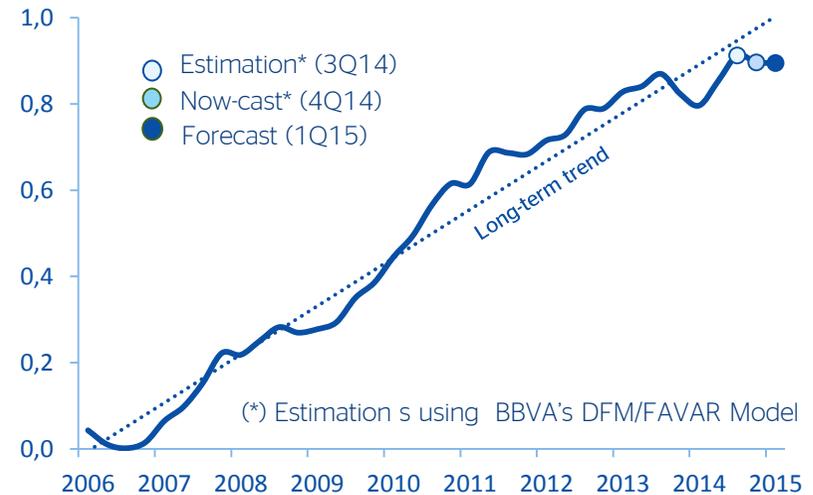
Update 27 Feb. 2015, Source: BBVA Research



Update* of accumulated flows to Emerging Markets

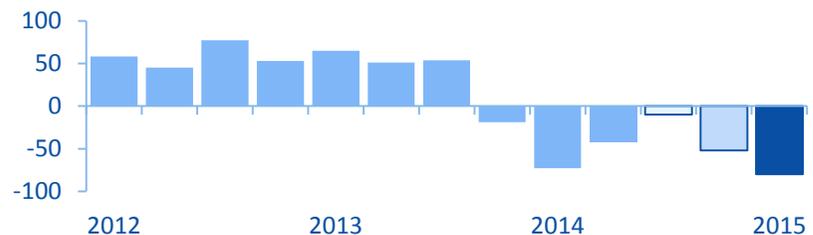
(Official Balance of Payments data, in USD trn)

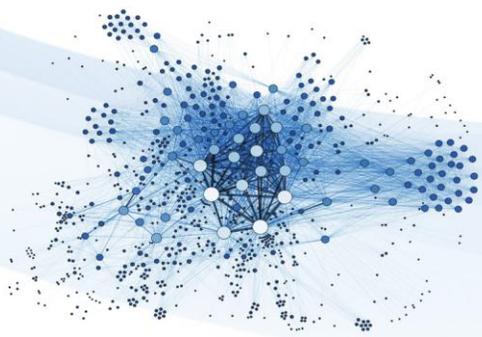
Update 27 Feb. 2015, Source: BBVA Research



Official Data Imbalance Assessment

(BOP official data deviations from long-term trend in USD bn)





The re-allocation process continues with flows leaving EMs and flying back to DMs, particularly to Europe

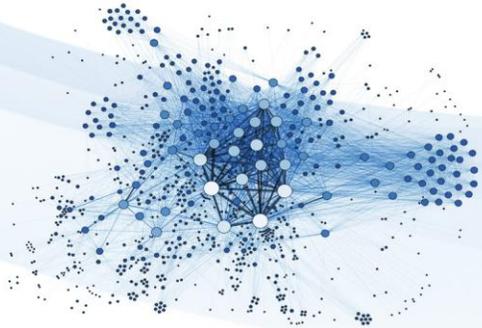
Net portfolio flows as per Balance of Payments data

(Now-casted data from 1Q15: Dark blue are Net Outflows, Light Blue are Net Inflows)

Source: BBVA Research & IMF IFS



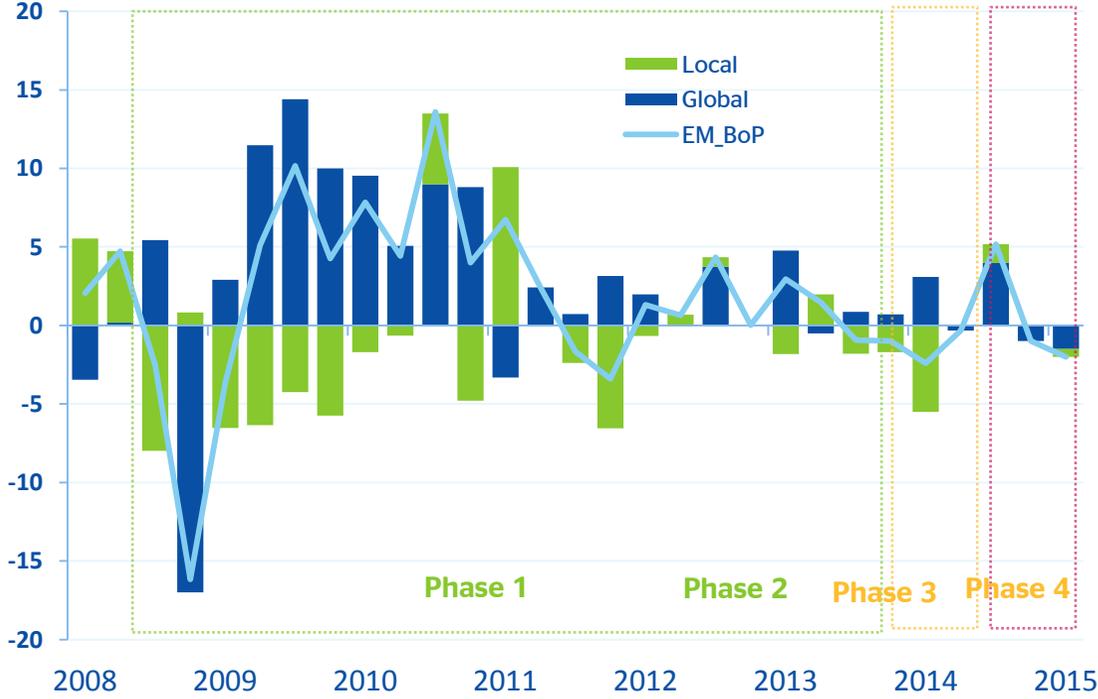
(*) Flows are % QoQ change in each country's net liabilities (Equities and Bonds) measured as the ratio of net portfolio flows in (q) to total liabilities accrued until (q-1).



EM flows were primarily driven by global factors during most of the first quarter

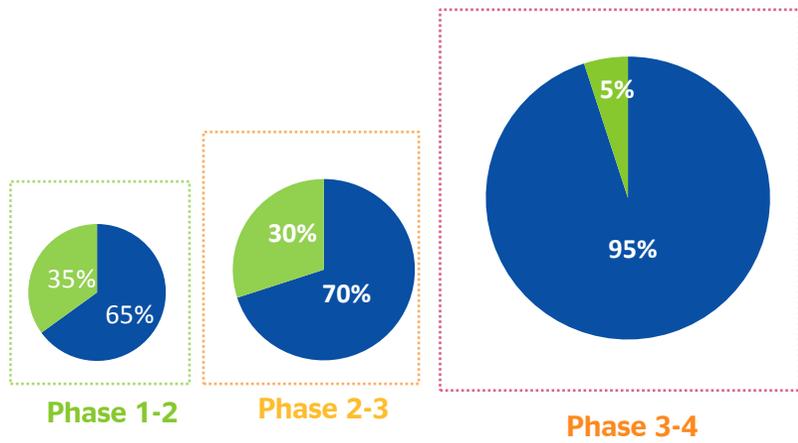
EM Flows

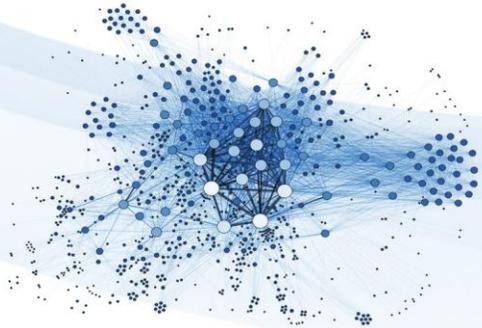
(Median EM portfolio flow breakdown as per BoP, QoQ % change) Source: BBVA Research & IMF-IFS



EM Flow Drivers

(Median EM portfolio flow breakdown, MoM % change) Source: BBVA Research & EPFR

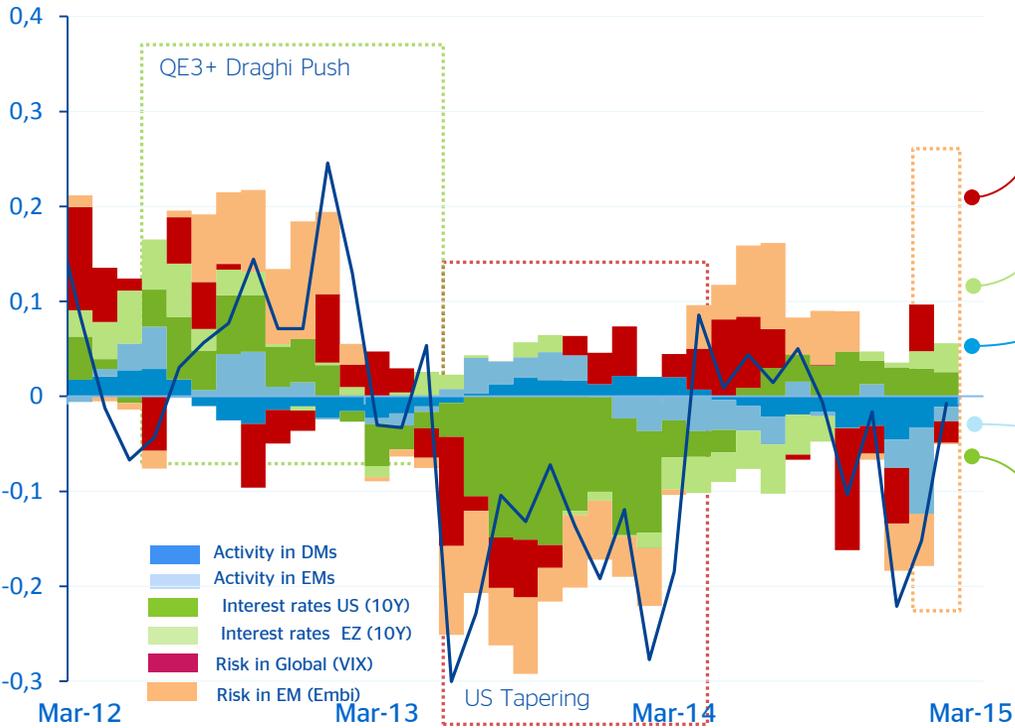




Global risk & activity profiles are reducing the contribution of the Global Factor to flows.
 Low interest rates in DM supports

BBVA Global Factor of Portfolio Flows

(First Factor from Flows using BBVA's DFM/FAVAR Model represents the main driver of flows) Source: BBVA Research



Global risk appetite supporting flows in February, less so in March

ECB monetary policy

Moderate improvement in DM growth

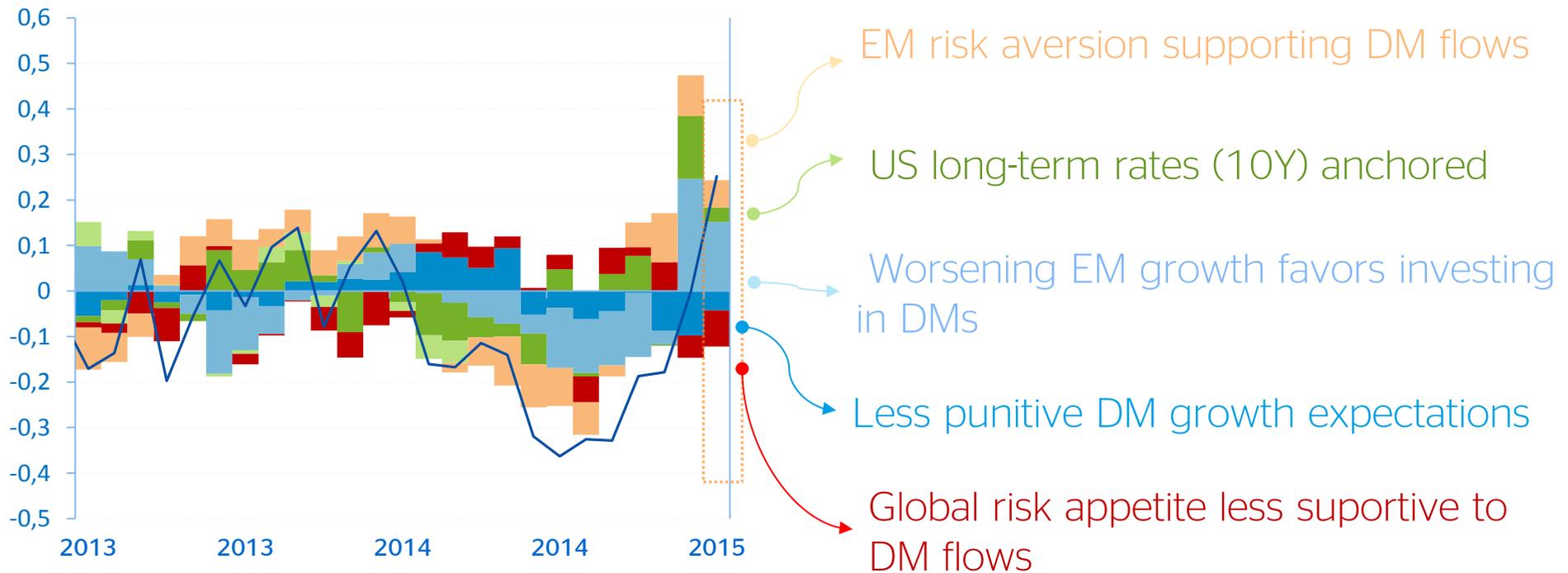
Worsening EM growth

US long-term rates (10Y) anchored

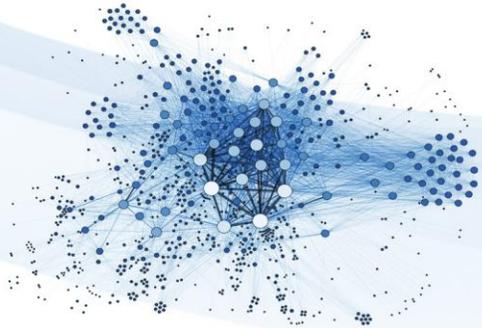
While global factor is losing momentum, specific factors as DMs are accelerating the reallocation process to DMs

BBVA Developed Market Factor of Portfolio Flows

Third Factor from flows using BBVA's DFM/FAVAR Model represents the main driver of flows) Source: BBVA Research



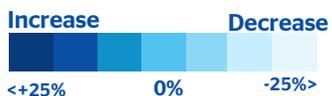
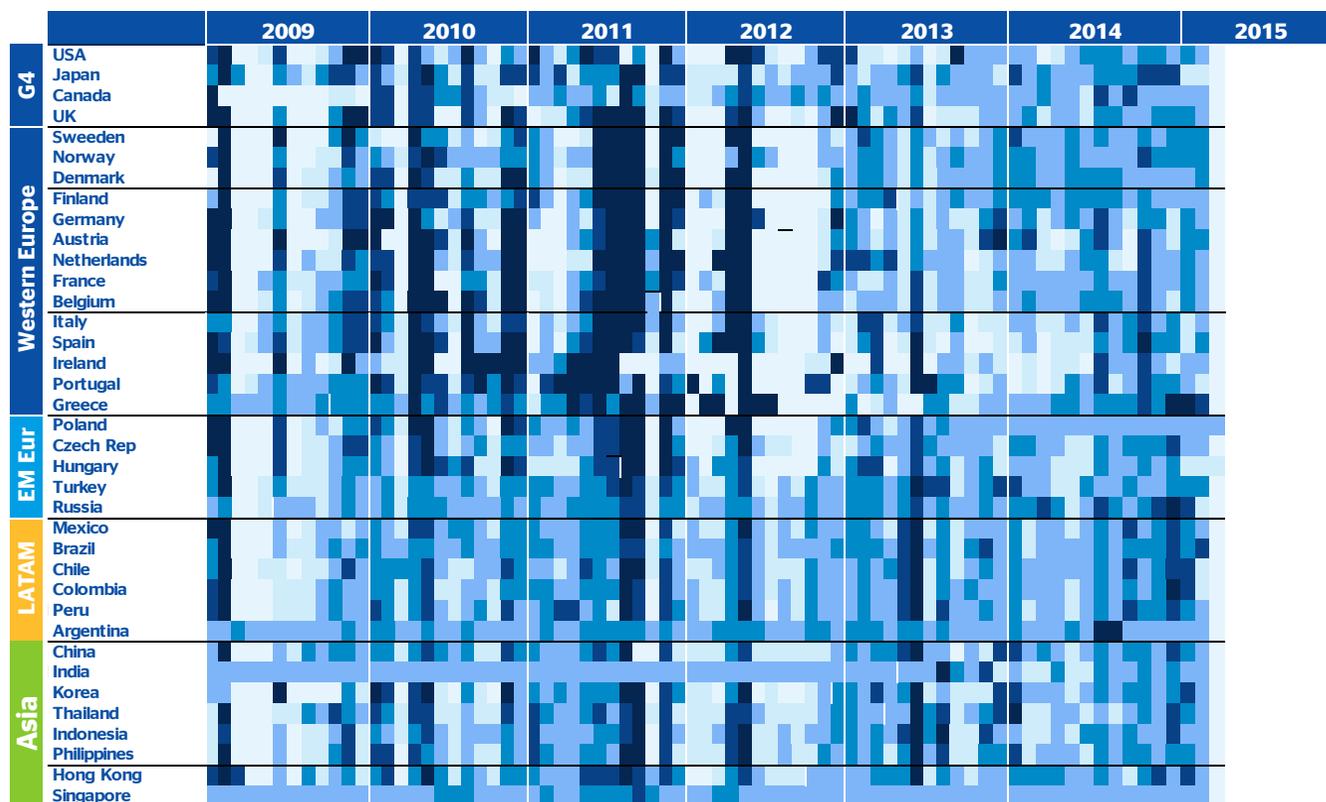
- Activity in Developed Markets
- Activity in Emerging Markets
- Interest rates in US (10 Yr)
- Interest rates in the EZ (10 yr Bund)
- Risk in Global (VIX)
- Risk in EM (Embi)



Credit risk premia moderated during the quarter supported by central banks push

BBVA Risk Premia Change Map

(as % MoM change in 5Y CDS. Darker color stand for positive or higher risk premia
Source: BBVA Research)

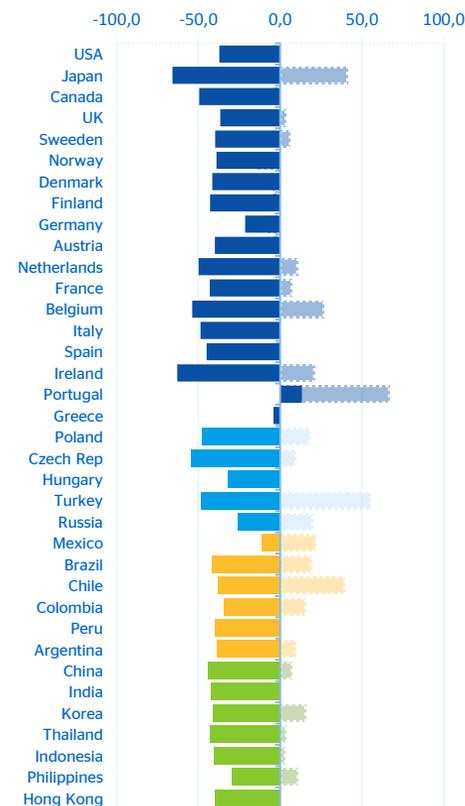


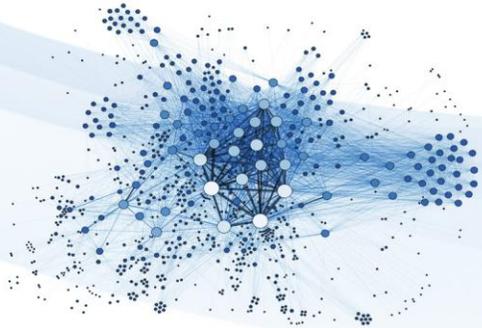
BBVA Research Risk Premia Map*

The Credit Risk Map show the monthly change in % of 5yr. CD Swaps
Darker / lighter colors mean sharper increases / decreases of CDS

1Q15 Change Credit Default Swaps

(% change in risk premia, shades represent last quarter change)
Source: BBVA Research)



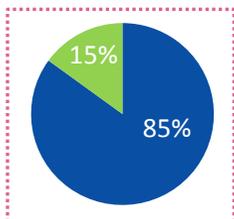
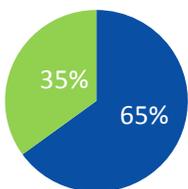
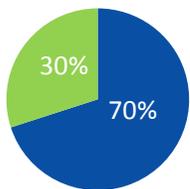
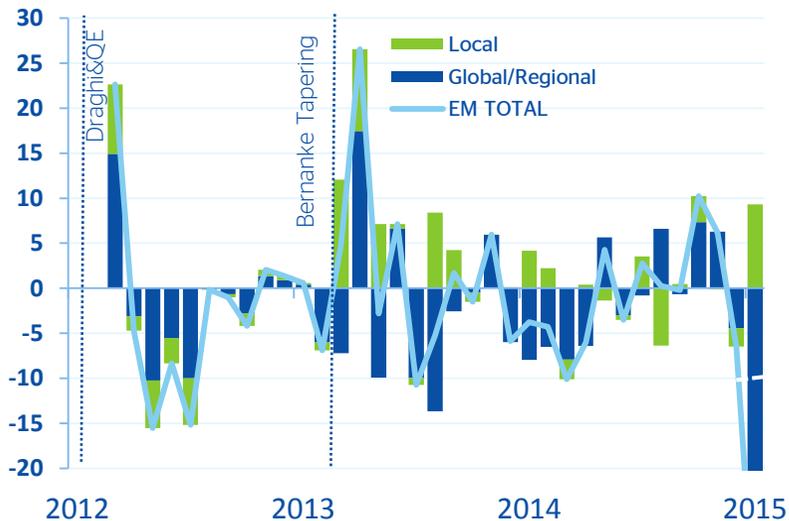


This moderation in risk aversion was not only seen in the price of risk (CDs) but also reflected in our Safe Haven index...

EMs change in risk premia

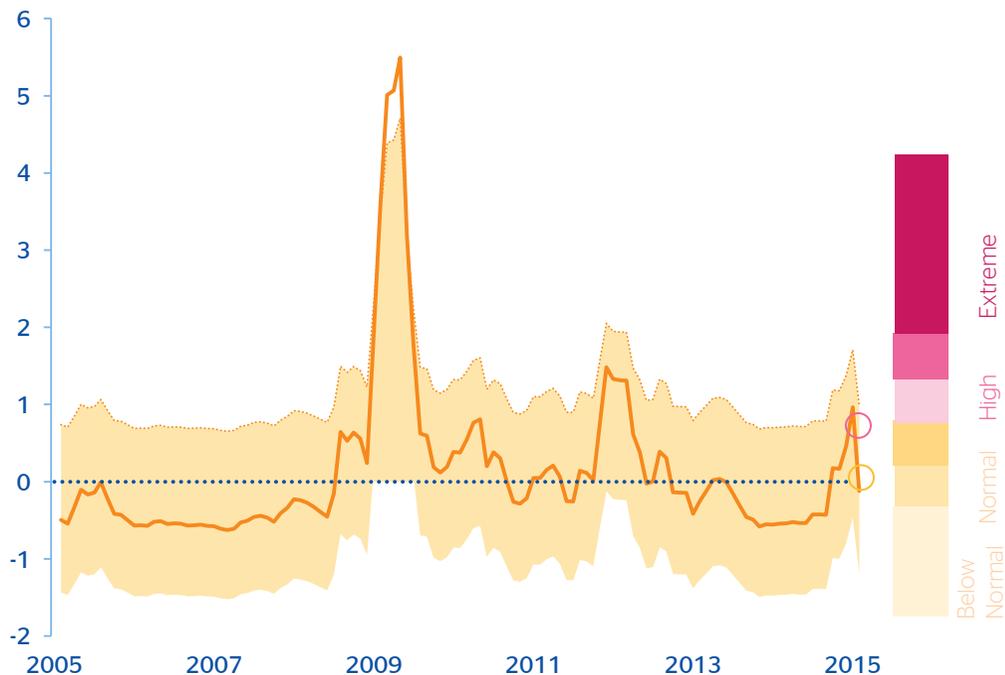
(Median EM 5Y CDS MoM % change)

Source: BBVA Research



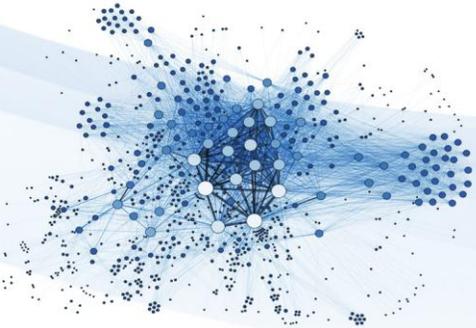
BBVA Research Safe Haven Indicator

(Median Safe Haven Factor (2nd) from flows and asset prices data using the BBVA DFM/FAVAR Model) Source: BBVA Research



BBVA Safe Haven Indicator

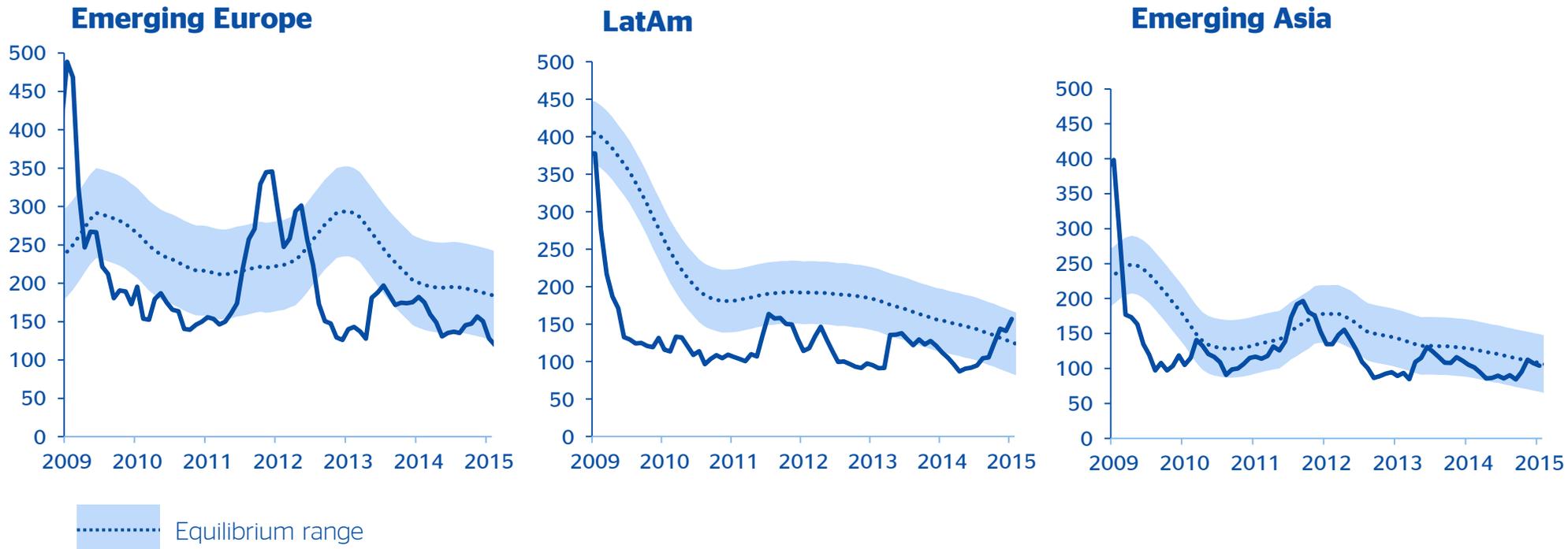
Represents the median of the selected safe haven components in portfolio flows, risk premia and FX data



...As well as some EM risk premia,
particularly EM Europe

CDS and equilibrium risk premium

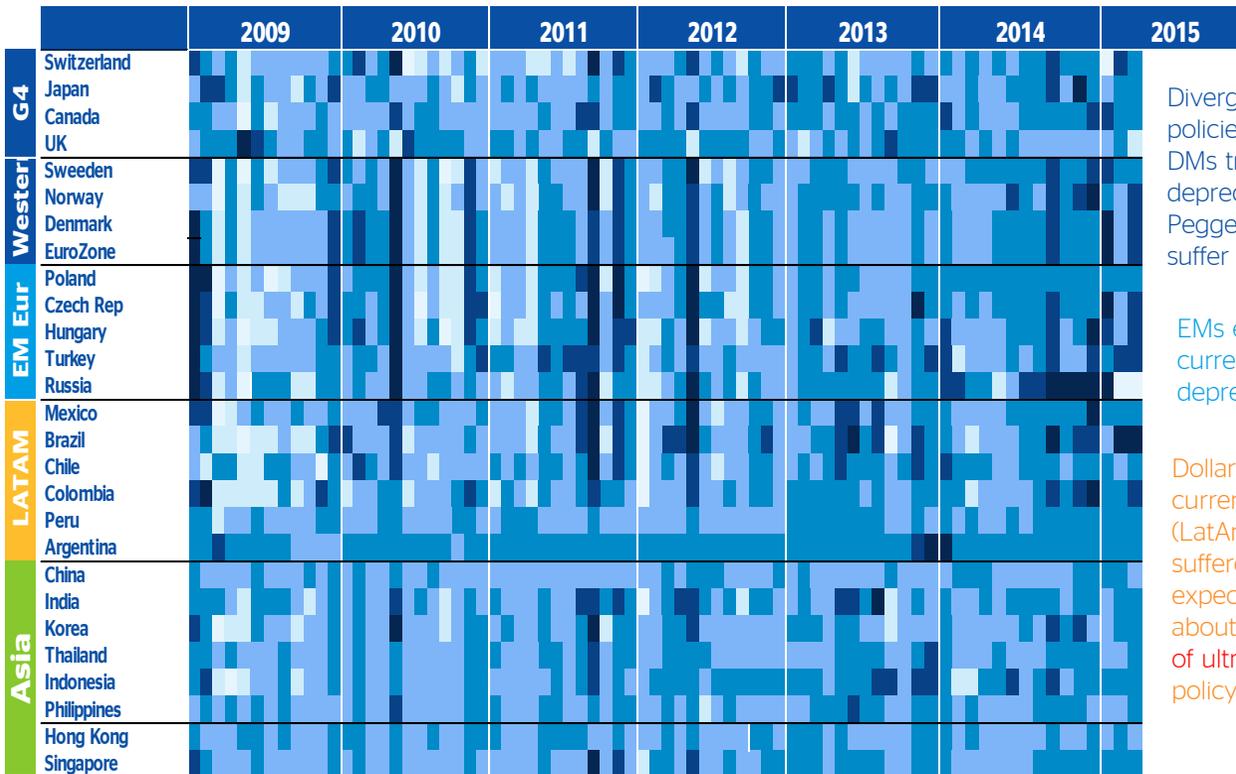
(Source: BBVA Research, Equilibrium: average of four alternative models + 0.5 standard deviation)



The USD appreciates across the board. Euro is further depreciated by the ECB policy while some EMs suffer

BBVA Exchange Rate Map

(Monthly variation of exchange rates vs. USD in %. Darker is depreciation)



Divergent monetary policies among DMs trigger euro depreciation. Pegged currencies suffer

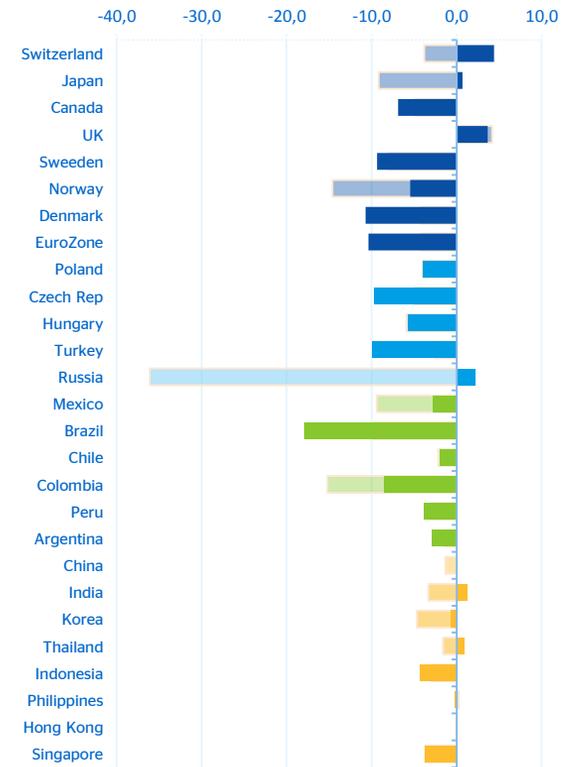
EMs euro-block currencies depreciated

Dollar orbit currencies EMs (LatAm & Asia) suffered expectations about the impact of ultra-lax Fed policy

- Strong Currency Depreciation (between -3 % and -6 %)
- Moderate Currency Depreciation (between 0 and -3 %)
- Moderate Currency Appreciation (between 0 and 3 %)
- Strong Currency Appreciation (between 3 % and 6 %)
- Sharp Currency Appreciation (greater than 6 %)

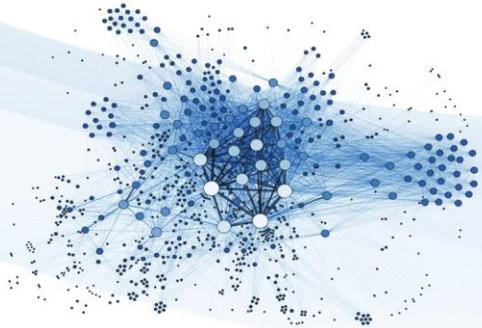
FX 1Q15 average change in %

(shades are last quarter's average FX change)



BBVA Research Exchange Rate Map

(Darker Zones are negative variations but here it means depreciations)

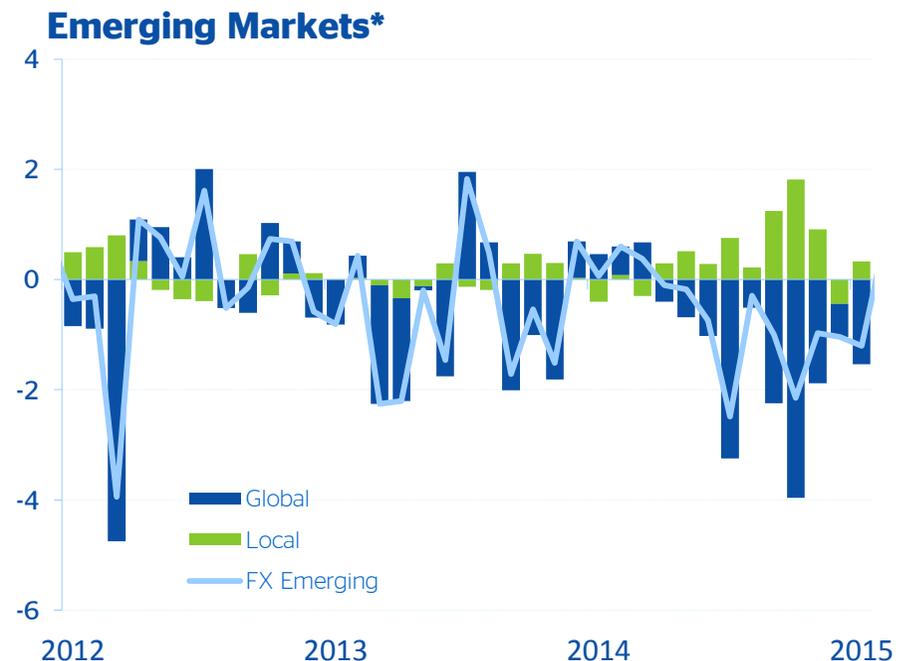
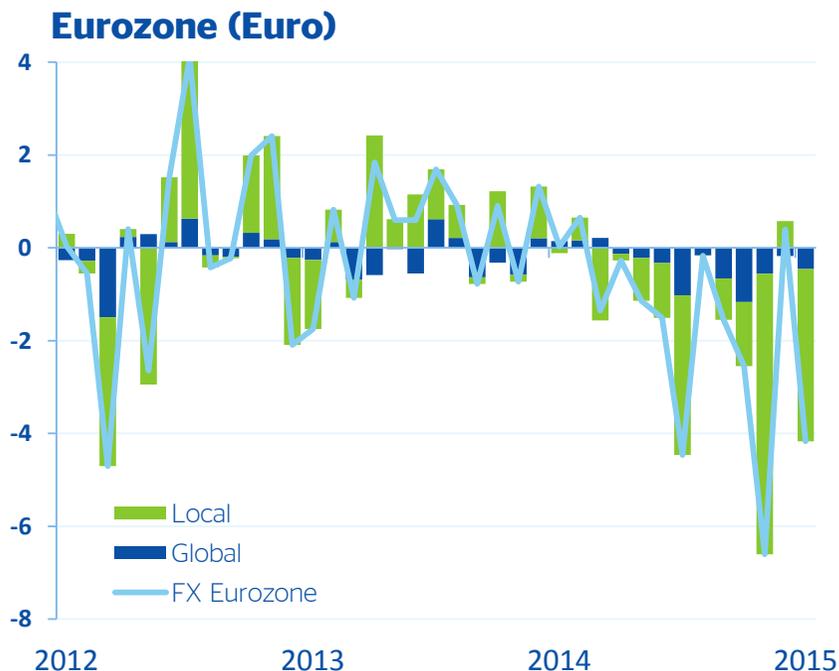


Currencies depreciates across the board but due to different factors: local in Eurozone, global in Emerging Markets

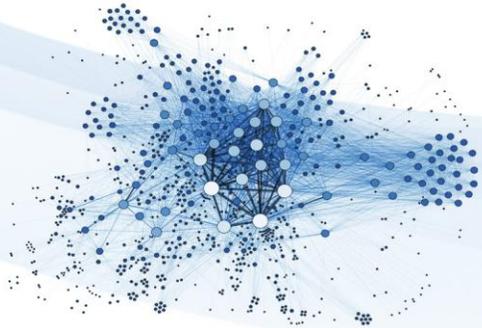
FX Change Decomposition in Developed and Emerging Markets

(in % MoM change, negative are depreciations)

Source: BBVA Research



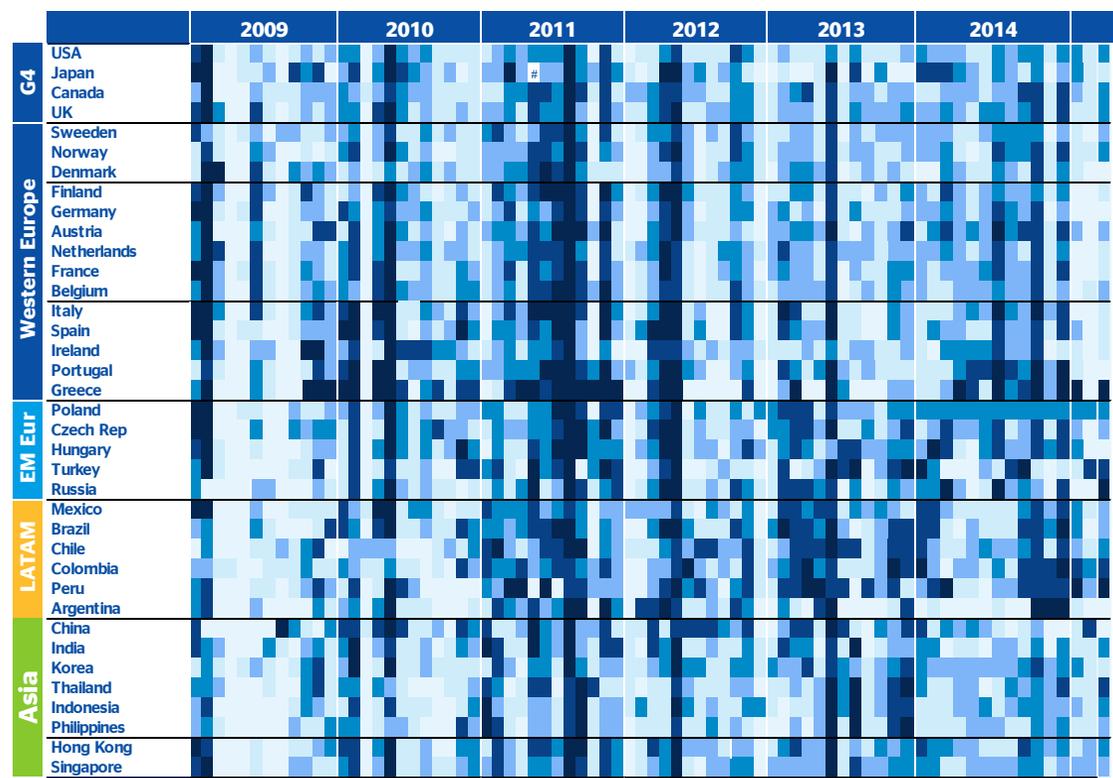
(*) Measured as median % MoM change from the following Emerging Economies; Turkey, Poland Czech. Rep., Hungary, Russia South Africa, Mexico, Brazil, Chile, Colombia, Argentina, Peru, China, Korea, Thailand, India, Indonesia, Philippines, Hong Kong, Singapore



Low yields and ample liquidity boosted equity indices. The strong USD weighed on US equity indices as it constrains margins

BBVA Equity Price Map

(Monthly Variation of Equity Price Indexes in %)



Sharp Equity Price Contraction (below -6 %)
 Strong Equity Price Contraction (between -3 % and -6 %)
 Moderate Equity Price Contraction (between 0 and -3 %)
 Moderate Equity Price Expansion (between 0 and 3 %)
 Strong Equity Price Expansion (between 3 % and 6 %)
 Booming Equity Price Expansion (greater than 6 %)

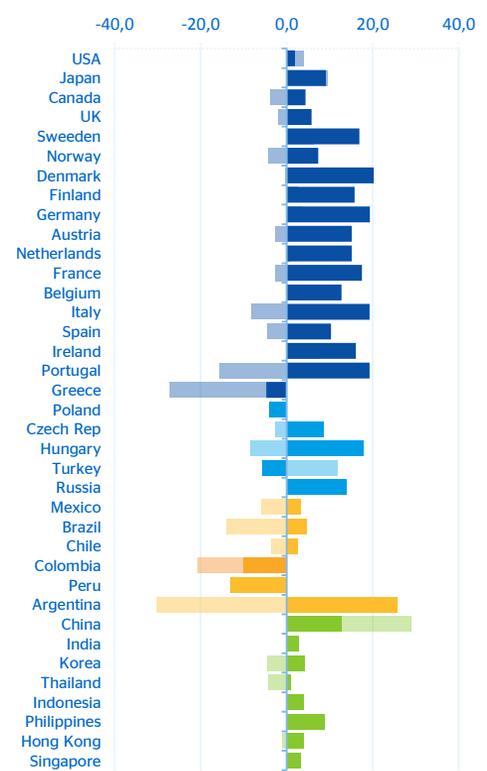
USD appreciation compresses euro-pegged margins

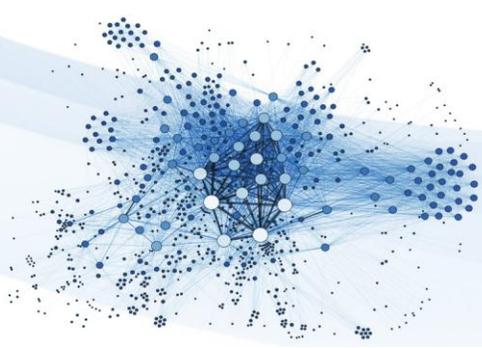
ECB QE -dominant region favoured by ultra-low earnings discount rates

EMs margins compressed by USD appreciation and weaker expected earnings in line with economic performance

Equity price changes (% QoQ)

(shades are last quarters QoQ change)

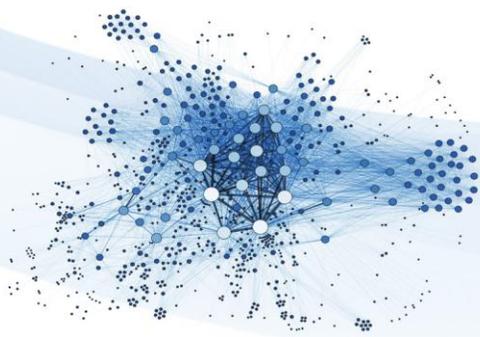




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Scenarios

Simulation analysis



The current Baseline Scenario is framed within a set of possible macro & policy scenarios

(1) Baseline Market & macro scenario

Source: BBVA Research -FAVAR Model

Global growth

Global growth to narrow 3.6% in 2015 thanks to the US. DM to grow close to 2.3% in 2015, EMs to remain subpar and growing at 4.5% in 2015

Global monetary policy

US MP normalisation to start in 2Q15 will push term premia in DMs, spread to EMs will widen. US T bill to reach 2.6% in 4Q15. Bund to reach 0.4 % in 4Q15

Global risk aversion

Global risk aversion to slowly take off from current current levels (VIX) but with decreasing negative differential to EMs (EMBI)

(2) Positive market & macro Scenario (3) Negative market & macro scenario

Source: BBVA Research -FAVAR Model

(Source: BBVA Research -FAVAR Model)

Global growth

Global growth surprises to the upside but not enough to trigger earlier normalisation

Global monetary policy

FED normalisation delayed. ECB committed to current QE

Global risk aversion

Global risk appetite remains alive (VIX at lows and stable)

Global growth

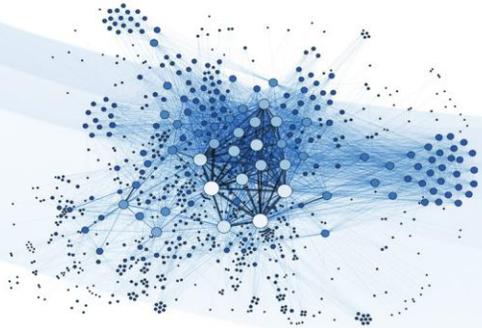
Global growth divergence with DMs outperforming and EMs worsening

Global monetary policy

US MP normalisation before expectations (now mid-2Q) & market overreaction

Global risk aversion

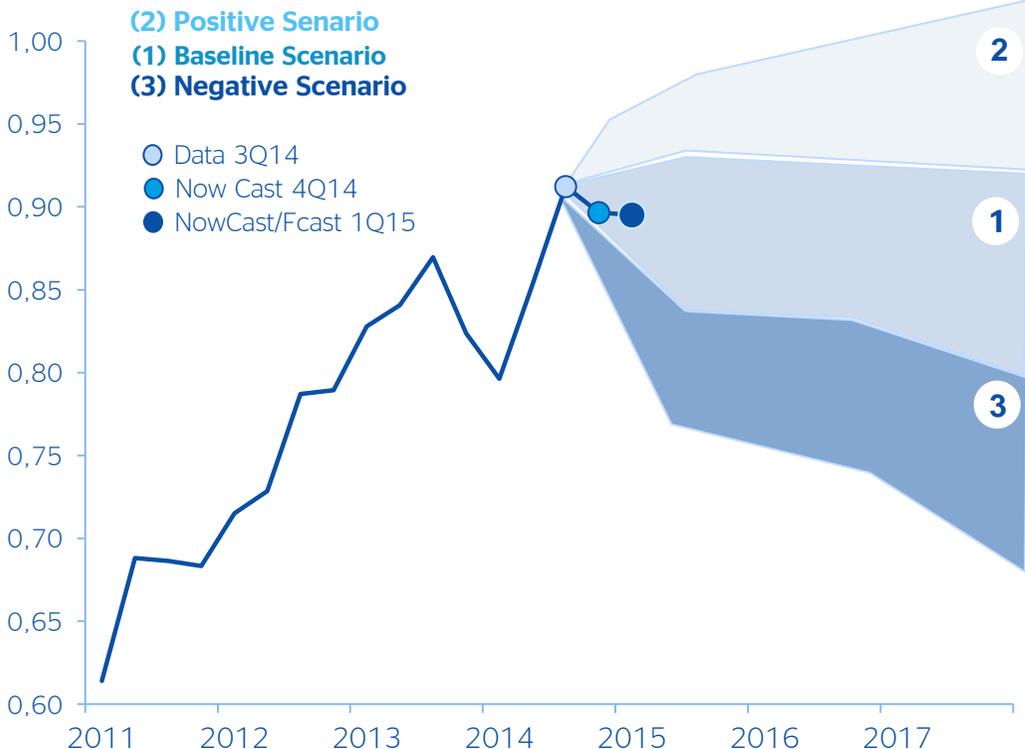
Global risk aversion increases



Contained shock consistent with our base scenario for Portfolio Flows. Risk is still tilted to the downside

Monetary Policy in the North & Flows impact in EMs (Alternative QE FED & ECB scenarios on EM Flows)

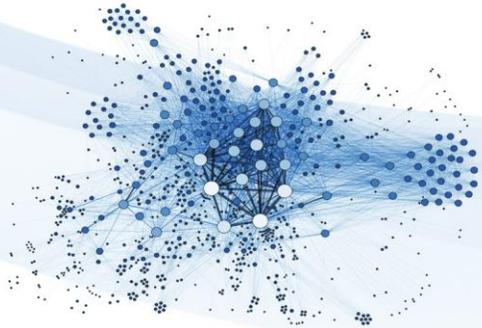
Cumulative Response of Portfolio Flows in US bn, forecast made as 3Q-14
Source: BBVA Research & IMF



Initial positive reaction of EM flows at 3Q14 (last official data) reversed at the end of 2014

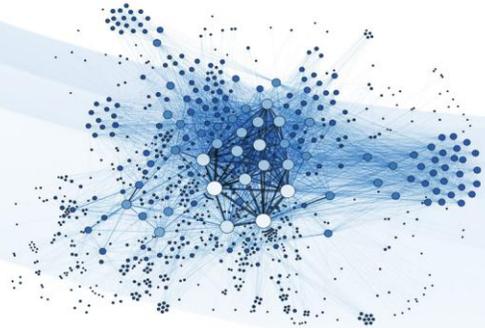
Some signs of volatility & overreaction at the end of 2014 but flows now anchored to our central scenario.

The risk is on the downside depending on Fed's normalization path



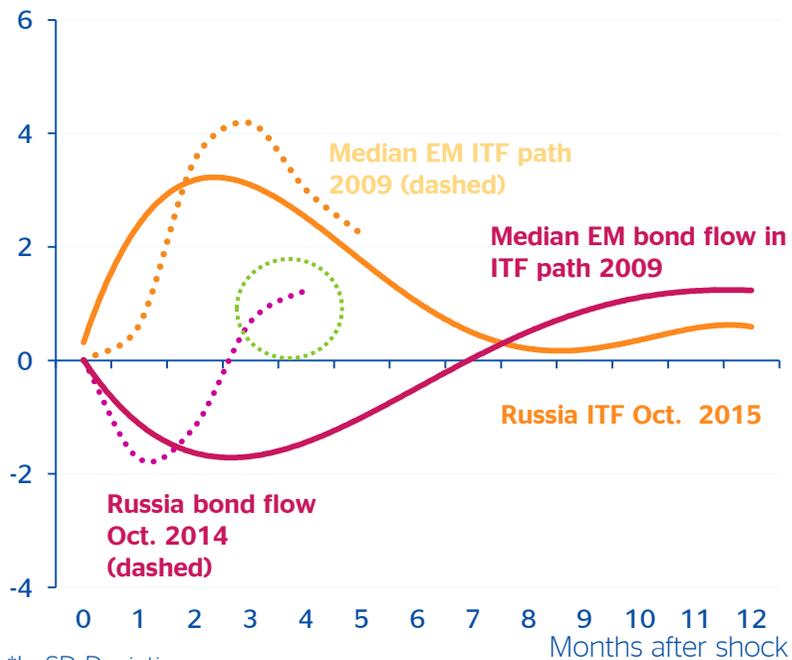
Hot Topic

Russian Woes



Russian financial tensions similar to previous crisis but local component of portfolio flows recovering faster

Idiosyncratic bond flow reaction to comparable FTI shock (1: Global Crisis 2009) Source: BBVA Research

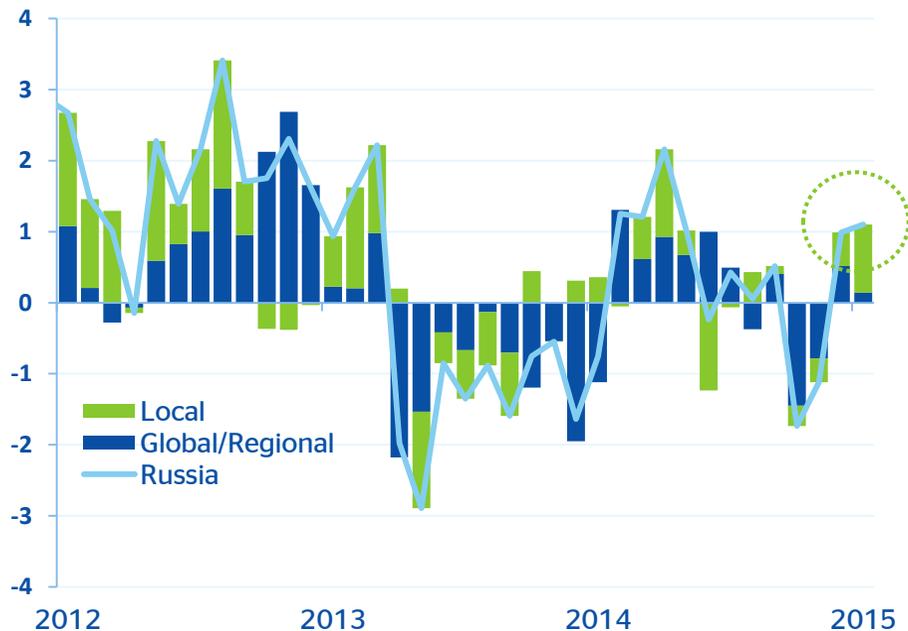


*In SD Deviations

** Median ITF dynamics in similar event as recorded from Jan 2009 for all Emerging Markets standardized vs. Median Idiosyncratic component dynamics recorded during the financial stress episodes (only for EMBI markets)

Russian bond flows

Source: BBVA Research



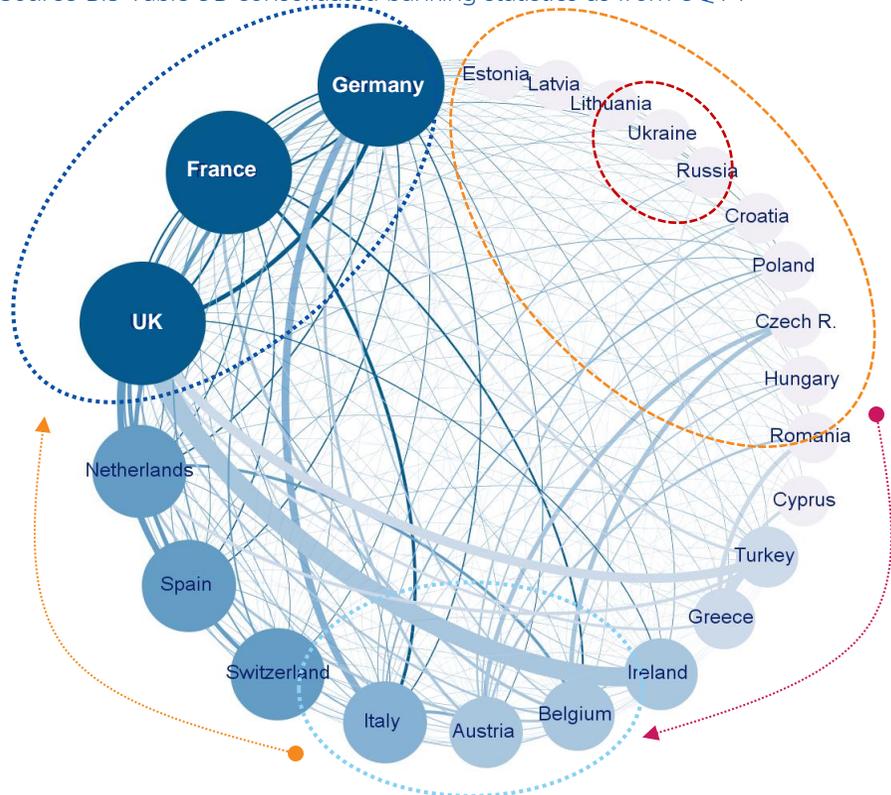
1H 2013 Bond Flow Cumulated Contraction: -10.3% (Global/Regional 65% Local 35%)
 1H 2015 Expected Cumulated Contraction: -11% (Global/Regional 30% local 70%)

We should remain very vigilant as shocks to Russian portfolio may translate to domestic Europe through banking exposures interconnectedness

Interbank interconnectedness in Europe 3Q14

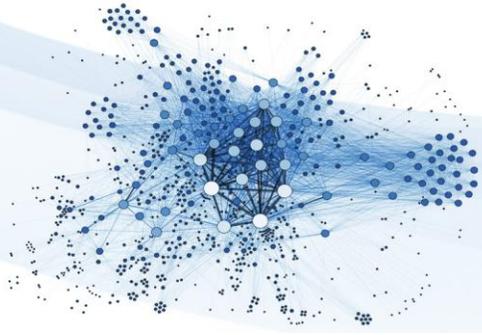
(Nodal chart of interbank relations)

Source BIS Table 9B consolidated banking statistics as from 3Q14



NOTE: Node size is the size of each country's banking system relative to the total. Lines are assets/liabilities (credit financing outflows/inflows) and the colour tone corresponds to the origin of the flow, while the size of the lines is relative to these flows. Eastern European countries (apart from Turkey) do not report assets.

- According to official BIS data, we can find **two interbank European clusters: greater Western European countries (creditors) and EM European borrowers (debtors)**. This interconnectedness between East and West has remained stable through time though with increasing intensity
- **The direct exposure to risky countries in EM Europe (Russia and Ukraine) are marked in red. It is significant for some countries (i.e. Italy), but in general terms is well-diversified and should not give rise to serious problems**
- However, we enter a **more serious scenario if we move to the rest of EM Europe (Czech Republic, Hungary, Poland, Romania and Croatia). If the crisis reaches these countries (in orange), important Western European creditors such as Austria, Italy and Belgium (in orange) would be affected**
- This situation could become challenging. Although the indirect exposure is less straightforward, it can be easily checked in the graph on the left. **Pivotal countries mentioned above would move the exposure to key Western countries such as Germany, France and the UK**, which have the potential to trigger more important risks to the European and the global economies.



U Useful Information



Methodology and Interpreting the Results

A Dynamic Factor Model / Factor Augmented VAR to analyze and forecast flows and asset prices

Our framework is based on the belief that there are unobservable factors or channels that act at the global (GLOBAL), regional (Developed (DM), Emerging (EM) and Safe Havens (SH) and idiosyncratic (I) transmitting from the global macro economy to flows or asset prices. The origin of these shocks can be created due to monetary policy in DMs, expected growth differentials between DMs and EMs and the differential risk aversion levels arising between the latter two.

To model the behavior between flows and asset prices and these global shocks via the described channels we use a two step approach based on a Dynamic Factor Model (DFM) and its interaction to a Factor Augmented Vector Autorregresion (FAVAR)

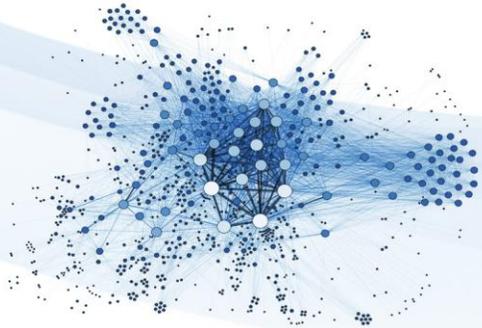
In the first part of the model, the “Dynamic Factor Model of Portfolio Flows and Asset Prices”, we use a version of a Dynamic Factor Model. Our set-up comprises a measurement equation block (1) and a state equation block (2). Both blocks together build the so called State Space Model. In this, the measurement equation block relates each observable portfolio flow in the (Y) matrix to several unobservable “states” or latent factors (F) with varying intensities according to the estimated parameters of each flow.

In the second part of the model the “Factor Augmented VAR (FAVAR) model“ we state the relation of the extracted factors with a set of macroeconomic variables in the form of a VAR structure allowing time dynamics between the three elements of the analysis: factors, macro and flows/assets.

We have chosen a set of macro variables so that the extracted factors carry strong statistical relations to the global financial cycle represented here with the EUR and US long-term rates that proxy the term premium. Also, factors and these latter variables carry strong links to the Global Risk Aversion and the Differential Risk Aversion to Emerging Markets (here gathered with the VIX and the EMBI respectively as in Rey 2012). Lastly we have analysed the relation of these variables and variables that proxy growth and growth differentials between developed and emerging markets (here as the G7 and great -EM median GDP Q/Q growth rates).

The model is estimated by means of maximum likelihood with Bayesian techniques and a prior that leverages more in the recent past in order to gauge the recent events.

Factors are forecasted conditional to the evolution of macro economic variables following the scenarios described bellow and flows are recovered back from the forecasted factors by means of the estimated measurement equation block (1) described above.



The BBVA_PM: a two step DFM/FAVAR model

(1) The Dynamic Factor Model (DFM) to extract flows (and asset prices) factors

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

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

2) 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 ($\phi(L)$).

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

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

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

(2) Factor Augmented Model (FAVAR) to combine Macroeconomic variables and factors and Variables

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

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

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

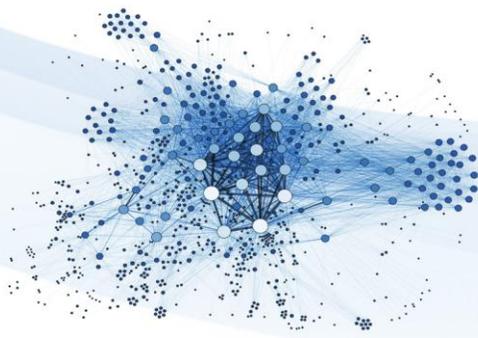
TRANSMISSION

- 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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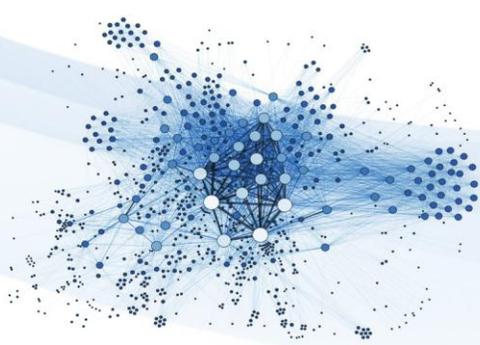
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