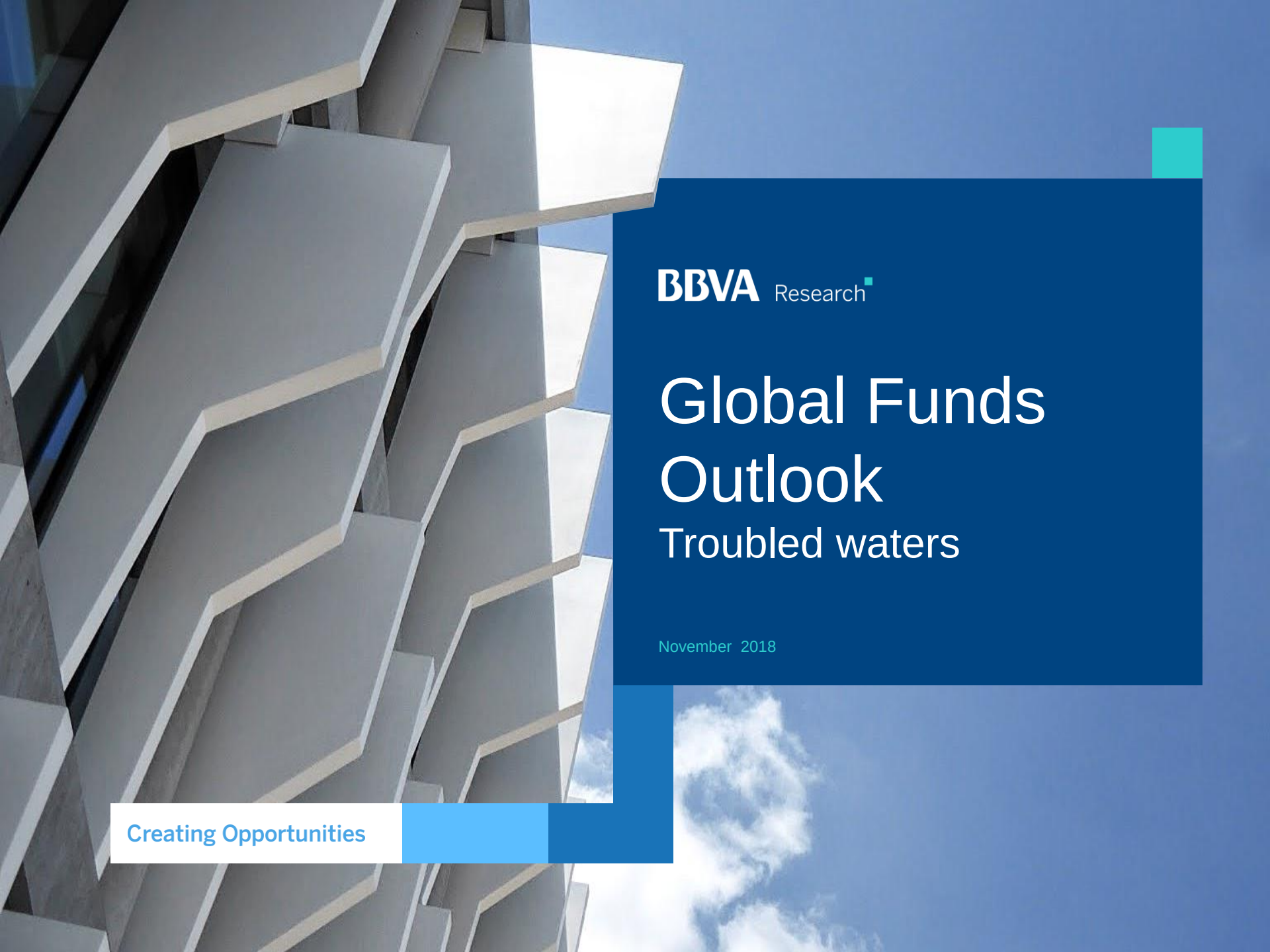


BBVA Research

Global Funds Outlook

Troubled waters

November 2018

Creating Opportunities

Main Takeaways

- In 3Q18 global investment funds (GIFs) registered net outflows for a second quarter in a row. As expected, EM funds continued to register withdrawals amidst an increasingly challenging global economic outlook. However the accompanying outflows also registered in DM funds were an unwelcomed surprise .
- Investors' conduct towards EM remains measured. They have cautiously discriminated across EM economies restraining from panic yet acting harder on economies with higher external financing needs. All in all, accumulated outflows in 2018 represent 15% of the total inflows registered in 2017.
- Investment flows are an increasingly distressing issue for Europe. Italy's renewed fiscal-led financial turbulence and Brexit ongoing negotiations are taking their toll. Portfolio outflows from Europe have accelerated to a pace not seen since the European debt crisis.
- A generalized risk-off mood persists among global investors. More worrying, it is growing in scope: hurting now US assets and starting to impact money market funds.
- Looking forward, and accompanying the expected economic cyclical downturn, the ongoing monetary policy normalization and the return of some volatility, portfolio outflows from EM will likely intensify in the coming quarters.

Global Investment Funds (GIF)

We analyse EPFR data on global fund flow over the quarter

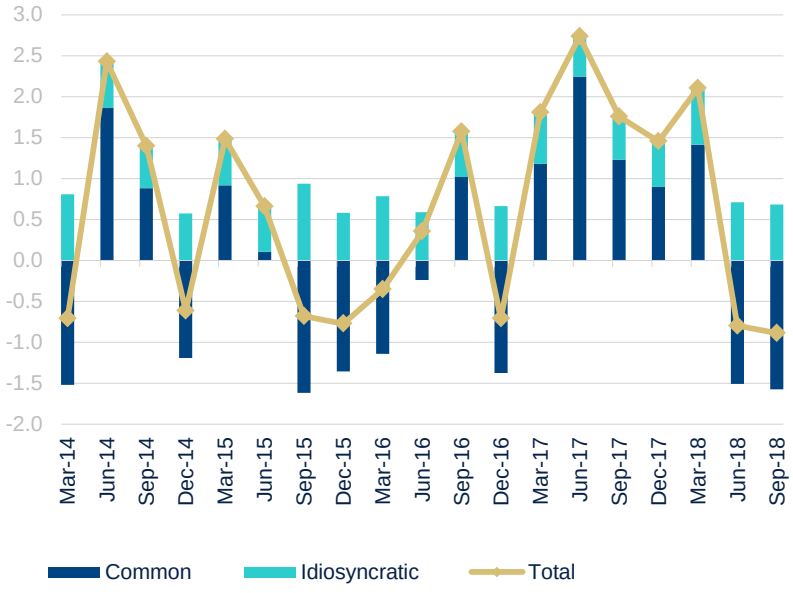
- to track asset volumes
- to describe net reallocations across regions and asset types
- to identify common factors underlying those dynamics

What happened to GIF in 3Q18?

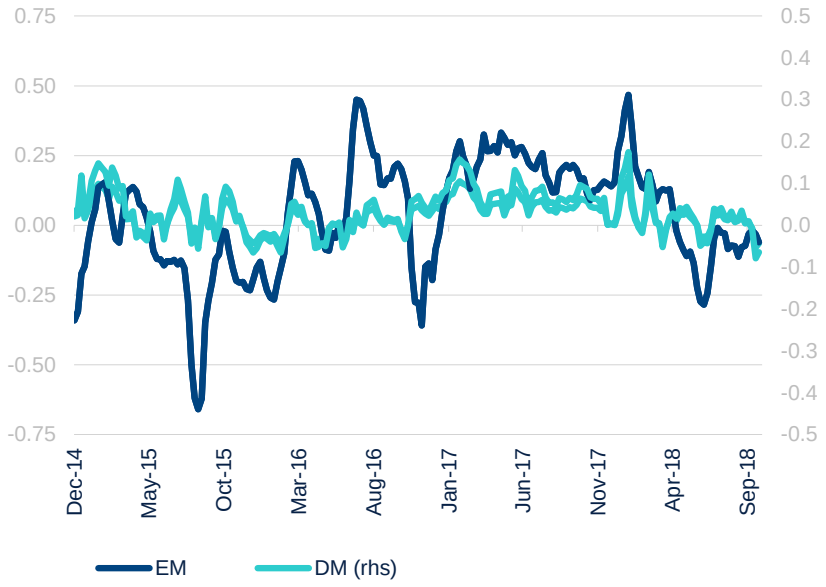
Global investment funds showed outflows for a second quarter in a row. Differentiation between EM and DM is fading

Investors continued to withdraw capital from global funds amidst an increasingly challenging outlook: protectionism threats have escalated, the Fed is proceeding with monetary policy normalization and political risks re-emerged in Europe. EM confronted another round of financial turbulence but a sudden stop has been avoided so far (thanks to the response of most vulnerable countries)

GIF flows and their composition
(quarterly average, all countries, % AUM)



GIF flows to EM and DM
(weekly flows, 4w moving average, % AUM)



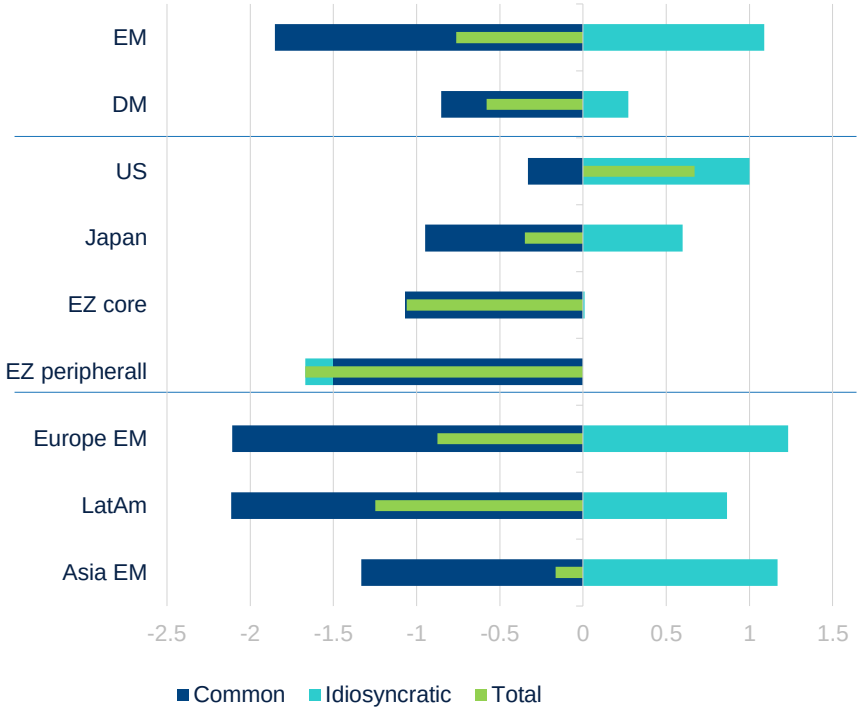
Source: BBVA Research, EPFR

What happened to GIF in 3Q18?

Investors are increasingly worried about Europe while anxiety on EM seems to subside and US fund are still attracting fresh flows

GIF flows across regions in 2Q18: common vs idiosyncratic factors

(monthly average,%, AUM)



- The pace of portfolio outflows from EM has moderated despite steady tightening of global funding conditions. Most vulnerable EM countries (Turkey, Argentina) are taking economic (fiscal and monetary) actions to curb renewed financial tensions. Meanwhile China is trying to offset the negative impact of US tariff measures through easing measures
- Outflows from the Eurozone increased sharply on the back of fiscal concerns in Italy and Brexit negotiations with some differentiation between core and peripheral countries
- US funds have consolidated as the preferred destination of flows during 2018. However, recent volatility spike and equity correction, are starting to dampen investors' appetite

*All comparative inferences across countries are based on inflows relative to each country's total assets under management (AUM). They are NOT based on actual USD flows, which tend to be significantly larger for the US than for any other economy

Source: BBVA Research, EPFR

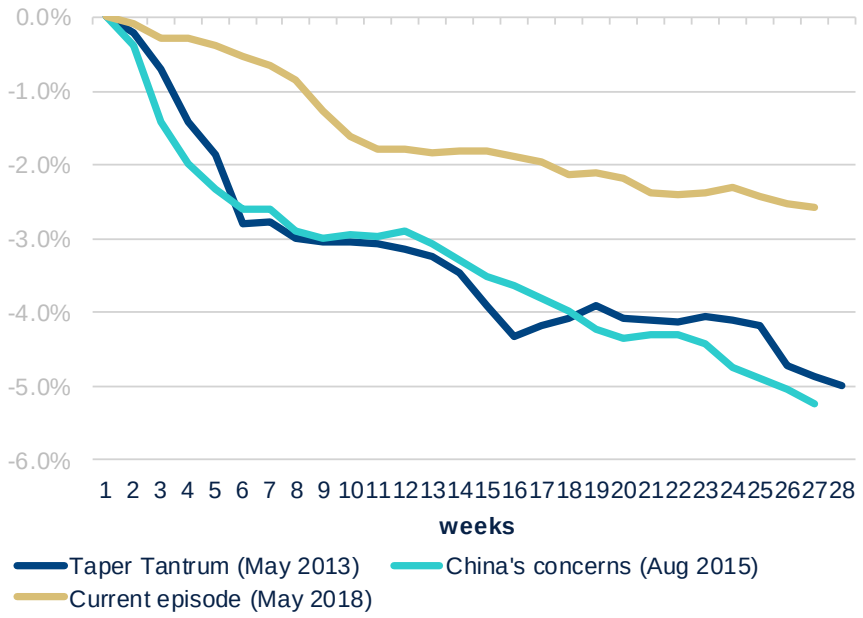
What happened to GIF in 3Q18?

Outflows from EM, a bit of comfort: GIF have evolved broadly in line with our expectations and far from a "sudden stop"

While EM have been witnessing persistent portfolio outflows since May2018, we can not talk about an episode of "capital flight". The dynamic and size of outflows have been orderly and manageable, pointing out that investors could still be reassessing their exposure to EM

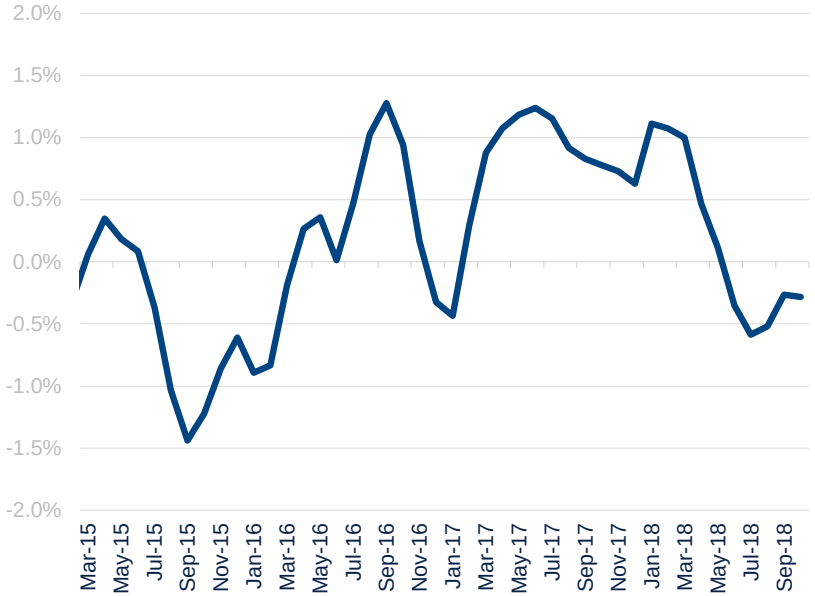
Outflows from EM in different episodes

(cumulated flows in different episodes, % AUM)



Monthly GIF flows to EM

(3M moving average, monthly flows, % AUM)



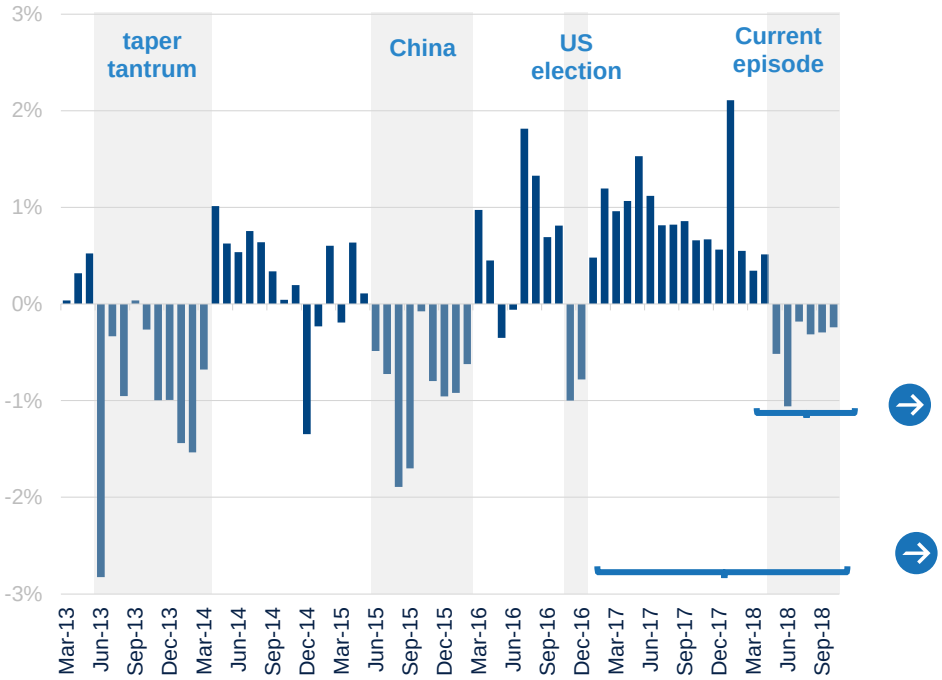
Source: BBVA Research, Bloomberg

What happened to GIF in 3Q18?

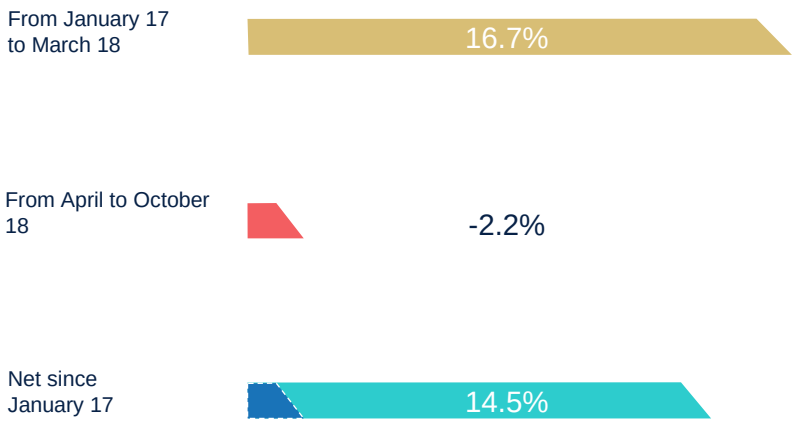
Outflows from EM, a bit of risk: cumulated outflows from EM are a very small portion of the bulk of inflows during 2017, more to come?

The bulk of inflows to EM during 2017 increases the chances of persistent outflows even in 2019. During the recent risk events, EM registered outflows for 12 months in a row

Portfolio flows to EM
(% of AUM, monthly data)



Buffer of portfolio flows built since early 2017
(% of Jan-17 AUM)



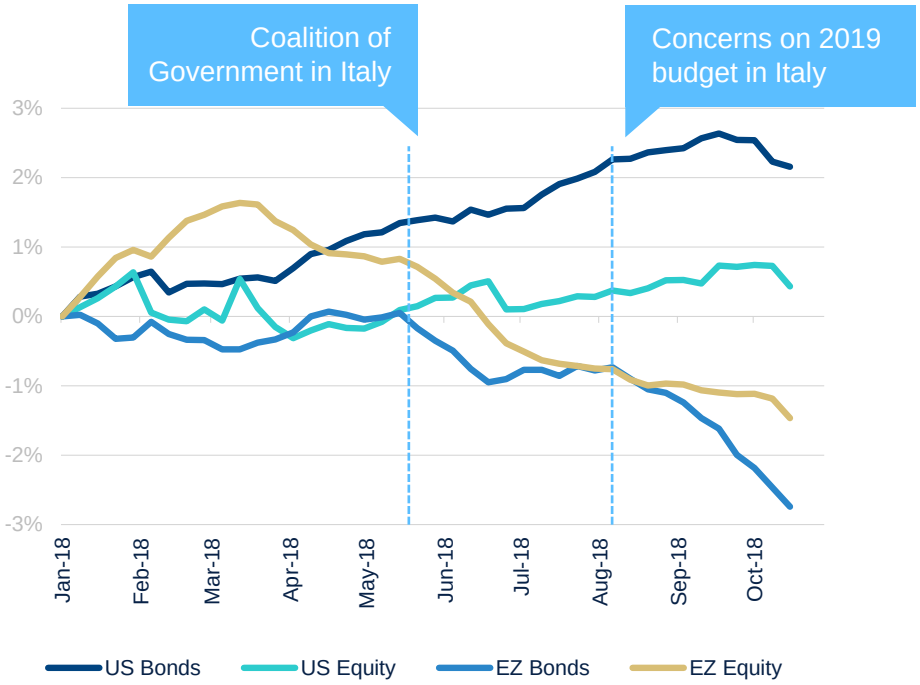
Source: BBVA Research, Bloomberg, EPFR

What happened to GIF in 3Q18?

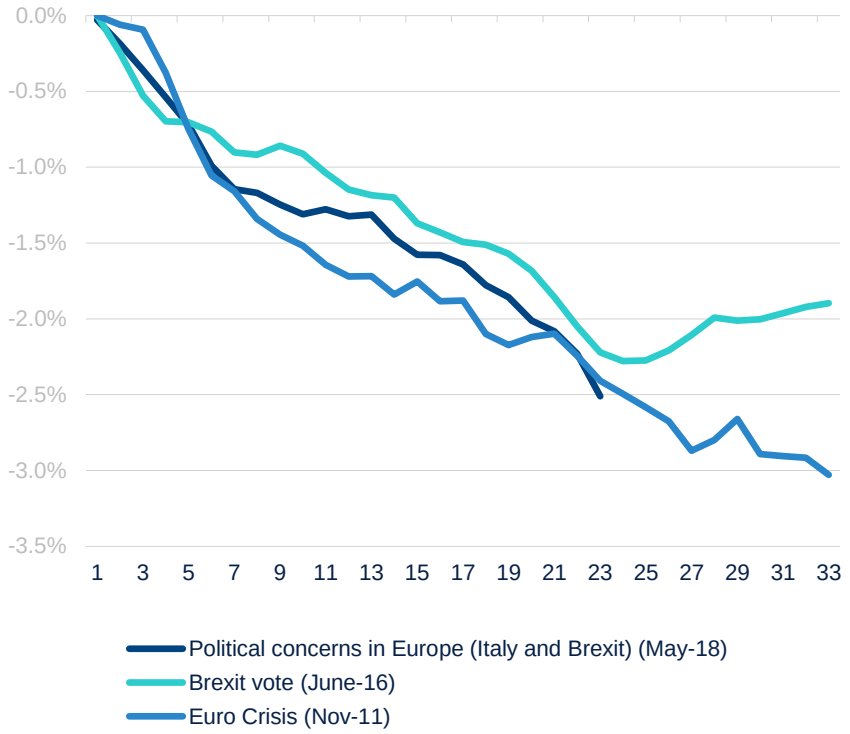
Renewed turbulences in Italy and Brexit is taking its toll: outflows from Europe have accelerated showing a worrying dynamic

While US funds have continued to attract a sizable amount of portfolio flows, investors have continued to reshape portfolio allocation against Europe. Outflows from European funds have surpassed the Brexit episode and the path is akin to the "Euro-crisis" (2011)

Accumulated flows to DM
(% of AUM from January 2018)



GIF flows to Eurozone funds
(cumulated flows since 2018 % AUM)



Source: BBVA Research, EPFR

Major macro determinants of GIF flows

We identify the global and idiosyncratic macro-drivers of net GIF inflows to both EM and DM

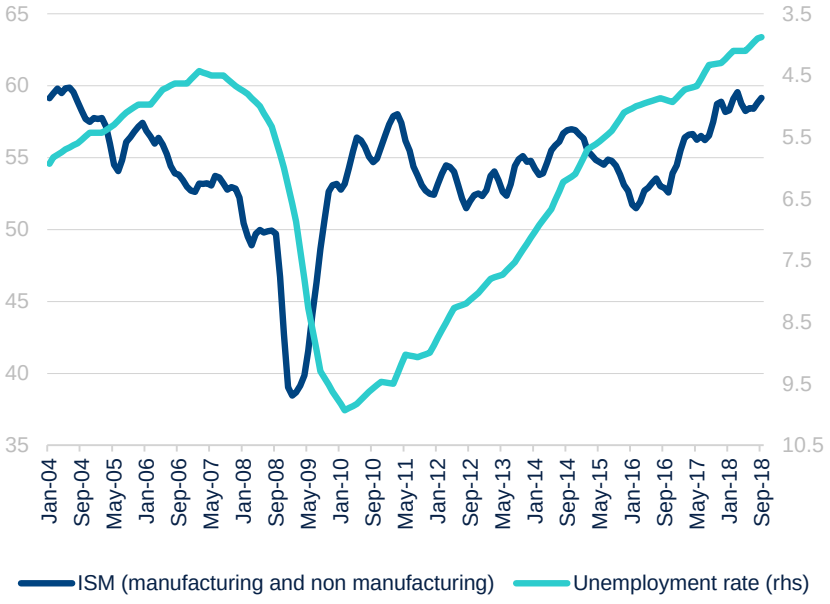
Major macro determinants of GIF flows

Among global factors, global growth has remained solid chiefly driven by the US, allowing the Fed to proceed with normalization

Economic conditions in the US remain consistent with high growth in 2018 and 2019, unemployment rate near 50 year low, and the Fed is poised to further raise rates (in December, following the September hike). Market expectations on the Fed have corrected to the upside

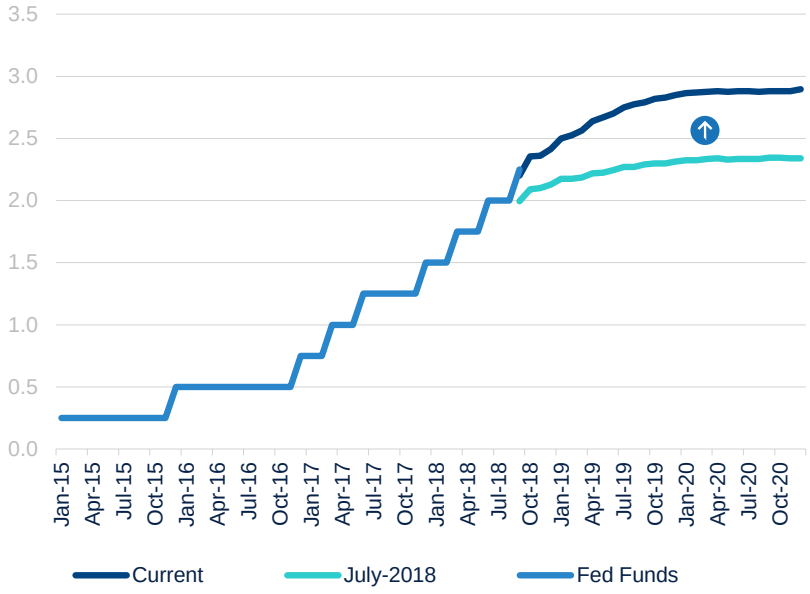
US: Confidence indicator and unemployment rate

(ISM, level, and Unemployment rate,%:mm 3 months)



US: Implicit rates in Fed Funds futures

(%)



Source: BBVA Research, Bloomberg

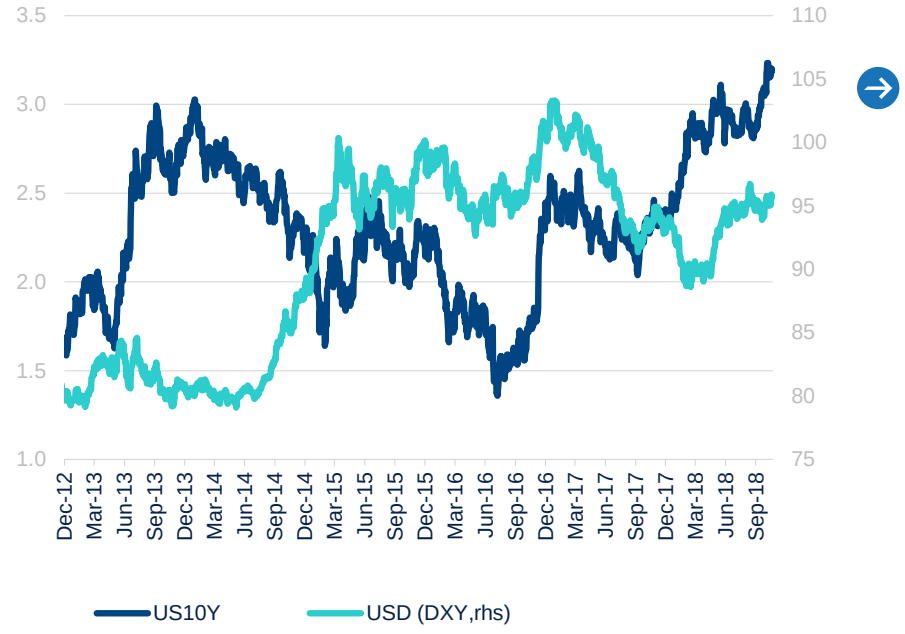
Major macro determinants of GIF flows

In fact, global financial conditions have further tightened on the back of higher 10-year US Treasury yields and strong US dollar

As markets incorporate a more hawkish outlook for the Fed, the 10-yr Treasury trended upwards (reaching a seven year high, 3.20%). Unlike in the rate increase showed early in the year, bond yields have been mainly driven by real rates (while inflation expectations have remained well-anchored)

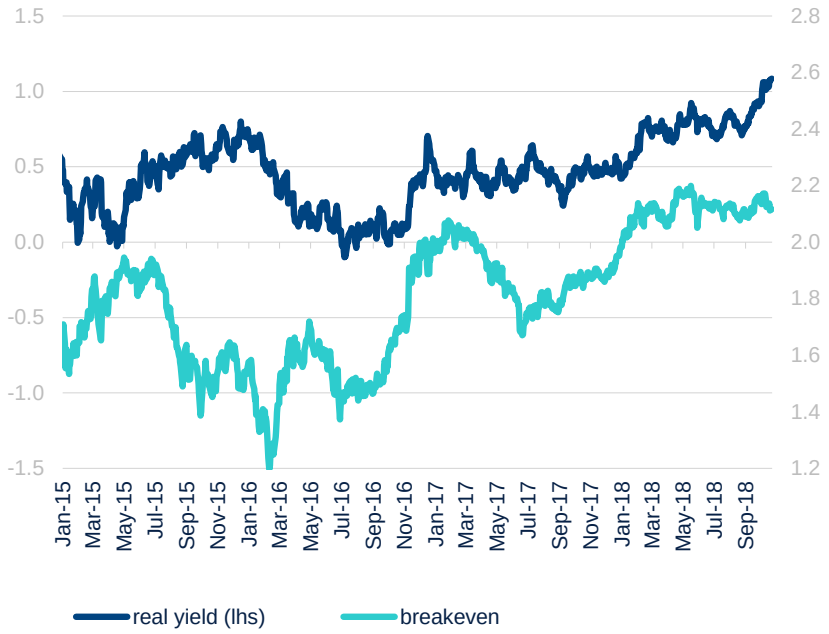
Global Financial conditions: US Dollar and US bond yields

(DXY index: US Dollar vs major developed currencies, %)



10Y UST descomposition

(%)



Source: BBVA Research, Bloomberg

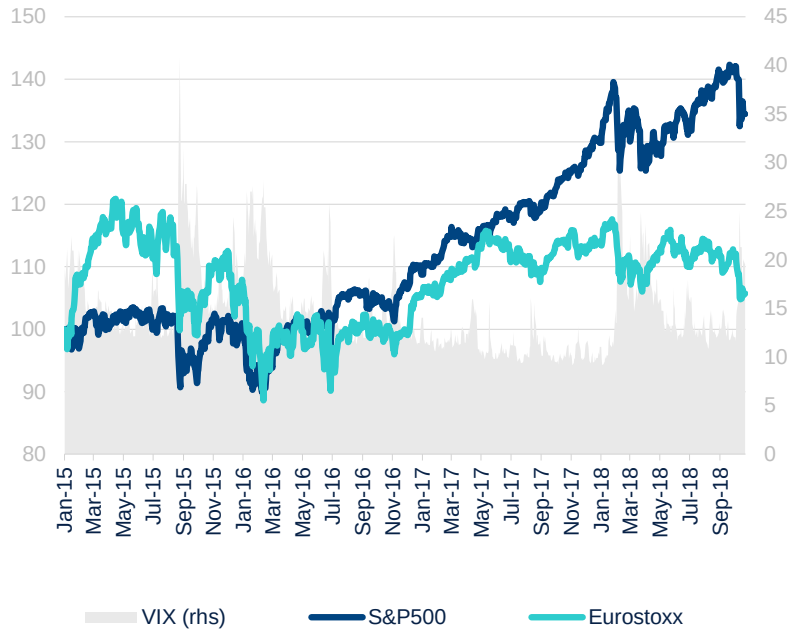
Major macro determinants of GIF flows

With investors focused on solid growth and ignoring global risks, volatility remained subdued and equity indices kept on growing

However, risk perception has abruptly changed. Equity markets have finally adjusted to rising yields as the Fed continues with its tightening cycle, and volatility has reemerged. Going forward, investors should navigate in a more challenging environment

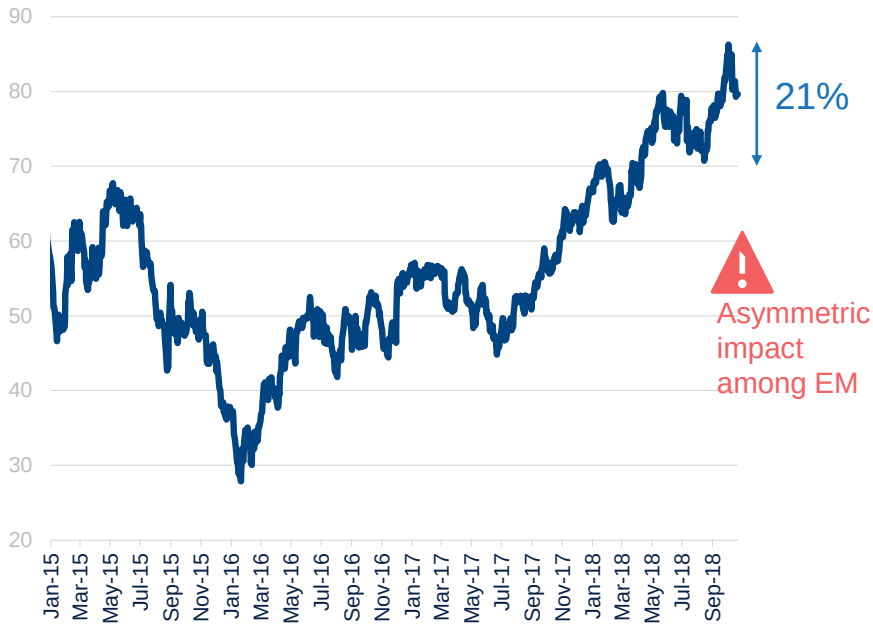
Main developed equity indices and volatility (VIX)

(Equity indices Jan15=100; Volatility, %)



Brent prices

(USD)



Source: BBVA Research, Bloomberg

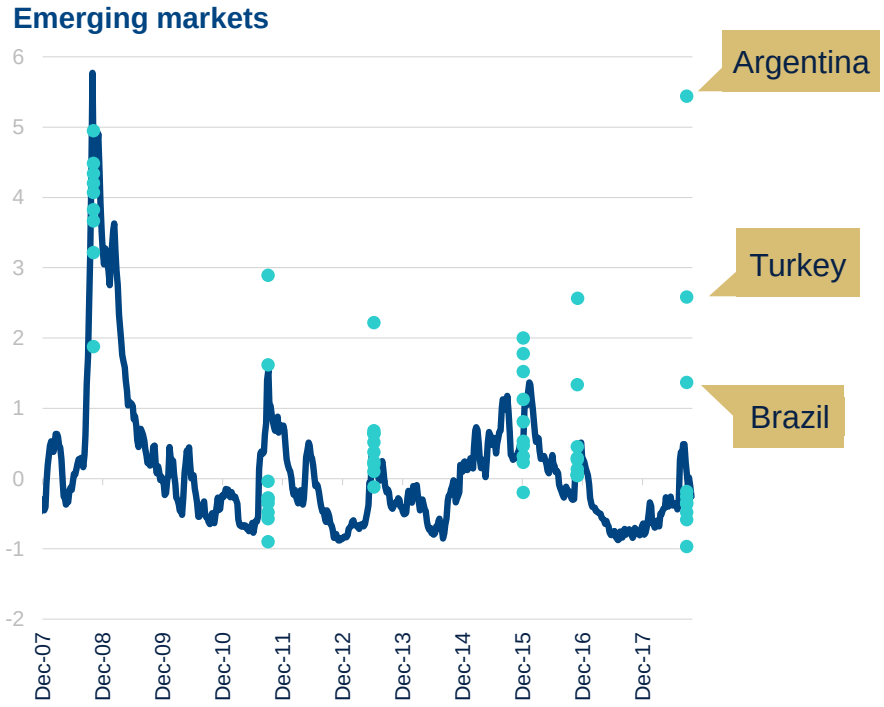
Major macro determinants of GIF flows

On idiosyncratic factors in EM, macro-financial vulnerabilities are playing a major role

Emerging Markets: Macro-financial vulnerabilities monitor

		External sector			Public sector	Private sector
		Current account balance (% GDP, Q118)	External debt (% GDP, Q118)	External Reserves / short term external debt (%)	Public debt (% GDP, Q417)	Non financial debt (% GDP, Q417)
LatAm	Argentina	-5.2	40	1.0	55	21
	Brazil	-0.5	33	4.0	83	69
	Chile	-1.0	66	1.6	25	139
	Colombia	-3.1	40	2.8	49	65
	Mexico	-1.3	39	3.4	36	43
	Peru	-1.3	32	6.3	25	41
Eastern Europe	Hungary	3.2	112	1.1	81	101
	Ukraine	-2.1	104	1.0	76	40
	Poland	0.0	75	1.6	51	81
	Russia	2.7	33	4.9	16	66
	Turkey	-6.3	55	0.7	28	85
Asia	China	0.9	15	3.8	47	209
	India	-1.9	21	4.0	69	56
	Indonesia	-2.0	35	2.3	29	39
	Malaysia	3.7	73	1.3	51	134
	Thailand	10.6	33	3.4	33	116

BBVA Financial Tension Index:



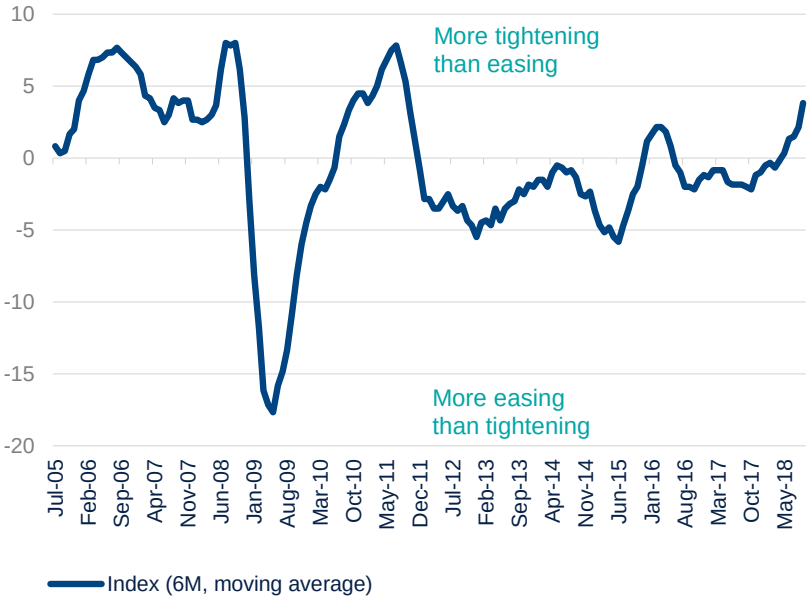
Major macro determinants of GIF flows

Most vulnerable EMs have taken some steps (monetary and fiscal measures) to regain market confidence

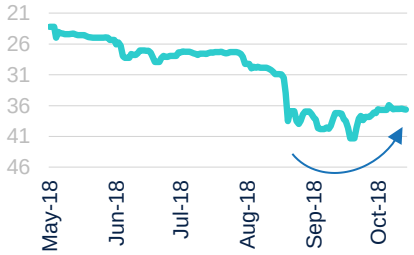
The adoption of monetary and fiscal measures in most vulnerable EM countries has allowed for some stabilisation. In Mexico, the trade deal with the US and Canada (USMCA) has been a supportive factor. In Brazil, short-term uncertainty on presidential elections has faded. While China is already implementing fiscal and monetary measures to offset the negative impact of trade tariffs on growth

EM monetary policy indicator

(Number of rate hikes minus number of rate cuts by 23 central banks 6 months moving average)



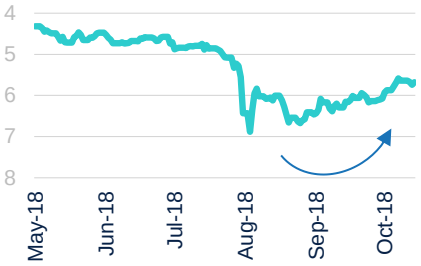
ARS/USD



Argentina

- Very restrictive monetary policy: rate hikes (+1500 bps) and no monetary growth
- Strong fiscal consolidation
- IMF programme

TRY/USD



Turkey

- Rate hikes: +650 bps
- Moderate Fiscal plan
- Easing geopolitical tensions

Source: BBVA Research, Bloomberg

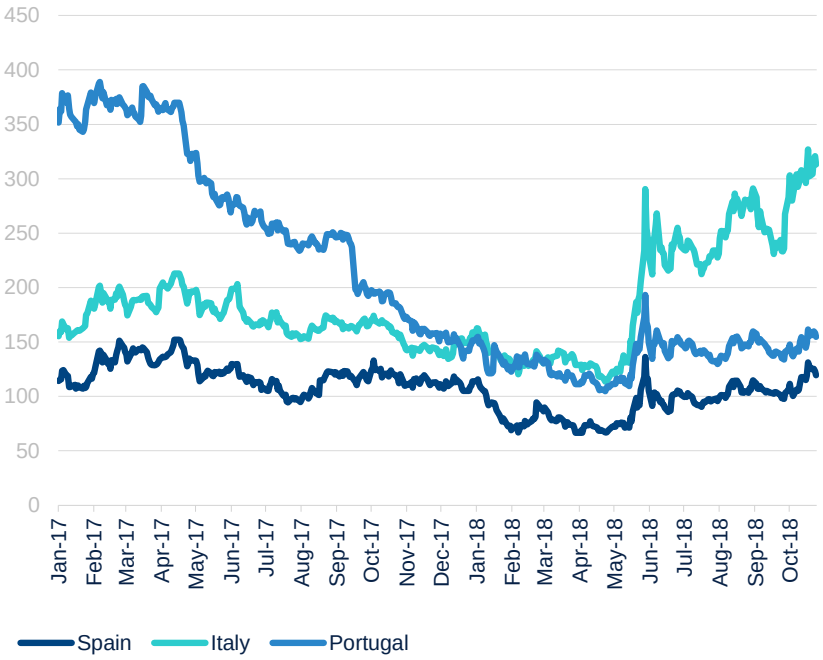
Major macro determinants of GIF flows

Tough times for European assets amidst Brexit negotiations and Italian fiscal concerns

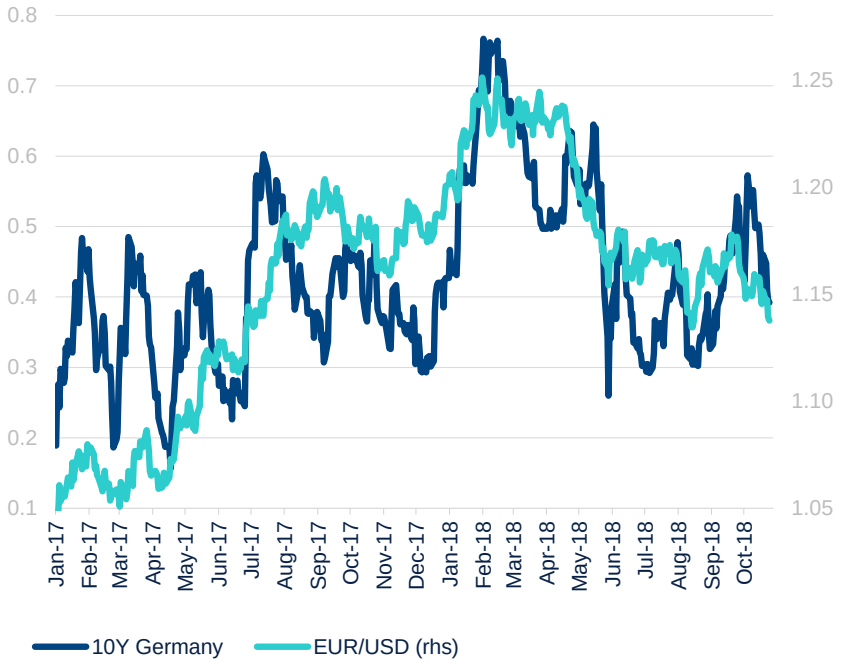
Italy risk premium has consolidated levels around 300bp, after the new government fiscal plan, with limited contagion to other peripheral countries

The increasing uncertainty is dragging down the EUR (to its lowest since early 2017) and German Bund yields

Peripheral risk premium
(10Y yield spread against Germany, bps)



Germany 10Y sovereign yields and Euro
(% and level against the USD)



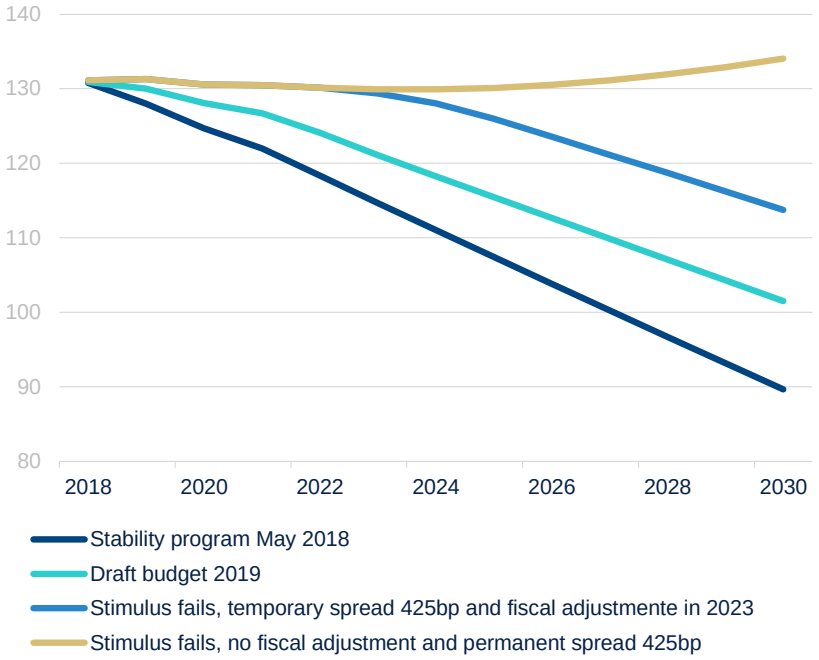
Source: BBVA Research, Bloomberg

Major macro determinants of GIF flows

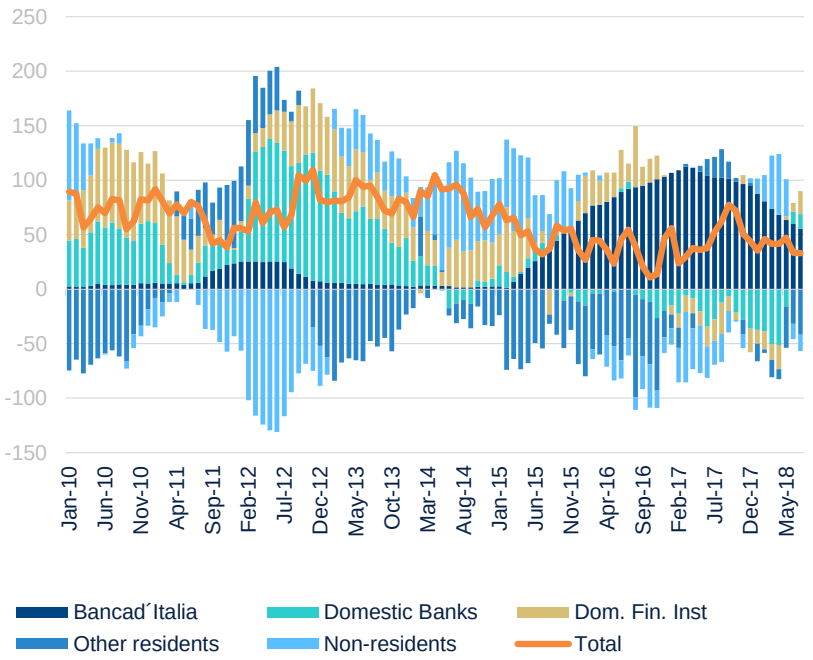
Italian challenging environment: political turmoil, the end of the ECB QE and increasing cost of funding

Under the Italian draft budget 2019, public debt remains sustainable but more vulnerable and less room of maneuver if fiscal adjustment postponed.

Italy: Public Debt
(% of GDP)



12month change in Government debt by investor
(EUR, bn)



Source: BBVA Research, Bloomberg

Investor sentiment

We have developed a set of indicators, which combine asset prices and GIF flow data from EPFR, to identify

- episodes of risk-on mood and
- episodes of risk-off mood, of which there are three types - pure risk aversion, redemption and safe-haven flight

Furthermore, we assess investor appetite for funds in emerging markets vs. developed markets or equity vs. bonds

Investor sentiment

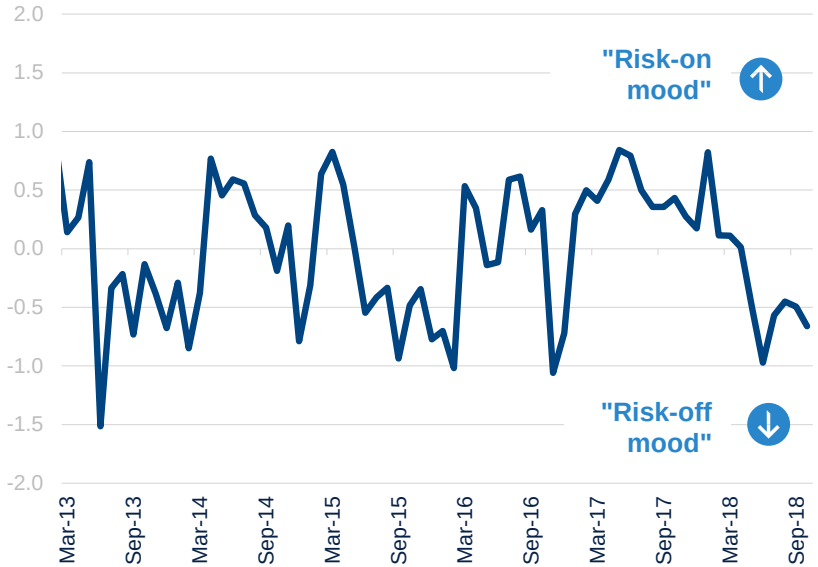
Investors' sentiment remains in "risk- off" territory. Moreover, latest data pointed for further deterioration

The deterioration of market sentiment seems to halt during the Summer, but anxiety has returned to financial markets led by the correction of US equity

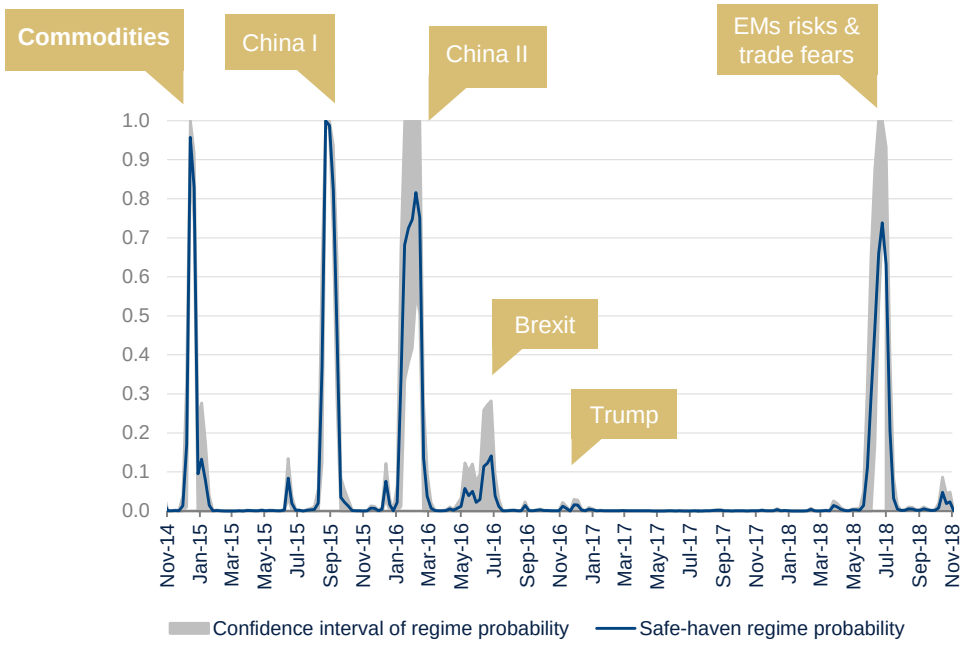
According to our *probit* model, during last Summer the probability of markets entering into safe-haven was high but it moderated as the quarter went by.

Investment mood index*

(above (below) zero = risk-on (risk-off) mood



Probability of safe-haven flight based only on portfolio flow data



(*) see annex for more details
Source: BBVA Research, EPFR

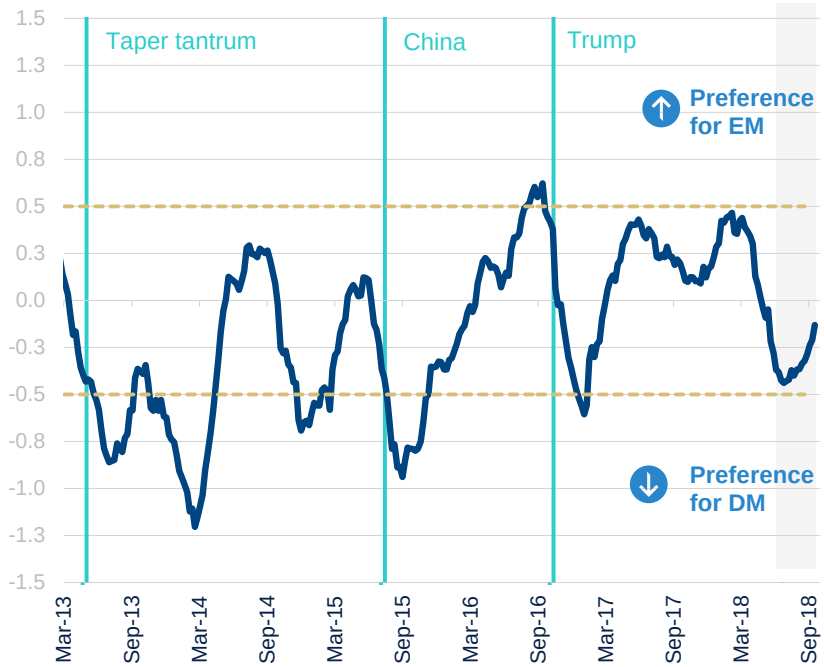
Investor sentiment

Preference for Developed vs Emerging markets is fading as investors sentiment towards Europe deteriorates

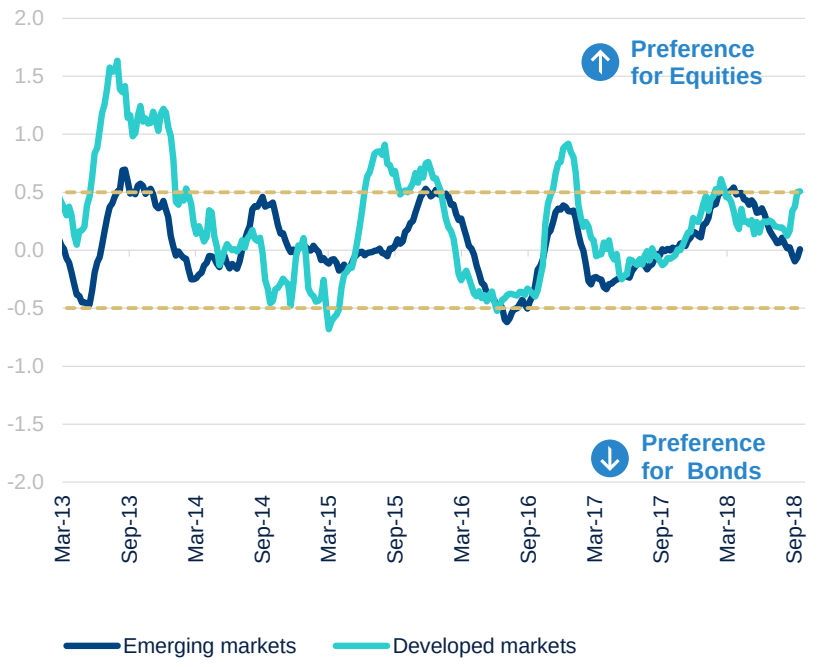
The sharp outflows from the EZ along with decreasing inflows to US curbed the preference for DM

Rotation from equity towards bond funds continued in EM while in DM the outflows from bond funds outpaced those from equity funds

Investor appetite for DM vs EM
(indicator expressed as standard deviation from historical mean)



Investor appetite for bonds vs equity
(indicator expressed as standard deviation from historical mean)



Source: BBVA Research, EPFR

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What's next?

Our baseline macroeconomic outlook

Global economic outlook

- **Global growth still solid, but moderating and less synchronized. The peak is behind us**
  - Strong performance in the US contrast with stabilization in the Eurozone and China
- **US-China trade escalates.**
  - Still limited impact but ready for more action, while US tensions with other countries have eased
- **Biased to the downwards. Global risks intensify**
  - Protectionism (US-China trade escalates) and Fed's exit, with EM sell-off acting as potential amplifier and greater uncertainty in Europe.

Major central banks' monetary policy

- **Ongoing monetary policy normalization:**
  - Central banks' balance sheet to further shrink: -450 bn USD in 2019
  - Fed and ECB at very different stages: Fed at the end of the tightening cycle and ECB to start only in 2019
- The **Fed** is expected to further raise rates 25 bps in December and by 75 bps in 2019
- **The ECB** to end QE by the end of 2018 (reinvestment to be maintained) and start hiking interest rates in Sep2019

Global financial conditions

- **Financial volatility has returned** given the lingering concerns on the global outlook and diminishing global liquidity.
- **Long-term interest rates** in the US and EZ are expected to increase gradually, with some downward pressure to German rates due to safe-haven flows.
- **US Dollar** is expected to weaken vs EUR, assuming that political risks in Europe recede
- **Oil prices will remain high in the short term** (led by supply factors such as US sanctions on Iran). Gradual convergence to estimated long-term equilibrium (60USD/b)

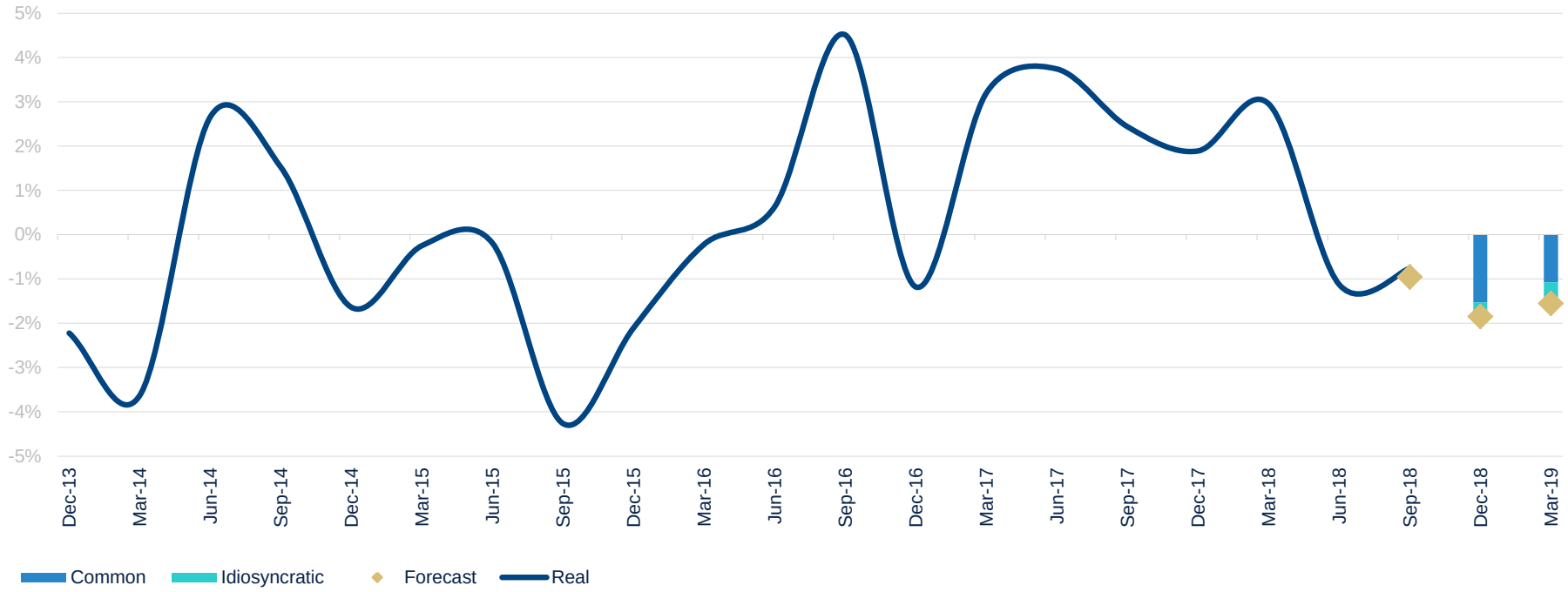
What's next?

Portfolio outflows from EMs have been persistent but not sudden stop

- EMs funds registered outflows amounted to 1% of AUM in the 3Q18, broadly in line with our projections led by the ongoing withdrawal of global liquidity
- According to our estimations, outflows from EM fund could intensify as global conditions could worsen. In particular, financial volatility is on the rise, and there is a growing evidence that the peak on the global cycle is behind us. In particular, the rebound of financial tensions is expected to have an impact on EM growth

Global Investment Funds flows to EM

(% of AUM, QoQ)

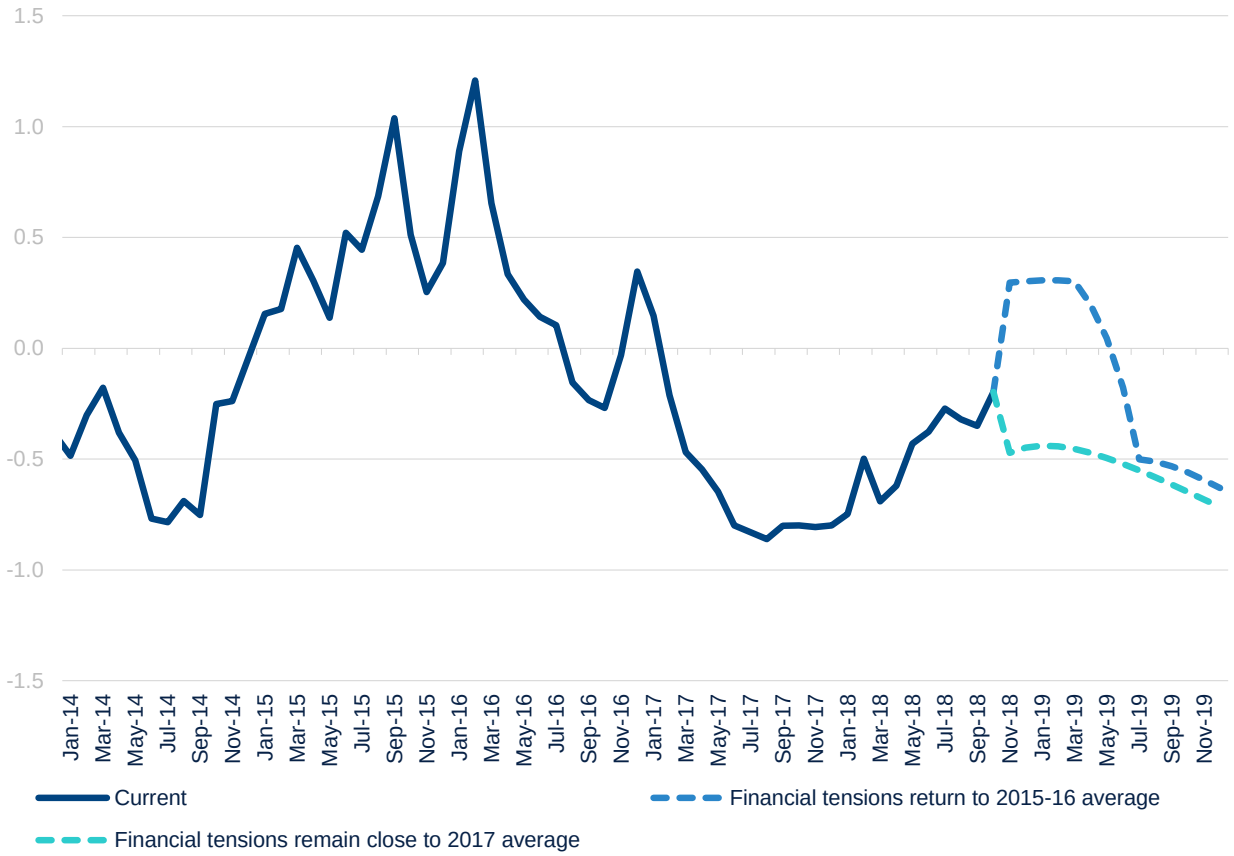


Source: BBVA Research, EPFR

What to watch?

The effect of higher and persistent financial stress on GDP growth could be sizeable, especially in EMs

EM Financial Tension Index simulation: tensions back to 2016 level or reverting 2017 complacency
(normalized index)



Effect of higher financial stress on EM GDP growth
(cumulated effect over the next 4 quarters, pp)

-0.7%

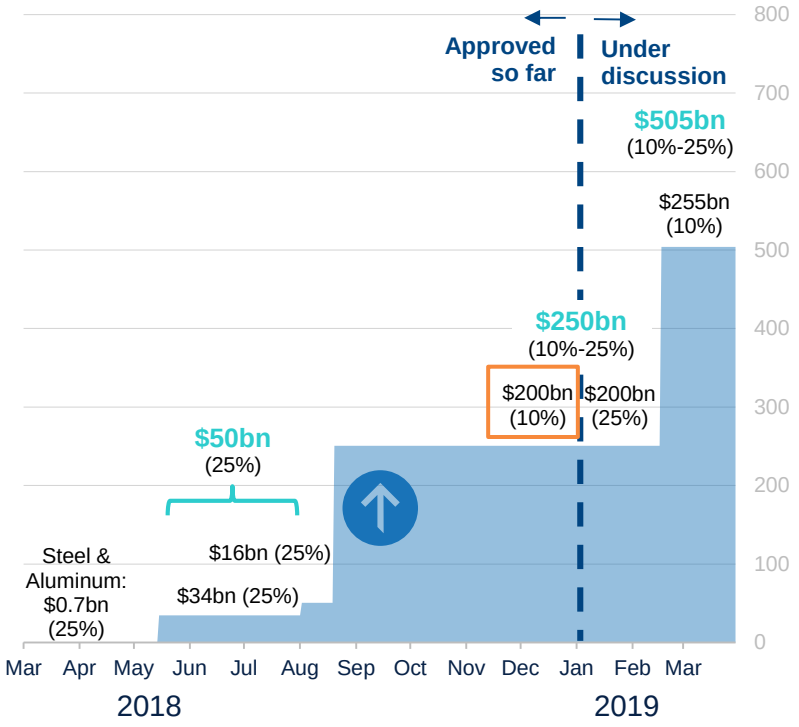
Source: BBVA Research

What to watch?

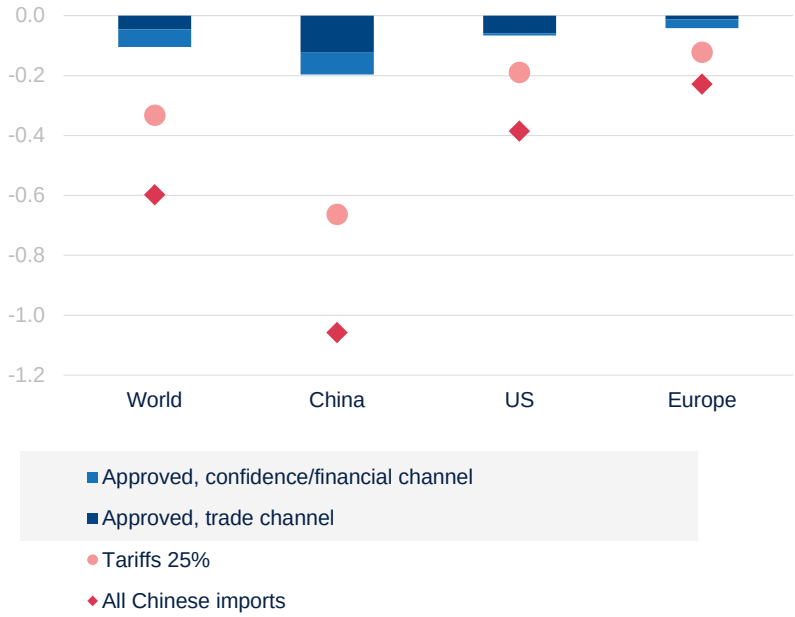
Trade war (US-China) could threat global economic outlook. Mild impact, so far

US and China have raised tariffs. The trade channel effect on GDP growth of approved measures for now could be limited, but indirect effects through confidence and financial could be sizeable, especially for China and emerging economies

US import tariffs applied vs. announced
(volume under threat of new tariffs, $bn)



Effect of approved US tariff increases and retaliation on GDP growth. September 2018
(2018-20, pp)



Simulation: 25% tariff increase on steel, 10% on aluminum, **25% on Chinese $50bn imports and 10% on $200bn.** China's retaliation: **25% on $50bn and 10% on $60bn**

Source: BBVA Research and National Sources

What to watch?

How will China react to the US? Managing a RMB depreciation poses a material potential threat to financial stability

China: Renminbi and Equity

- The trade war is one reflection of a broad, long-term geopolitical conflict between the US and China
- The dilemma for China on the trade conflict: how to mitigate the impact of tariffs without risking financial stability
- Policy options to counter US tariffs are limited
- A sharp currency depreciation could lead to large-scale capital outflows and an escalation of the conflict with the US

Annex

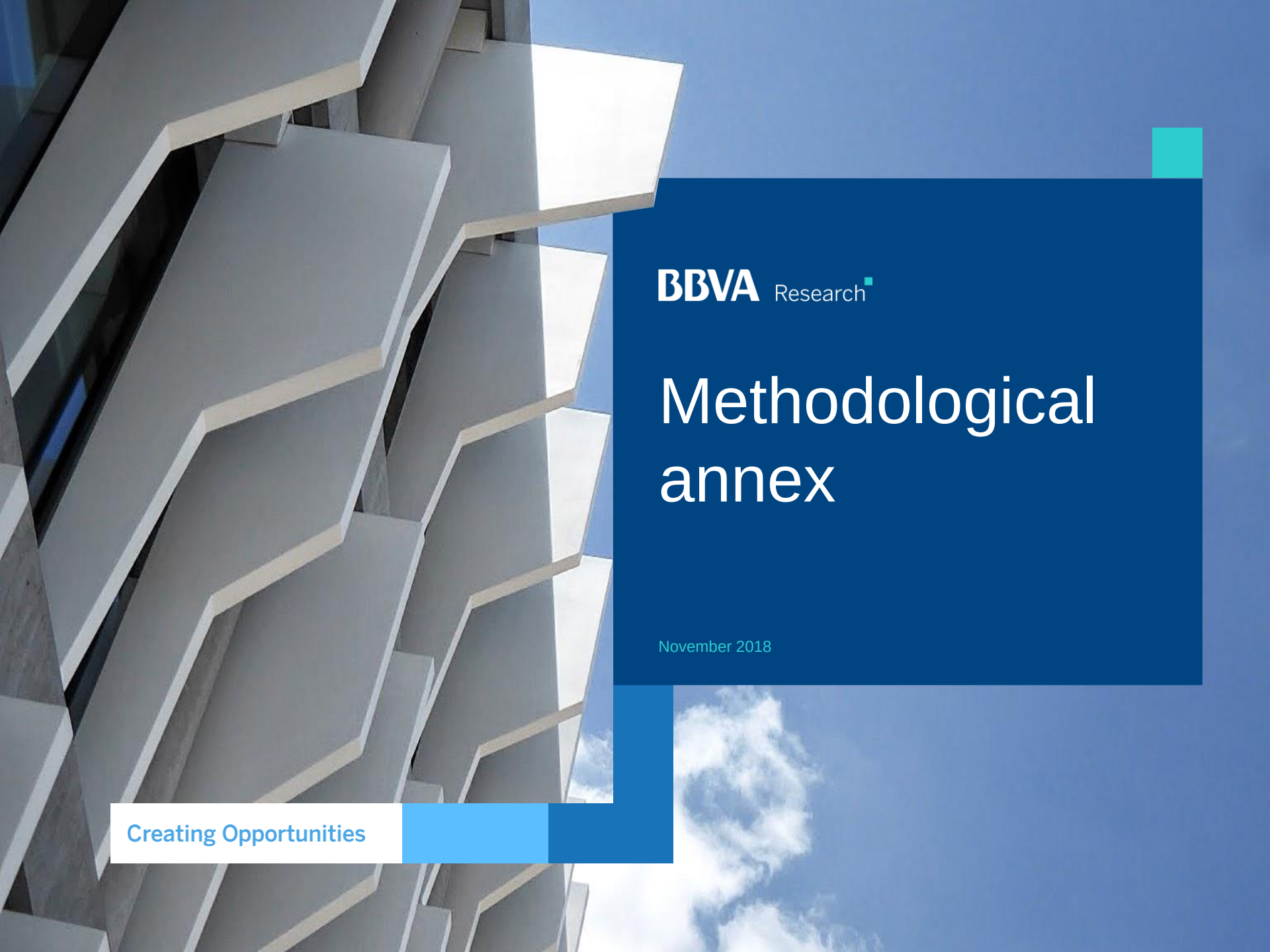
Glossary

- **GIF:** Global Investors Funds: these are the funds covered by the EPFR database in the “Country flows” allocation, with amounts shown in millions of US Dollars. This database includes the flows in country-denominated funds and the proportional amounts in global or supranational labelled funds

- **AUM:** Assets under management in the EPFR database

- **DM:** Developed markets included in our sample are Austria, Australia, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Italy, Japan, the Netherlands, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the US

- **EM:** Emerging markets included in our sample are Argentina, Brazil, Chile, China, Colombia, Czech Republic, Hungary, India, Indonesia, Korea, Mexico, Peru, Philippines, Poland, Russia, Slovenia, South Africa, Thailand, Turkey and Venezuela



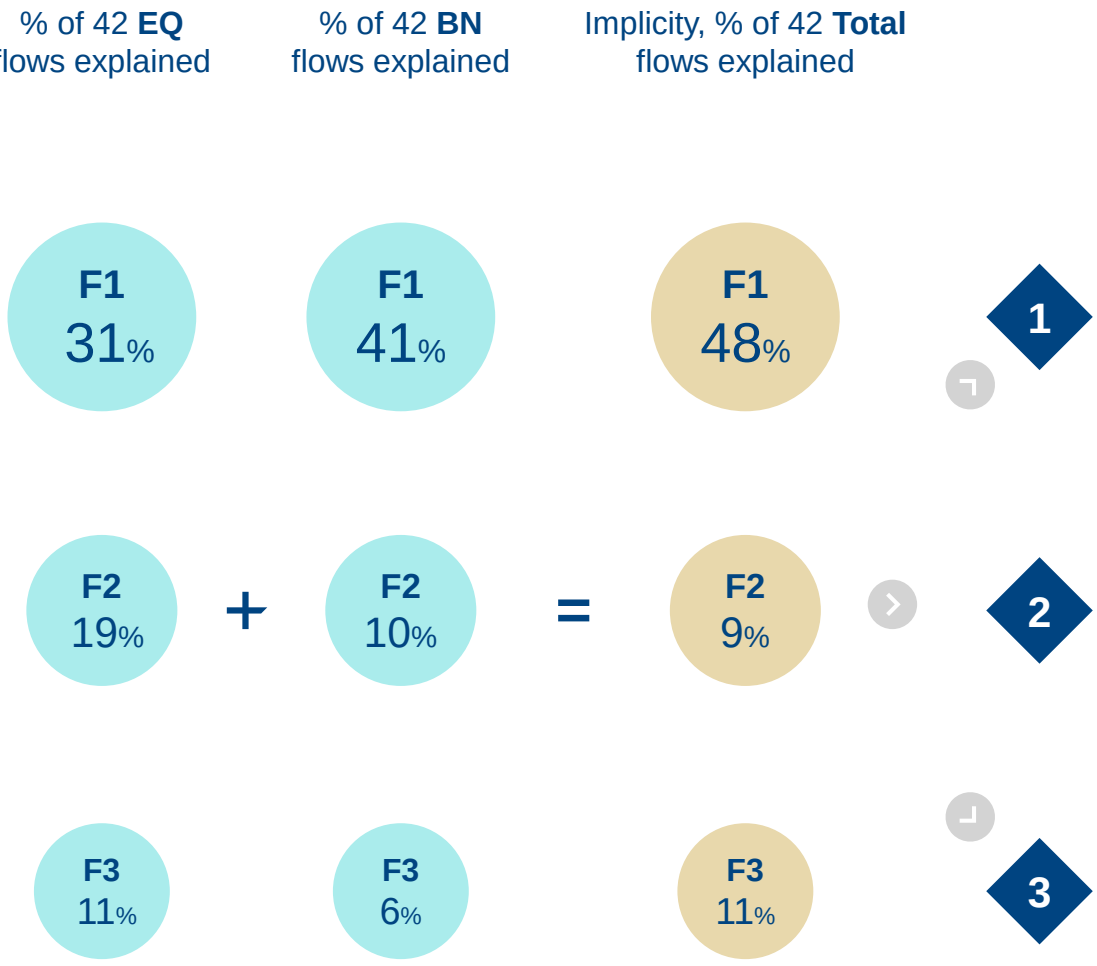
BBVA Research

Methodological annex

November 2018

Creating Opportunities

Factor analysis of EPFR flows, decomposition of global and idiosyncratic factors



GIF flows could be explained by 3 identified factors and idiosyncratic differences

Global: Captures common movements across all countries (same direction), i.e. due to changes in market risk appetite

Asset reallocation (bonds and equities) Variation explained by the reallocation between assets within a geographical region. The effect on each country will vary according to the composition of its stock between equities and bonds. Positive factor for preference for Equities over Bonds.

Regional reallocation (EM vs, DM) Explains the variation caused by the appetite for one area as against the other. Inverse effect between DM and EM

Macro-Financial Determinants of EPFR Flows

01 Methodology: GLS panel data

02 Sample: 42 countries, quarterly data from October 2005 to June 2017

03 Dependent Variables: Equities (EQ), Bonds (BN) and Total flows to each country.

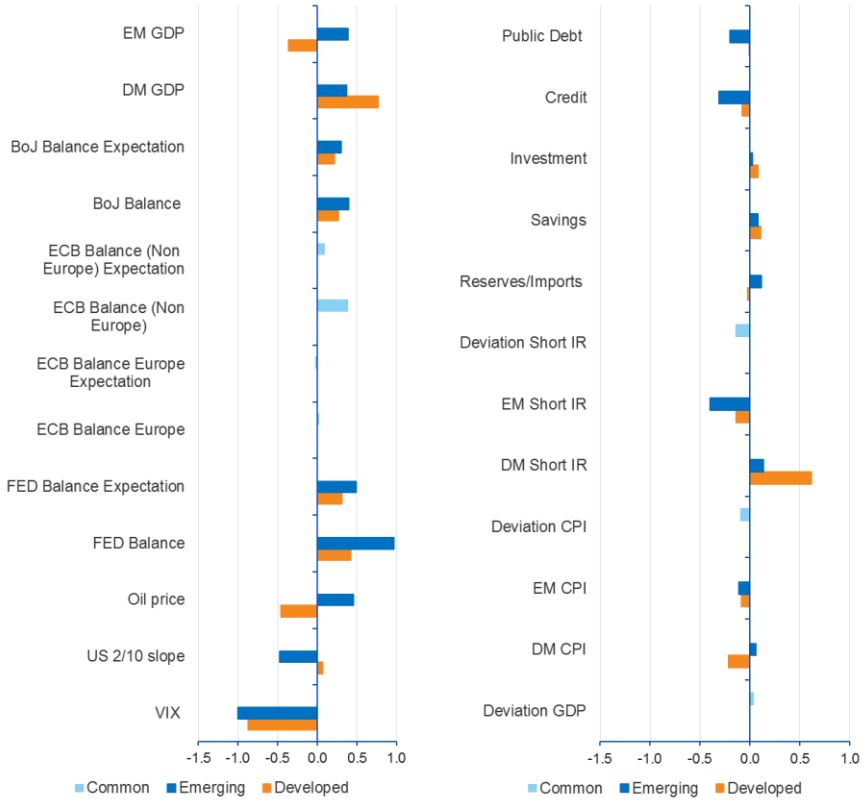
04 We have allowed each explanatory variable to have a different effect on Developed vs. Emerging Markets

05 Explanatory variables (first differences)

- VIX
- USA 10Y-2Y Curve
- GDP Growth (EM, DM, Idios.)
- Inflation (EM, DM, Idios.)
- Short-term interest rate (EM, DM, Idios.)
- West Texas Intermediate (WTI)
- FED, ECB & BoJ Balance Sheet
- Expectation of changes in FED, ECB & BoJ Balance Sheet

- Public Debt-to-GDP
- Credit-to-GDP gap*
- Investment-to-GDP
- Savings-to-GDP
- Reserves-to-Imports

Macro-Financial Determinants of EPFR Flows. Panel Regression Results (Coefficients)



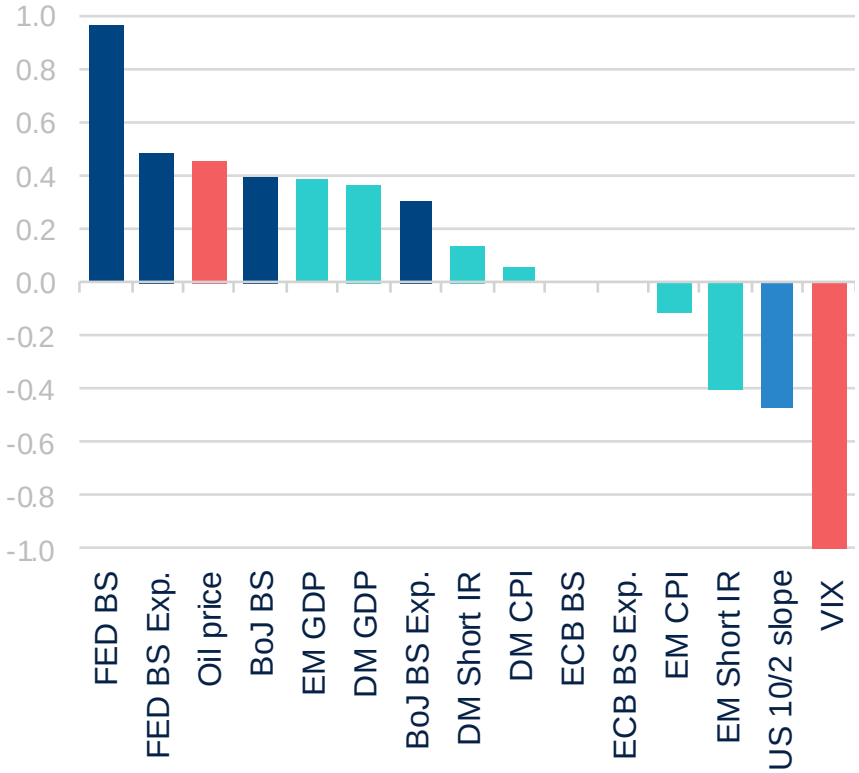
- Global variables are by far the most important determinants of total, equity & bond flows.
- Idiosyncratic variables play a limited role
- Markets seem to differentiate sharply between Emerging and Developed countries, but differentiation between countries seems quite limited

$R^2 = 0.54$

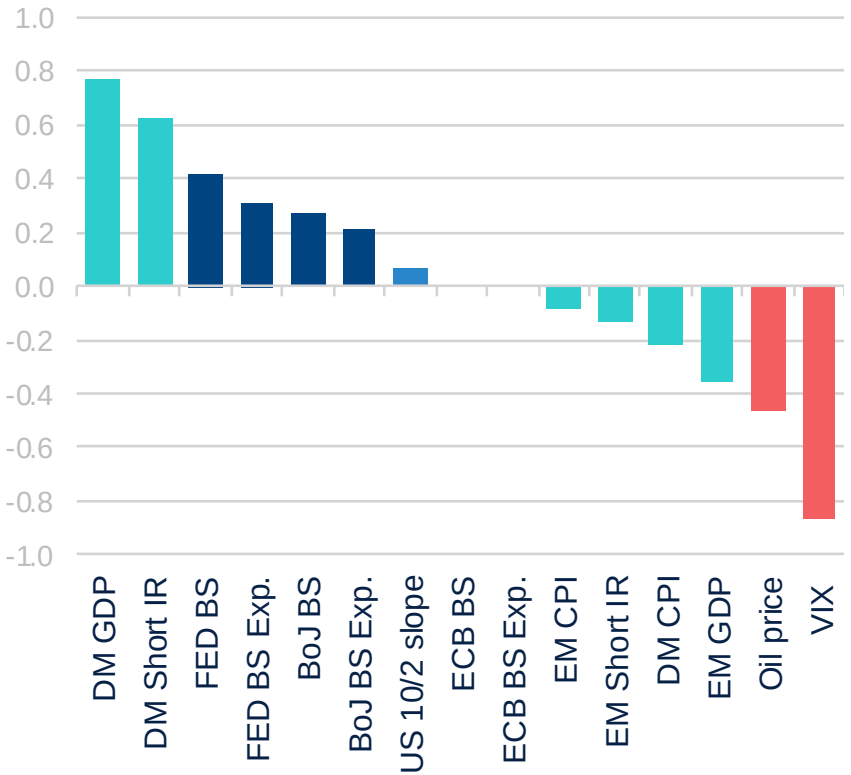
(*) Coefficients of standardised variables.

Global macro drivers

Sensitivity of EM GIF flows
(Coefficient of standardised variables in a panel regression)



Sensitivity of DM GIF flows
(Coefficient of standardised variables in a panel regression)



Source: BBVA Research, EPFR

Safe-haven indicator

The starting point for developing the indicator is to identify periods of risk aversion in financial markets. We determine these periods based on significant movements in selected financial variables. That is, we define a period t of risk aversion as follows:

$$t \text{ is a risk aversion period } \Leftrightarrow (\Delta T10 < 0 \text{ or } \Delta GER10 < 0 \ \& \ \Delta VIX > 0 \ \& \ \Delta EquityEM < 0)$$

Where:

- ΔT10 refers to the weekly change of the 10Y Treasury
- YTM
- ΔGER10 refers to the weekly change of the 10Y German government bond YTM
- ΔVIX refers to the weekly change of the VIX index
- ΔEquityEM refers to the weekly change of the MSCI Emerging Markets Index

In short, a risk aversion period is such that we witness lower long-term rates in developed market's government bonds, higher volatility in developed markets' equity and losses in emerging markets (EM) equity.

Once we have defined the set of risk aversion episodes, we categorize Safe Haven periods as a subset. To do so we follow two steps:

- First, we use the EPFR data to determine the conditional distribution of bond flows from institutional investors to Safe Haven countries (USA, Germany and Japan) and the conditional distribution of equity flows to Emerging Market countries (EM) from retail investors, both based on the four-week moving average change of assets under management (AUM). We are interested in the distributions in periods of risk aversion given their different behavior in comparison when considering the whole sample. In addition, we separate the distributions by type of investor given that we found a significant difference in their behavior under conditions of uncertainty (see figures 1, 2 and 3,4). That is, we found that institutional investors tend to fly to government bonds, while retail investors tend to reduce significantly their exposure to EM equity. These patterns could be associated with the different investment objectives and investment horizons of these types of investors
- Second, based on the analysis of the distributions by type of investor in risk aversion episodes we define the safe haven episodes as those periods t' such that

$$t' \text{ is a safe haven period } \Leftrightarrow (Bond\ flows\ to\ haven\ countries\ from\ Institutional\ Investors > p50) \ \& \ (Equity\ flows\ to\ EM\ from\ Retail\ Investors < p50) \mid t' \varepsilon\ risk\ aversion\ episode)$$

That is, given that we are in a risk aversion episode, this can be considered in the subset of Safe Haven episodes if and only if the flows from Institutional Investors to safe haven bonds during the period increases in more than the median of the distribution; and if bonds from retail investors to emerging market equity decrease during the period in more than the median of the distribution. All measured by the four-week moving average change of assets under management

A second subset of risk aversion episodes is given by the redemption category. This tries to capture all risk aversion episodes in which investors sell most financial assets looking not just for save haven but for liquidity. In short, we define redemption episodes as follows:

$$t'' is\ a\ redemption \Leftrightarrow Bond\ flows < 0 \ \& \ Equity\ flows < 0 \ \& \ Money\ market\ flows > 0 \mid t'' \ \varepsilon\ risk\ aversion\ episode$$

That is, given that we are in a risk aversion episode, this can be considered in the subset of redemption episodes if and only if two conditions hold:
1) The flows to bonds and equity during the period decrease;
2) The flows to money markets increase;

All measured by the monthly average of assets under management

Regional re-allocation

This exercise pursues a simple indicator to measure the investor's preference for a certain region over time. It is based on EPFR data* The indicator has been built with the EPFR data (since 2005) in USD but the portfolio flows have been relativized by assets under management (of each period) to make their comparable.

The indicator allows us to capture the short term dynamics and to quantify and compare the effects in portfolio flows of the realization of some risk events in a very simple way. It lets us identify easily the regions that suffered the most and to measure the relative impact.

This is a relative indicator as it compares the flows to different regions to create relative measure.

The previous step is to create an indicator for EM and to DM. Those indices are obtained by smoothing (moving average 3M) the normalized flows to each region (weighted by asset under management of each country or area) in order to create a more stable indicator for each region given we aim to capture the trend more than the weekly spikes. As the flows have been standardized, those indices should be understood as standard deviation from their historical mean (since 2005). These partial indicators allow us to breakdown areas or countries' contribution to the indicator.

The difference between developed markets and emerging market indices shows the relative appetite of each region, and a deviation of 0.5 from the mean means a marked preference for one region over the other.

- Weekly change in total portfolio flows by Country (% of assets under management)

$$x_i = \frac{Weekly\ total\ flows\ (USD)}{Total\ assets\ under\ management\ (USD)}$$

- Standardization

$$Z_i = \frac{x_i - \bar{x}}{\sigma}$$

- Moving average of 3 months

$$\frac{1}{n}\sum_{i=0}^{n} Z_i$$

n: 12 weeks

- The moving average weighted by its relative weight in EPFR database

$$\bar{x}_{DM} = \frac{\sum_{i=1}^{n}(x_{DMi} * w_{DMi})}{\sum_{i=1}^{n} w_{DMi}} \qquad \bar{x}_{EM} = \frac{\sum_{i=1}^{n}(x_{EMi} * w_{EMi})}{\sum_{i=1}^{n} w_{EMi}}$$

W: is the weight of each country or area in the assets under management in each area (DM or EM)
X: is the 3-month moving average of the standardized flow to a country or region
i: is the countries or area in the regional (DM or EM) index

- Relative preference:

$$Y = \bar{x}_{EM} - \bar{x}_{DM}$$

Weight of each country in the region

Region	Country	Weight	
DM	United States	73%	100%
	Eurozone	13%	
	Japan	6%	
	United Kingdom	5%	
	Swizerland	3%	
EM	Latin America	31%	100%
	Asia (ex China & Japan)	51%	
	Emerging Europe	18%	

Type of asset re-allocation

This exercise pursues a simple indicator to measure the investor's preference for a certain type of assets (equity or bonds) over time. It is based on EPFR data* The indicator has been built with the EPFR data (since 2005) in USD but the portfolio flows have been relativized by assets under management (of each period) to make their comparable.

The indicator allows us to capture the short term dynamics and to quantify and compare the effects on portfolio flows of the realization of some risk events in a very simple way. It allows us to easily identify the type of assets that suffered the most and allows us to measure the relative impact.

This is a relative indicator as it compares the flows to different type of assets to create relative measure.

The previous step is to create an indicator for Bonds or Equity. Those indices are obtained by **smoothing** (moving average 3M) the normalized flows to each type of asset (weighted per asset under management of each country or area) in order to create a more stable indicator for each region given we aim to capture the trend more than the weekly spikes. As the flows have been standardized, those indices should be understood as standard deviation from their historical mean (since 2005).

The difference between bonds and equity shows the relative appetite of each type of asset, and a deviation of 0.5 from the mean means a marked preference for one type of assets over the other.

- Weekly change in Bonds and Equity portfolio flows by Country (% of assets under management)

$$x_i = \frac{Weekly\ total\ flows\ (USD)}{Total\ assets\ under\ management\ (USD)}$$

- Standardization

$$Z_i = \frac{x_i - \bar{x}}{\sigma}$$

- Moving average of 3 months

$$\frac{1}{n}\sum_{i=0}^{n} Z_i$$

n: 12 weeks

- The moving average weighted by its relative weight in EPFR database (example for DM)

$$\bar{x}_{DM\ bond} = \frac{\sum_{i=1}^{n}(x_{DMi} * w_{DMi})}{\sum_{i=1}^{n} w_{DMi}} \qquad \bar{x}_{DM\ equity} = \frac{\sum_{i=1}^{n}(x_{EMi} * w_{EMi})}{\sum_{i=1}^{n} w_{EMi}}$$

W: is the weight of each country or area in the assets under management in each area (DM or EM)
X: is the 3-month moving average of the standardized flow to a country or region
i: is the countries or area in the regional (DM or EM) index

- Relative preference:

$$Y(DM) = \bar{x}_{DMequity} - \bar{x}_{DM\ bond}$$

Weight of each country in the region

Region	Country	Weight	
DM	United States	73%	100%
	Eurozone	13%	
	Japan	6%	
	United Kingdom	5%	
	Swizerland	3%	
EM	Latin America	31%	100%
	Asia (ex China & Japan)	51%	
	Emerging Europe	18%	

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