BBVA | RESEARCH

Monetary policy in the North and portfolio flows in the South

Gonzalo de Cadenas-Santiago
Alicia García-Herrero
Álvaro Ortiz Vidal-Abarca

BBVA | RESEARCH

Monetary policy in the North and portfolio flows in the South

Gonzalo de Cadenas-Santiago, Alicia García-Herrero[1], Álvaro Ortiz Vidal-Abarca

Abstract

Portfolio flows across Emerging Markets (EMs) have been particularly volatile over the last years. Financial distress at the beginning of the crisis was followed by monetary policy reactions in developed economies and emerging countries triggering push and pull forces favourable for flow dynamics across Emerging Markets. Subsequent actions and discussion over the exit strategies of central banks in developed economies – particularly the Fed - were behind the various waves of risk-on/-off sentiment in financial markets. We propose a cross over approach (Dinamic Linear Model / Factor Augmented VAR) to disentangle the net effects of global shocks. This paper will focus on the effects of Monetary Policy in the North (more specifically, monetary policy normalization by the FED and the QE by the ECB) on cross border portfolio flows to the South (Emerging Markets) under six alternative plausible scenarios.

Our proposal adds to the current state of the art in three ways: (i) offering a enhanced framework that bonds the concept of unobservable Global/Regional factors with the concept of global push and pull forces by means of a DLM/FAVAR model, (ii) extending the analysis of shocks from the North beyond the Monetary Policy normalization from Fed to the taming effect of the protracted ECB's QE and (iii) coupling high frequency data from EPFR with Balance of Payments data as reported by the IMF.

Keywords: portfolio flows, monetary policy, emerging markets, Quantitative Easing, Tapering.

JEL: C32, E32, F32, G12.

Monetary Policy in the North and Portfolio Flows in the South

Working Paper, this version: 1.0 20140924

Gonzalo de Cadenas-Santiago | Alicia García-Herrero[1] | Álvaro Ortiz Vidal-Abarca

JEL Classification: C32, E32, F32, G12

Portfolio flows across Emerging Markets (EMs) have been particularly volatile over the last years. Financial distress at the beginning of the crisis was followed by monetary policy reactions in developed economies and emerging countries triggering push and pull forces favourable for flow dynamics across Emerging Markets. Subsequent actions and discussion over the exit strategies of central banks in developed economies – particularly the Fed - were behind the various waves of risk-on/-off sentiment in financial markets. We propose a cross over approach (Dinamic Linear Model / Factor Augmented VAR) to disentangle the net effects of global shocks. This paper will focus on the effects of Monetary Policy in the North (more specifically, monetary policy normalization by the FED and the QE by the ECB) on cross border portfolio flows to the South (Emerging Markets) under six alternative plausible scenarios.

Our proposal adds to the current state of the art in three ways: (i) offering a enhanced framework that bonds the concept of unobservable Global/Regional factors with the concept of global push and pull forces by means of a DLM/FAVAR model, (ii) extending the analysis of shocks from the North beyond the Monetary Policy normalization from Fed to the taming effect of the protracted ECB's QE and (iii) coupling high frequency data from EPFR with Balance of Payments data as reported by the IMF.

Introduction – Motivation

It has been substantially discussed how monetary policy exerted in the north has cross border real effects on Emerging Market Economies (EMEs).The concern has been overly debated not only at the global policy level (IMF WEO 2011, 2014, WB 2014) but also within the academic fora (Eichengreen and Gupta 2013, Rey 2013, Fratzscher 2014, Musalem 2014, Filardo 2014, etc.)

Recently, this issue has received a new blow as policy makers enter the unchartered terrain of unwinding exceptional monetary measures in some countries (US, UK, Canada) at the same time that others still maintain or even exacerbate their ultra-accommodative monetary policies (ECB[2], BoJ).

---

[2] We believe that the ECB´s commitment to increase significantly its balance sheet (up by 1 trillion) is credible. A higher balance sheet is currently the ECB´s key to underpin inflation expectations. The ECB has already started the TLTRO and private asset purchases (ABSPP and CBPP) programmes, but we consider that these measures alone will not be enough to

The need of understanding the mechanics of monetary shocks seems necessary as exerting and withdrawing large monetary stimuli will have asymmetric impacts on emerging economies throughout the current account, the forex markets, the term premium and the private and public balance sheets. This impact will certainly impinge costs in terms of currency volatility, inflation, funding needs and inter-temporal capital allocation.

Capital flows are the transmission vehicles of these monetary shocks through the well-known "Portfolio", "Liquidity" and "Risk taking" channels. (Filardo, 2014). For that reason, it merits understanding how monetary shocks in the North (in Develped Market Economies, DMEs) will impact capital flows into the South (Emerging Markte Economies, EMEs),

In a context where the sources of short term funding have been substantially reduced and have been skewed towards capital market funding[3] understanding portfolio flow dynamics is deemed of paramount interest. Especially ahead of forthcoming monetary policy shocks.

2. State of the art, our approach and the model

The nature of portfolio flows renders the analysis of their reaction to global shocks elusive. They are characterized for being fickle (Guajardo 2014), subject to volatility regimes, low persistent (low serial correlation), asymmetric in their response to shocks and conditional on the economic & financial endowment of the recipient countries. Besides, their dynamic is highly conditional on the nature of global shocks. On the other hand, the increasing global portfolio integration of EMEs and the enhancement of their financial deepening has turned the drivers of portfolio flows more widespread, common and attached to the global financial and activity cycle (determined in the North).

Academic literature since the mid-nineties has identified several stylized facts that could help portraying flow dynamics with certain degree of comfort: globalization not only turned portfolio flows increasingly dependent to activity in both developed and emerging markets, but also steadily cyclical with the global financing conditions (Calvo's real interest cycle, 1996) and the degree of market risk appetite (Rey 2012). Overly, these three forces are considered "push" factors for flows from Developed Markets into Emerging Economies as they are deemed to have a "global"

---

reach the one-trillion target. Consequently, a full-scale QE (i.e, purchase of government bonds) will be needed to fill the gap. As a result, we revise our outlook as follow: we increase the probability of QE to slightly above 50%, i.e. we consider QE part of our baseline scenario. Markets pricing-in a high probability of QE (of around 45%) so our baseline remains close to the 50% benchmark. A higher balance sheet is currently the ECB´s key to underpin inflation expectations.

[3] Portfolio capital flows steadily represent c.a 2% of GDP in EMEs funding, before Lehman this represented a third of the total short term funding (ex FDI flows) as collateralised debt allowed a surge in interbank credit flows and funding. The Lehman collapse reduced credit funding and portfolio flows represented a half of the total short term funding in EMEs. After the European Crisis, interbank credit financing virtually disappeared making capital markets and portfolio flows the only source of short run funding.

reach and exert severe yet low persistent shocks that push portfolio flows in and out emerging countries. They are normally proxied using the term premium of the 10y rate, some risk aversion measures as the ViX, the yield curve, and expectations on GDP growth. At the same time, it has been overly identified that local factors play an extensive role in preserving capital flow stability in recipient countries, having a direct positive impact on EMEs capital flows offsetting even the aforementioned global forces in part. These factors are assumed to have a regional/domestic reach and exert less severe yet more persistent shocks on to flows. They are nonetheless not the interest of this analysis.

Monetary Policy Decisions (easing and tightening) are Global Push factors and this paper will concentrate in analysing their role in portfolio flow dynamics.

Our approach

We will follow similar analysis as Musalem 2014, Fratzscher 2011, Guajardo 2013, Zahng 2004 and Puy 2013.Where the spill over effects in the south (EMEs) from Monetary Policy Shocks in the North (the US) are analysed on inspection of the nature of global shocks, their expected/unexpected perception and the relevance of the liquidity and risk appetite endowment[4]. Importantly, the amount of academic evidence that relates on the effects of global monetary shocks circumscribes broadly to the effects of the QE and less to the withdrawal of stimuli (Eichengreen and Goupta 2013 among the few cases) and we have found no evidence of the analysis of the combination of effects from monetary normalization in some countries and the taming effects of a parallel easing (as it would come from ECB's recent Quantitative Eeasing). We believe deem this a genuine contribution of our work.

This work leverages on the findings of deCadenas and Ortiz 2014. It offers a sophistication of the traditional framework of *push and pull shocks* by finding the different transmission channels that catalyse them into each country flow dynamics. We call these transmission channels the Global, Developed, Emerging and Safe Haven factors. We call them as such since they workings are related to specific markets and/or asset classes.

A factor/channel is GLOBAL if it affects all markets simultaneously indistinctly of the asset class, relating thus to the global and generalised investment appetite,

---

[4] Their findings summarized: (i) Global monetary policy (and global risk aversion cast over 2/3 rds of total global portfolio variance, (ii) the nature of QE shocks matters, asset purchases produce portfolio rebalancing to the DMs due to the portfolio channel, (a case under QE1), forward guidance and liquidity provision (QE2) provide a global portfolio rebalancing from DM to EMs due to the risk taking channel (yield seeking), (iii) capital flows are increasingly procyclical on global shocks (MP), (iv) the volatility framework matters and this depends in the (un) certain character of the policy moves, adverse selection on the balance sheet of the financial system being leverage at the core (Rey 2014)

*Flows are also linked to an idiosyncratic factor modelled as domestic autoregressive term but our attention will only focus on the global and regional factors (please see deCadenas and Oritiz 2014) for further reference.

A factor is DEVELOPED (DME) if it affects only markets who issue securities visibly above the investment grade (broadly the developed market economies).

A factor is called EMERGING (EME) if it affects only markets whose rating is below or newly right at the investment grade rating (virtually all emerging economies in our sample), and a SAFE HAVEN (SHE) factor relates only to those countries whose issued securities that fall within the top rated assets.

All factors are -by construction- orthogonal to each other carrying different information from the variance of the portfolio flow sample. They work thus as independent transmission channels. Global Shocks are decomposed into their distinct effects across markets and/or asset classes distinctly through them.

In our mind-set global shocks such as Monetary Policy decisions (or increased risk aversion or expected growth) are partially transmitted into capital flows using the GLOBAL channel that affects simultaneously and in the same direction all markets but with different intensities (probably according to their fundamentals) in each flow. A second part of the shock however, is catalysed through each latent regional factors (EMEs DMEs and SafeHavens) specifically to their corresponding markets, By doing this we first portrait generalised tides of portfolio flows but also cast the distinct behaviour of each region depending on their sensitivity to each regional factor. This allows replicating stylized facts such as portfolio reallocation events or flight to quality.

In this analysis we focus only in the transmission of a global shock such the Monetary Policy decisions from the north.

The model

Our framework[5] rests on two modelling approaches: (1) the Dynamic Factor Models Approach as extensively used for the same purpose by Ramadorai and Gupta (2013), Agripino and Rey (2012) and Fratzscher (2011)[6] whom we borrow the intuition of existing unobservable channels for global and regional shocks and the statistical relation of these factors to global variables[7] and 2) the FAVAR Models Approach used to link the extracted factors, the global and regional macro-economic variables and capital flows in a vector auto regression form. We try to contribute methodologically in various ways:

---

[5] The framework that we present here is a piecemeal approach to a more general version of the model (Aumented State Space, Cadenas and Ortiz, 2014) built on the theoretical conclusions of Stock and Watson (2005).

[6] Who commonly replicate portfolio flows as the collusion of unobservable global, regional and idiosyncratic factors and sufficiently document their representativity of the universe of capital flows (c.a 60% of the variance is represented with three factors).

[7] Especially: global risk aversion, financial conditions and growth expectations.

1) Providing a richer taxonomy of latent factors since we add to the usual global common factor three distinct regional or Market factors to cast regional dynamics plus an idiosyncratic factor for each country capital flow.
2) Finding the relation of each global and regional factor to global and regional variables that account for the sources of shocks using a Bayesian Moving Average approach (as Damien Puy 2013)
3) Creating a dynamic environment whereby global macro-economic variables (accounting for the origin of shocks) relate to the dynamic factors in order to make simulations[8]
4) Providing a wider universe of capital flows, as we do not only show effects onto EMEs but also into Developed Markets and Safe Havens.

Building Bloc 1: The Dynamic Factor Model of Portfolio Flows: Global, Markets and Local Factors

As in Doz, Giannone, Reichlin (2006), Watson and Reis (2010), Agrippino and and Rey H. (2013) among others, we build on the hypothesis that portfolio flows conceal an unobserved structure of dynamic latent factors that can me expressed as a DFM. In our set up, the combination of a Global Factor, three market factors (Emerging, Developed and Safe Haven) and an Idiosyncratic Factor summarize all information within the portfolio flows covariance matrix[9].

We use a version of a Dynamic Factor Model. Our set-up comprises a measurement equation block (1) and a state equation block (2).

$$1. \quad Y(t) = C(t)*F(t) + V(t) \qquad\qquad V(t) \sim i.i.d.$$

$$2. \quad F(t) = A(L)* F(t-L) + W(t) \qquad\qquad W(t) \sim i.i.d.$$

Where, in the measurement equation block:

Y_r is a (txn) matrix of dependent variables, in our case the portfolio flows from n=40 countries along the sample size

F_t is a Tx(k<n) matrix of states or unobservable factors The number of factors shall be less than the number of dependent variables, in our case its 5 factors vs. 40 dependent variables.

C_t is the matrix that identifies each element in the dependent variable V_t i.e links each capital flow to a combination of latent or unobservable factors. In this matrix we impose null restrictions a priori and allow the model to estimate parameters from the starting values. For instance, the global factor is a column of ones from which each parameter relating flow to

---

[8] We find little evidence of scenario simulation in academic research papers, only chapter III of the latest World Bank report is devoted to this)

[9] No explorative analysis was made in forehand to assess the factors rather the DFM confirmed a prior belief on the structure of co-movement of flows that arises on inspection of the recent stylized facts.

global factor will be estimated (see appendix for results); the Emerging market Factor will have zero restrictions on the flows from developed markets and non-null to be estimated parameters in emerging market flows, etc.

V_t is a matrix of orthogonal shocks or NOISE that enters into the measurement equation through the channels of the estimated latent factors

Factors are orthogonal and residuals carry no serial correlation: u_{it} iid $N(0, \Sigma_u)$ and $E(u_t, u_{t-s}) = 0$ for all $s = 0$

The state equation block (2) allows for time dynamics of the mentioned latent factors as Factors (F) evolve over time according to a VAR process of order p

Equations herein take the form of a ARMA process, or this case the structure of a VAR(p). It defines the dynamics of the estimated Measurement Equation Block over time. It could take any form of VAR as long the specification is statistically supported.

F_t are the already mentioned latent factors (Txk)

A(L) is the matrix of parameters that defines the transmission of the equation A_t can be fixed or not, IN our case its not fixed as it evolves from the latest estimation.

V_t is the matrix of shocks to the transition equation (SIGNAL)

The relation of the covariance matrices of noise an signals (Σ_w) relative to Σ_V) is the noise to signal ratio to be optimized under a kalman filter

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. As such we obtain that:

Portfolio Flow $y^{i,*}(t) = c^i_{global}$ x global common component$_{it}$+ c^i_M·x specific market component$_{it}$ + c^i_{IDI}*Idiosyncratic component$_{it}$+ error$_{it}$

Where a set of restrictions on the coefficient matrices of the DFM (C) identify the common components as follows:

a) For Developed Market Flows [y^{DM}]

$y^{i,DM}(t) = c^i_{global} \cdot f_G(t) + c^i_{DM} \cdot f_{DM}(t) + \mathbf{0} \cdot f_{EM}(t) + \mathbf{0} \cdot f_{SH}(t) + c^i_{IDI} \cdot f_{IDI}(t) + u^{i,DM}(t)$

b) For Emerging Market Flows [y^{EM}]

$$y^{i,EM}(t) = c^i_{global} \cdot f_G(t) + \mathbf{0} \cdot f_{DM}(t) + c^i_{EM} * f_{EM}(t) + \mathbf{0} \cdot f_{SH}(t) + c^i_{IDI} \cdot f^i_{IDI}(t) + u^{i,SH}(t)$$

c) For Safe Haven Markets Flows [y^{SH}]

$$y^{i,SH}(t) = c^i_{global} \cdot f_G(t) + c^i_{DM} \cdot f_{DM}(t) + \mathbf{0} \cdot f_{EM}(t) \,) + c^i_{SH} \cdot f_{SH}(t) + c^i_{IDI} * f^i_{IDI}(t) + u^{i,SH}(t)$$

Building Block 2 The Factor Augmented VAR (FAVAR) model

So far, the Dynamic Factor Model allows to convert the universe of flows into a simpler set of latent factors as well as to recover flows back but it does not relate them to global macroeconomic conditions.

For that reason and in the same vein others have overly discussed portfolio flows to rely on macro push and pull factors, we also test the relation of the extracted factors with a set of macroeconomic variables and built a VAR structure allowing time dynamics between the three elements of the analysis: factors, macro and flows. This is how the FAVAR stands.

We have chosen a set of macro variables consistent with all the findings in the literature. As such, we have found[10] that all 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[11] median GDP Q/Q growth rates).

As such, our FAVAR model is has the following form

(3) $[Z_t, F_t]' = B(L) * [Z_{t-p}, F_{t-p}]' + E_t$

Where $Z_t = \{Y_t\_dm, Y_t\_em, i_t\_us, i_t\_ez, VIX_t, EMBI_t\}$ is a vector of macro economic variables. The order is increasing in endogeneity of the variables as in Rey 2012.

Where F_t is the vector of latent factors F={F_s.haven F_DM, F_EM, F_global} also in order of endogeneity with the res of the model variables

The model is estimated by means of maximum likehood 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

---

[10] See Bayesian Moving Average exercise in the Appendix

11 Ex China

back from the forecasted factors by means of the estimated measurement equation block (1) described above.

This two-step procedure is equivalent to simultaneous estimation of a Steady State Space conditional on the macroeconomic endowment, thereof an Augmented State Space. See de Cadenas and Ortiz (2014) for technical details.

The Data

About the alternative datasets, a discussion

There are two different databases that are being used for the purpose of analyzing portfolio flows in the literature. Standard practice has been so far relying on Balance of Payment Data from the IMF since it is more general and is more consistent with local accounting of country net liabilities. But BoP has the drawback of being updated with 2 / 3 quarters delay and its frequency (quarterly at its best) is for certain purposes also not compelling. On the other hand, academic research is increasingly using the EPFR portfolio flows database. EPFR is of great value as it has a high reporting frequency (daily, weekly and monthly) and offers a fair signal the investing appetite world-wide.

There is notable research on how EPFR data fairly tracks foreign net portfolio flows and allocations while its representativeness has been well documented in Lundblad and Ramadorai (2012) and in Miao and Pant (2012). However some sampling bias issues arise when inspecting the data from the investor and asset side while EPFR rather poorly tracks flows to Developed Markets[12]. A proof for that shall be seen on inspection of the divergent paths that cumulated flow accrue in the light of EPFR in comparison to BoP data (see chart 0). We believe thus, relying only on EPFR data could throw misleading conclusions on the portfolio flow momentum and the imbalances accrued so far, very important features for this kind of analysis.

In an attempt to remain as robust and consistent as possible with standard research practices we will use Balance of Payment Data.

Our newly created data set (which goes back to Q1 1980) is an extension of IMFs BoP data base enhanced backwards by means of the data set provided by Filardo 2013 in IMF WP 13/183. Going forward, the IMFs data-set ends in 1Q 2014 and we need to have it updated as near in the

---

[12] EPFR data has a bias towards (a) their own definition of Institutional investors (not matching others) and (b) Debt securities paying less attention to retail investors and equity. Besides EPFR data is excellent for tracking EMEs portfolio flows (they cover 95% of total EME flows) but rather poor tracking Developed Market flows, (60% of DMEs) and lastly, EPFR data are skewed towards investments in Mutual funds obliterating other sources of capital flows. These three issue bring substantial differences in the amount of capital flows accrued overall when comparing EPFR and BOP data, as can be seen on chart 1

past as possible to render our simulations from the correct starting point. To that end, we have updated it by means of now –casting using our DLM/FAVAR model, which can also work on a mixed frequency basis (and exploit updated weekly EPFR data to turn it into equivalent BoP IMF data). We deem this feature as an additional contribution to research. Now-casting BoP exploiting EPFR data is possible despite the differences since both flow data sets have identical reaction patterns to global shocks. We relate to Chart 10 to show this feature.

[Chart 0]   Comparision BoP vs EPFR Portfolio Flows data
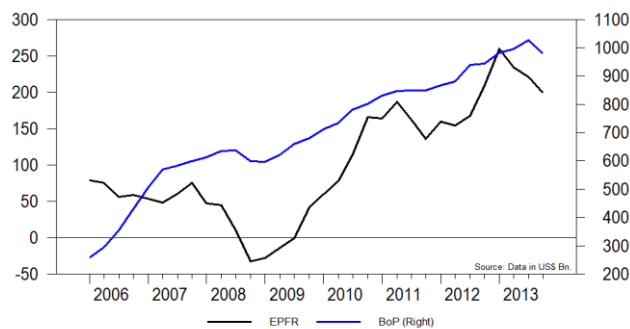
[Note: On inspection of chart 0 we observe the striking difference in capital flow accumulation using one source or the other, to the point that EPFR would be signaling the bulk of the current excess to have been created since the third Fed QE while BOP would be showing the imbalance to have started with the implementation of the first QE and thereafter, while reaching the long run trend would be equivalent in both].

About the sample and type of data used

All in all, we will use Balance of Payments data for the analysis and simulation of the effect of monetary policy shocks and EPFR data to update the BoP panel up to 2014Q3[13] by means of now-casting in the spirit of Miao and Pant (2012).

Our new dataset consists of a balanced panel of quarterly Net Portfolio Flows[14] covering from 2005Q1 to 2014Q3 (T=59) for (N=40) countries[15] with equal share of Developed (DM) and Emerging (EM) Economies

---

[13] IMF BoP data lag 3/9 months but our modelling procedure allows running mixed frequency now casting of quarterly data using EPFR weekly data.

[14] We will consider Total Net Portfolio Flows and not Total Flows as we want to remain consistent with the general literature that the virtues of using them. Froot and Ramadorai (2012) state Net Flows give better information on portfolio allocation effects and flow dynamics in global portfolios

[15] The countries of our database are: USA, Japan, Canada, UK, Sweeden, Norway, Denmark, Finland, Germany, Austria, Netherlands, France, Belgium, Italy, Spain, Ireland, Portugal, Greece, Poland, Czech. Rep, Hungary, Turkey, Russia, Mexico, Brazil ,Chile, Colombia, Peru,Argentina,China,India,Korea,Thailand,Indonesia,Philippines,Hong Kong and Singapore

As said, we manage actually a dataset that covers from 1980Q1 to 2014Q1 but we have decided to use only a subset starting in 2005 as Seidel et al (2012) document various volatility regimes, being the latest one in the year 2005. In addition, we wanted to control for asset portfolios that create flows to have a similar nature along the sample. It has been overly documented how portfolios have become more foreign fx related and more attached to close end positions with increasing participation of mutual funds. We investigated this an came to the conclusion this trend started by the times of collateralized debt creation and the related investment vehicles akin, In an attempt to honor this feature we have only sampled flows starting in 2005. This restriction on the data sample also aims to fully account the increasing trend of ever increasing share of non usd funds in an attempt to gather the BIS much commented effect that a dollar shortage could have in this analysis.

The analysis will be performed using total net portfolio flows relative to cumulative total liabilities of the country accrued since the start of the our sample (2005Q1). We do this in order to render all time-series comparable and stationary[16] while avoiding endogeneity problems in the modeling (the case if we had use data relative to GDP). That said, we will report the findings also in terms of nominal GDP (base 2013 Q4) for each country for the sake of comparability with literature results.

5.   The Scenarios

We borrow from World Bank's Global Economic Prospects 2013 Chapter III and from IMFs WEO 2014/4 to construct 6 plausible scenarios for Monetary Policy in the North (where North applies to the Fed and the ECB). We envisage a dissonance in the prospects of price and activity dynamics that will certainly condition both central banks' monetary policy actions. While the Fed seems almost certain the time for gradual withdrawal of monetary stimuli is ripe, the ECB is (according to Draghis words in September 2014) increasingly worried on deflation and secular stagnation. We believe thus the former to be on the verge of monetary tightening and the latter further easing[17]

Further, we also quantify the likely effects of the monetary correction following IMF WEO 2014/4 (in order to make our benchmark as comparable as possible). According to the IMF, Fed's QEs have detracted c.a 100 bps of the term premium (here the 10y treasury rate). Further, we will use our own quantification of the implicit drop in long term yields expected from ECB initial pre-committed QE (c.a 40 to 60 bps on the 10 year rate of the German Treasury Bill)

---

[16] EME net portfolio flows are by definition non stationary and so does ADF reflect (see Yanilang and Tiang 2012)

[17] Best portrayed with the decision of buying asset backed securities as from October 2014 what is the de facto an unsterilized monetary shock

As such, our scenarios for the simulation of the impact of monetary policy shocks in the North are the following:

[1] Benchmark Scenario

The Fed maintains the Monetary Policy Normalization as stated with the forward guidance. This will imply +50 bps by the end of 2014 (from the start of the tapering in 2013) and additional +50 bps during 2015 on the long run interest rate (Tbill). This is consistent with an implicit increase of the fed funds after Q2 2015 that allocates Fed Funds close to 2% by mid-2016. The ECB remains pre-Draghi 09/2014 and reactive to monetary policy in the US. Thus 10y Euro Rates (the Bund) has not been imposed and is set to evolve according to the dynamics of the model. Risk Aversion (ViX) steadily returns to its long run average (c.a 20) as liquidity and risk appetite taper off. This does not represent however a surprise shock.

[2] Overshooting Fed Scenario

The Fed surprises the market with unanticipated signs of faster Monetary Normalization, market reaction falls in between the frontloading objective and some overshooting due to overreaction as described in WB Chapter III. Thus, the long run rates hike +150 bps in the next two quarters (WB Chapter III establish +100bps for frontloading MP and +100bps due to overshooting). The ECB remains pre-Draghi and reactive to monetary policy in the US so the 10y Euro rate has not been imposed. The ViX however temporarily hikes to sovereign/financial crisis levels for a quarter, signifying the reaction of the market to the unexpected shock. After one period, risk aversion swiftly returns back to the original path towards the long run average as agents incorporate the news.

[3] Pre-committed ECB - QE

The ECB QE -in line of Draghis words 09/2014- has full effects onto EUR long run rates bringing the 10y -20/bps down each quarter between 4Q14 and 2Q15. The Fed maintains the monetary policy normalization as originally planned (see base scenario) and does not respond to ECB move. Risk aversion follows the normalization path described above as no unexpected news emerge.

[4] Overshooting Fed and Pre-committed ECB - QE

Cyclical momentums in the US (activity uptick) and EUR (deflation fears, secular stagnation) visibly defer and render Monetary Policy utterly a synchronic between the ECB and Fed. The latter signals earlier unwinding of stimuli triggering and an overshooting of the 10y rates is triggered as in Scenario 2. Meanwhile the ECB starts the pre-committed monetary stimuli (including MBS purchase announced in September) bringing the path of ten year rates described in scenario 2.

[5] Overshooting Fed and Frontloaded ECB-QE

The workings of scenario 3 apply but the markets overreact to the ECB pre-committed monetary ease (especially after the announcement of MBS purchase announced in September 2014) bringing an frontloading of the effect of the MP as a drop in the 10y rate of -50 bps in the two immediate quarters. In this scenario, the spike in global risk aversion (the VIX) lasts longer than in scenario 3 inflicting a longer damage than initially expected on flows.

[6] Delayed Fed Normalization and Frontloaded ECB QE

Signs of weak activity and downward pressure on prices bring the Fed to delay 2 quarters the monetary normalization which allows increases to be very modest (long rates in US reach 2.6 by the end of 2016, 200 bps less than the original tapering plan). The ECB follows suit and risk premium grow very timidly towards its average values.

6. Results

Estimation Results

Three broad conclusions may be taken from the estimation part of our DLM/FAVAR model:

Capital flows to both Developed and Emerging Marktes can be summarized by the interaction of a Global Factor (GLOBAL), an Emerging Factor (EME), a Developed Factor (DME), a Safe Haven Factor (SHAVEN) and an Idiosyncratic factor for each country (IDIO). This null Hypothesis is accepted as the estimation of the DLM converged and found a global solution (see deCadenas and Ortiz 2014 for details) providing a set of factors that replicate all stylized facts in the dynamics of capital flows since 2005 (see appendix, a "History Box") to whom each portfolio flow reacts distinctly according to the estimated loadings conditional on the initial restrictions. Factors are by construction orthogonal to each other and respond divergently to the various shocks.

Each of these factors has a nature consistent with their expected ability to transmit shocks. The factor variance decomposition of the Global and Regional Factors reveals that each of them reacts differently to: a) global financial conditions (proxied by the term premium), b) global risk aversion (as given global y by the VIX and domestically by the EMBI) and to activity (casted with GDP growth in developed countries and emerging countries). See Appendix for a detailed explanation of the nature of the factors.

The extracted unobservable factors transmit global and domestic shocks, as can be seen on inspection of table 10. The GLOBAL factor, who channels the global appetite for flows, is procyclical with activity but countercyclical to the financial conditions and risk aversion (procyclical with risk appetite). Regional factors behave with strong divergences regarding the nature of shocks. Together they portrait events such as sell offs (increase in the safe have factor, as emerging factor contracts and the

Developed Factor cashes part of the reallocation) or flights quality (where the safe haven factor increases abruptly as a result of increased risk aversion).

Simulation Results

We will follow the aforementioned scenarios to analyze and simulate the workings of portfolio flows to Emerging Markets amid Monetary Policy Shocks.

[1] Benchmark Scenario

The baseline scenario is consistent with a portfolio reallocation with net mild negative effects on Emerging Market portfolio flows. Monetary Policy normalization is fully anticipated and brings only gradual increase of the term premium while there are no hikes in the risk premia but only a very gradual normalization to average levels.

 [Chart 1]   FAVAR Model: Scenario #1 | Benchmark

Please bear in mind for the following graphs that blue lines represent imposed scenarios, solid black benchmark scenarios (unconditional in the first case) and dashed lines conditional variables to the imposed scenarios
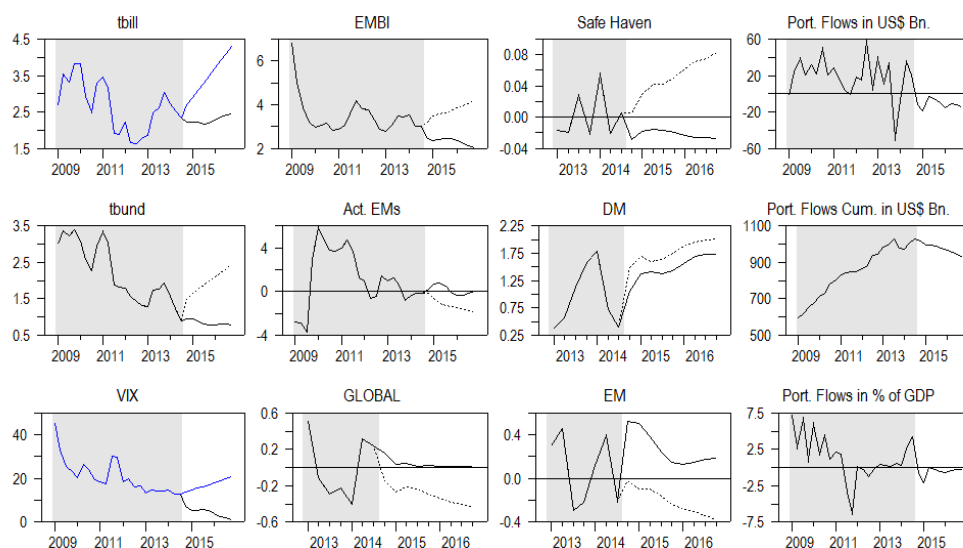

This scenario would imply a portfolio reallocation of assets with a net loss in EME capital flows.

The tightening shock is channeled as a contraction of the Global factor, (implying a down-size in global demand) and an increase in the Developed Market Factor and Safe Haven factor (as yields in the North and return to risk profiles in Safe Havens improve). On expense, the Developed Market Factor contracts, channeling the effect of the monetary shock that renders EM assets less attractive. Global and Emerging Channel effects of the shock dominate upon the Developed and Safe Haven. Under this scenario, median Emerging Market Capital Flows would lose close to 3.6% of GDP by end of the forecasting horizon (see table 2). This would imply an absolute loss in the stock of net Portfolio Liabilities of Emerging Markets of c.a US$ 140 bn by Q4 2017 (10.7% of the total stock).

[2] Frontloaded Fed Scenario

An overshooting to the Monetary Policy Normalization in the US would follow similar mechanics in the transmission of the global shock as explained in the base scenario but these would be exacerbated with a sudden and temporary hike of the global risk aversion. This effect of even higher yielding securities in the North together with the spike in Global Risk Aversion would exacerbate the portfolio reallocation effect described above and include a flight to quality of flows. This would bring a sharper drop in net portfolio flows across EMEs.

[Chart 2]   Scenario #2 | Overshooting Fed
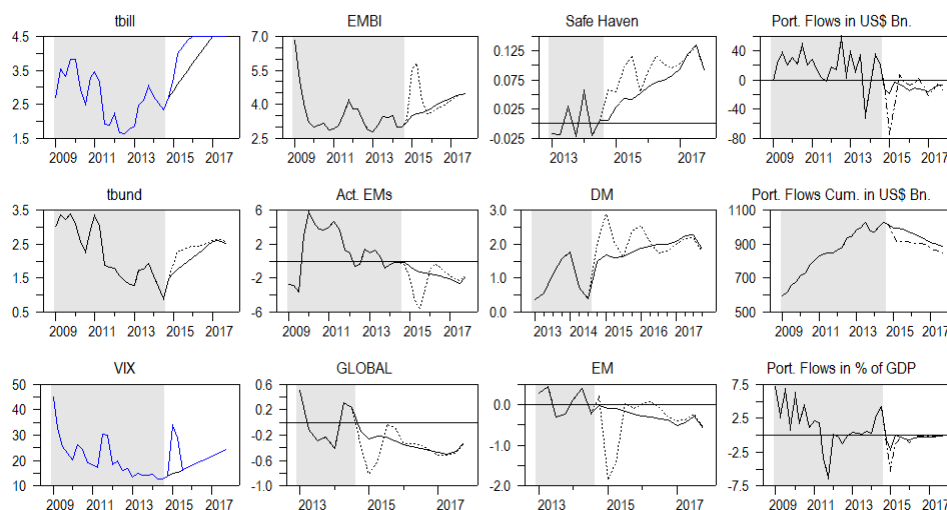
The scenario described would be a reallocation and flight to quality effect.

We estimate that under this scenario Emerging Markets would lose net flows very swiftly at the beginning of the cycle to slowly normalize thereafter. Flows would lose c.a 5.6% of GDP until the end of 2017. The total loss accumulated in capital stocks in EMEs would amount c.a US$ 184

Bn or 14% (of the total stock). During the first year $US 100 bn in line with the acceleration of the process due to risk aversion.

[3] Normal Euro QE

In order to see the joint effect of the regular Quantitative Easing planned by the ECB in interaction with regular Monetary Policy Normalization of the Fed, we have sketched the scenario where the ECB activates the policy move in an orderly manner slashing 20 bps of the term premium along the near horizon. This measure would allow the workings of the Base Scenario monetary transmission through the Global and Regional Market channels but mitigated with the ECB action. In our scenario, the translation of the net monetary shock would imply a milder retrenchment of the Global factor than scenario 1 but a visibly higher positive impact through the Developed Market channel. The lesser impact would be casting the less appeal of safe haven markets (notably Germany) and thus a relatively milder effect of the Safe Haven channel. The Emerging Market factor however would contract more and for longer time than in the base scenario mirroring the opposite move of the Developed Market channel (reallocation). All in all the contraction in flows would be close to 1.7% of GDP along the forecasted horizon, implying a total cost in terms of stock of liabilities in EMs of c.a US$ 105bn or 8.2% of the total stock (see table 2).

[Chart 3]   Scenario #3 | ECB QE & Regular Fed Normalization
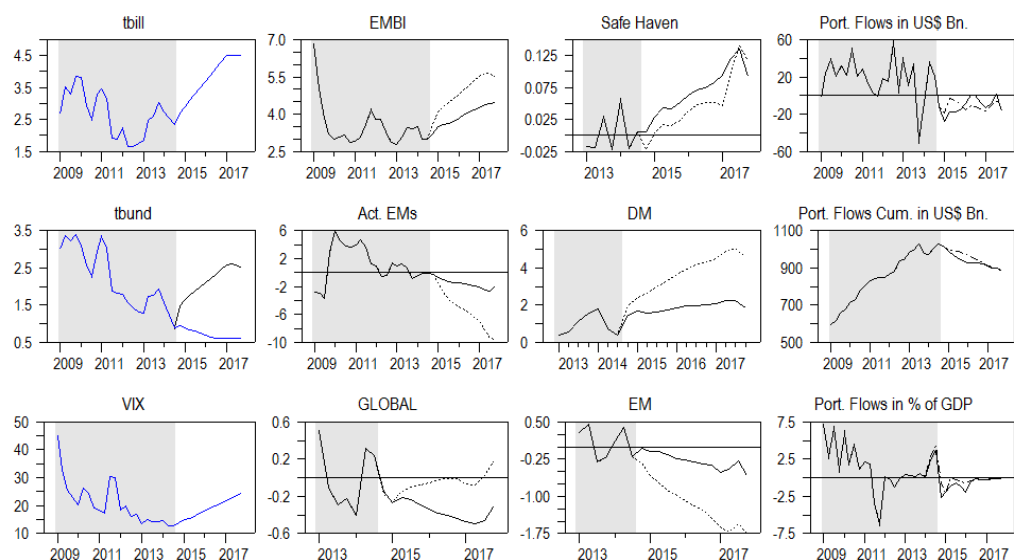
[4] Regular ECB QE & Overshooting Fed Normalization

The combination of the overshooting reaction to Fed normalization and a moderate easing in Europe would produce a sudden increase in risk aversion and a contraction of activity. The Emerging Market channel would contract accordingly while the Developed Market channel would substantially increase. In opposition to scenario 1 (overshooting Fed) the global channel would recover the positive terrain as the effects of the sudden increase had been incorporated. This would bring dynamics for capital flows to EMEs similar to that of the previous scenario (sharp contraction) in the first instance.

However, as soon as the global factor would kick back in, net capital flows would trend back to a neutral terrain, stopping the drain and limiting the portfolio reallocation event. In this scenario, a moderate flight to quality and short end reallocation process would be taking place. In this scenario, we estimate net portfolio flows to flee away from EMEs sharply during the first two quarters, (reaching 6% of GDP by mid-2015) and to recover thereafter, All in all at the end of our forecast period, EMEs would have lost -3.7% of GDP all of it before the end of 2015 and recovering slightly afterwards. This amounts c.a 138 US$ Bn or 10.5% of the total stock of liabilities in EMEs (see table 2).

[Chart 4] Scenario #4 | ECB QE & Overshooting Fed Normalization
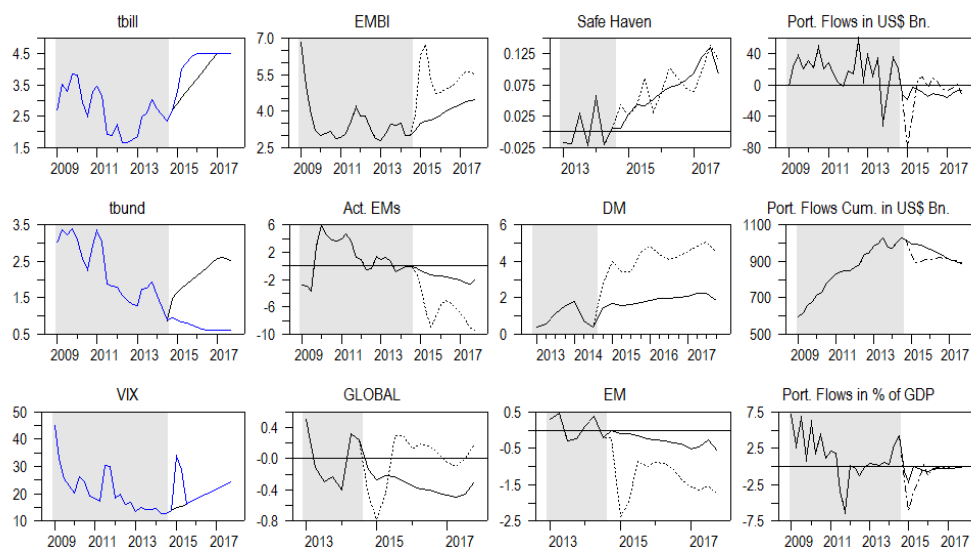
[5] Frontloaded ECB QE and Overshooting Fed

An overshooting Fed Scenario in the event of market overreaction to the signalling of Euro QE is expected to prompt the acceleration in the reduction of the European Term premium (the Tbund). This would imply an

exacerbation of the latter scenario with similar results, but as the Market overreaction would take additional toll on the risk premia (GRA would additionally increase or pervive longer than envisaged) Emerging Markets would be hit and stay longer depressed than in scenario 3, Safe havens would marginally increase and the upside adjustment in EM markets remains.

In this situation a portfolio reallocation will still take place with incremental flight to quality. The net effect would be partially compensated by the undershooting action of the ECB but that would not be sufficient to stop the drain of flows away of EMEs. We estimate in this case capital flows to have lost 3.9% of GDP cumulative by the end of the forecasting horizon, with the strongest stake in the shortfall happening before 2016Q1. This loss amounts c.a 113 US$ Bn. Or 8.6% of the total stock (see table 2

[Chart 5]   Scenario #5 | Frontloaded ECB QE and Overshooting Fed Normalization
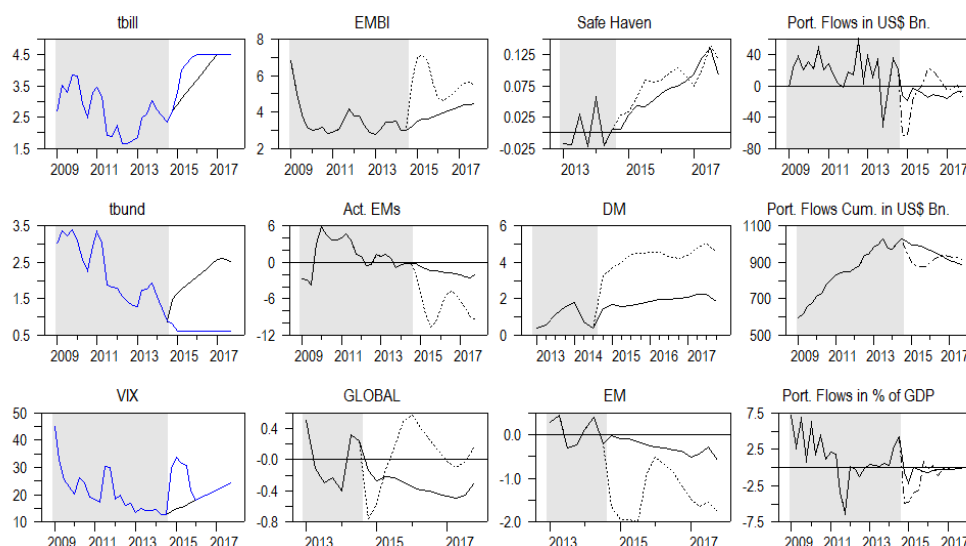
[5] Delayed & limited Fed Normalization and Frontloaded ECB QE

Its improbable yet not impossible that the Fed waters down the original plan of monetary policy normalization. In this case, the fed could be willing to extend and reduce the amount of stimuli withdrawal. In scenario this happens with two quarters of delay and the pace of the term premium reaches half the way it would do in the central scenario. The ECB meanwhile, in a scenario of the Fed scaling back its action, would signalise further concerns on activity and prices. A frontloading of the policy would take place.

Though this would be channelled through the usual global and market factor, their joint action would inflict a kicking forward of the current imbalances. Flows would reactivate, though not reaching the path of

previous episodes. In this case, flows would cumulate a total net inflow into EMS of c.a 1.4% of GDP by the end of the forecasted period, adding c.a 86 US$ Bn by 4Q 2017, 6.5% above the current stock level.

[Chart 6]   Scenario #6 | Frontloaded ECB QE and Delayed Fed Normalization
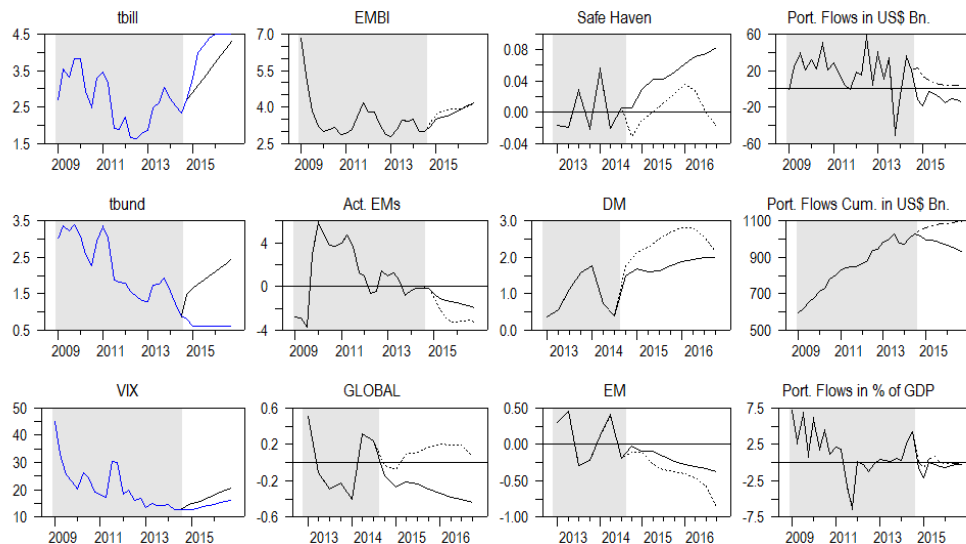
On inspection of the summary and regional tables we may summarize that in general terms:

1) The forth coming monetary shocks from the North (normalization in the US and easing in the EZ) will inflict an important impact on portfolio flows to the South. Our estimate is that the median EME portfolio flow may contract between 1.7% and 5.6% of GDP along the forecast horizon (by the end of 2017) depending on the scenario. These figures are consistent with the amounts documented at the IMFs WEO April 2011 in equivalent policy and risk aversion periods. This would imply that the net stock of liabilities of EMEs would contract between --8% and -14% at the end of our forecasting horizon (Q4 2017) although the bulk of the adjustment would take place before the end of 2016.

2) By region (see table 1), LatAm and Asia would be the most severely hit (in varying intensities according to the scenario but consistently in this order along the possible scenarios) with varying intensities among countries. Most affected countries would be the poorly diversified (Brazil and Russia) and or countries with poorest fundamentals (Turkey). Particulary cases with a large share of indexed debt are set in a delicate situation in the event of a strong tapering from the FED (the case of Brazil).

Emerging Europe would be cushioned by the role of the ECB policy, what proves that ECB tapering will have regional and not global effects.

3) The amount and the pace will be conditional on the normalization calendar of the Fed, the offsetting ability of EZ with its implemented Quantitative Easing and on the reaction of the Markets which could render the effects of the shocks to overshoot or undershoot the target via an increased risk aversion (in case the moves are not totally anticipated)

4) The ability of the ECB to offset the retrenchment of flows driven from the MP normalization in the US will prove limited being able to offset as little as a third of the retrenchment in case of a fully blown QE. MP in the Europe proves with this to have regional and not global effects.

5) In the light of the sketched scenarios, the distribution of shocks to EME flows is skewed to the downside, with very limited room for portfolio flow increases. That said, there is a possibility of a delay in the US monetary policy normalization that could bring a timid increase of EME portfolio flows but never at the pace registered before. All in all we estimate in that unlikely event flows to cumulate at 1.4% of the GDP by the end of the forecasting horizon.
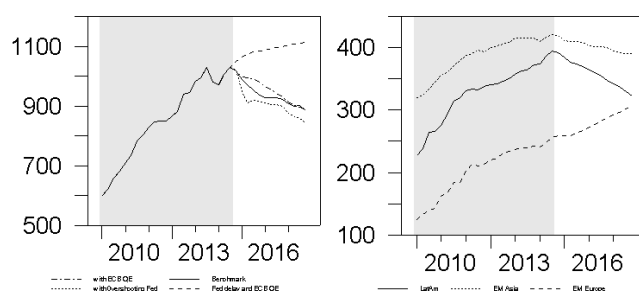
6) In all possible contexts capital flows will accrue an undershooting of the long run stock the choice of possible MP combinations will create an imbalance ranging -25% to -35% to the expected long run levels of capital flow accumulation in EMEs (calculated at a rate of flow to GDP of 1.8%, the long run average)

[Table 1] Porfolio Flows. Scenario Simulation by Region (Cum. as % GDP)

Scenarios	EME	LatAm	E.Asia	E. Europe
(1) Benchmark Scenario (Precommited Fed)	-2.1%	-3.4%	-2.1%	3.9%
(2) Overshooting Fed Normalization	-3.9%	-3.9%	-2.4%	-3.9%
(3) Pre-commited ECB-QE | Precommited Fed	-1.9%	-3.0%	-1.9%	4.3%
(4) Pre-commited 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%

[Chart 7]   Global Accumulated Portfolio Flows in US$ Bn.
(Left are Global Flows within main scenario Bands; Right are Regional Flows in the median Scenario)

[Table 2] Emerging Markets Porfolio Flows. Scenario Simulation

(1) Benchmark Scenario (Precommited Fed)

	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%
2015	-2.2	-1.4%	-1.9%	-47.7	-3.63%
2016	-3.2	-1.2%	-3.1%	-98.7	-7.52%
2017	-2.6	-0.4%	-3.6%	-139.8	-10.65%

(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)
2014Q4	-1.8	-1.4%	-0.4%	-7.4	-0.56%
2015	-6.5	-3.7%	-4.1%	-111.9	-8.53%
2016	-1.1	-0.5%	-4.6%	-130.0	-9.90%
2017	-3.3	-1.0%	-5.6%	-183.5	-13.98%

(3) ECB-QE Scenario | Precommited Fed

	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%
2015	-4.9	-1.7%	-2.0%	-49.5	-3.77%
2016	-1.0	0.0%	-1.9%	-85.1	-6.48%
2017	-2.3	0.2%	-1.7%	-105.2	-8.02%

(4) Precommited 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)
2014Q4	-4.19	-2.6%	-0.7%	-16.8	-1.28%
2015	-6.22	-3.2%	-3.9%	-116.3	-8.86%
2016	0.27	0.2%	-3.7%	-112.0	-8.54%
2017	-1.63	0.0%	-3.7%	-138.1	-10.52%

(5) Frontloaded ECB-QE | Overshooting Fed

	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%
2015	-5.4	-2.2%	-4.2%	-149.9	-11.42%
2016	3.7	0.5%	-3.7%	-90.4	-6.88%
2017	-1.4	**-0.1%**	-3.9%	-113.4	-8.64%

(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)
2014Q4	3.0	1.5%	1.1%	22.6	1.72%
2015	1.4	0.6%	1.3%	56.3	4.29%
2016	1.0	0.0%	1.4%	71.5	5.45%
2017	0.9	0.0%	1.4%	85.7	6.53%

(1) Capital flows to Total Assets Under Management here proxied as the accumulated stock of liabilities since 1Q2005
(2) GDP 2013 Q3 as reference. No forcasted
(3) Accunulated Variation of the "Stock of Liabilities in EMES to GDP"
(4) Accunulated Change Relative to the Total Stock of liabilities as of 2014Q1

Conclusions

- Portfolio flows to Emerging Markets will contract as the FED normalizes its Monetary Policy and the ECB QE will only marginally offset that effect.

- The magnitude of the expected shortfall will depend on the market anticipation & risk aversion response. Our estimated ranges between -1.7% of GDP in the lower shortfall scenario to -5,6% of GDP in the worst one (cumulative).

- The normalization of monetary policy will have different effects in different regional markets. LatAm and Asia lows will be more affected Emerging Europe will enjoy the buffer of the ECB's offsetting role (see table 1). Latam will be more affected than Asia for two reasons, some countries have strong portfolio integration (Brazil and Mexico) while others (Brazil) are set highly on indexed funds adding to risk volatility and procyclicality.

- The ECB moderating effect is stronger in Emerging Europe and practically non-existent elsewhere: ECB monetary policy has only regional effects while FED has global.

- 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.

References

Chen, Qianying and Filardo, Andrew,(2012) 'International spillover of central bank balance sheet policies¨, chapter in Are central bank balance sheets in Asia too large?, 2012, vol. 66, pp 220-264 ,Bank for International Settlements.

Musalem, Alberto (2014), 'U.S. Monetary Policy: Domestic and International Dimensions' , Federal Reserve Bank of NY conference paper, March 2014.

Eichengreen,Barry; Gupta,Poonan(2014) 'Tapering the talk: the impact of Expectations of Reduced Federal Reserve Security Purchasing on Emerging Markets', Bank for International Settlements , Policy Research Working Paper, WPS 6754

Fratzscher, Marcel, Lo Luca, Marco and Straub, Ronald (2013). ' A global monetary tsunami? On the spillovers of US Quantitative Easing' ECB rerence paper, ECB WP, August 2013

Lundblad, Christan and Ramadorai, Tarun (2011) 'Asset Fire Sales and Purchases and the International Transmission of Financial Shocks' Working Paper XXX, January 2011

Turner, Phillip (2013) 'Capital Flows to EMEs, the global long-term interest rate and financial risks', The global long-term interest rate, financial risks and policy choices in EMEs. BIS Working Papers No 441. February 2014.

Aizenman, J, B Mahir, and Hutchinson, M (2014) 'The Transmission of Federal Reserve Tapering News to Emerging Financial Markets', NBER working paper 19980

IMF Global Financial Stability Report (2014), 'How do changes in the investor base and financial deepening affect emerging market economies?' August 2014,

IMF World Economic Outlook, Chapter IV, '(2011) 'International Capital Flows: Reliable or Fickle?', August 2011.

IMF Global Financial Stability Report (2013). 'The Yin and the Yang of Capital Flow Management: Balancing Capital Inflows with Capital Outflows' October 2013

World Bank's Global Economic Prospects (2013), Chapter III, 'Capital Flows and Risks in Developing Countries', January 2014

Puy, Damien (2013), 'Institutional Investors Flows and the Geography of Contagion' European University Institute WP April 2013, Series/Report no.: EUI ECO; 2013/06 URI: http://hdl.handle.net/1814/27618 ISSN: 1725-6704

Rey, Hélène (2013), 'Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence', IMF Working Paper No. 13/246

Bluedorn, John, Guajardo, Jaime et al (2013), ' Capital Flows are Fickle, Anytime, Anywhere' IMF WP/13/183 and IMF WP 13/183 Capital Flows Database

Agrippino, Silvia and Rey, Hélène (2012) ' World Asset Markets and Global Liquidity' Conference Paper,

.Ananchotikul, Nasha and Zhang Longmei (2014) 'Portfolio Flows, Global Risk Aversion and Asset Prices in Emerging Markets, IMF WP/14/156

García-Herrero Alicia and Ortiz, Alvaro (2005) Alicia García-Herrero & Álvaro Ortiz, 2005. "The role of global risk aversion in explaining Latin American sovereign spreads," Banco de EspañaWorking Papers

Fratzscher, Marcel (2011) 'Capital Flows, Push vs Pull Factors and the Global Financial Crisis' European Central Bank Working Paper Series No. 1364

Froot Kenneth A. and Ramadorai,Tarun (2008) 'Institutional Porfolio Flows and International Investments'. The Review of Financial Studies, 21 (2). pp. 937-971

McCulay, Robert N. (2013) 'Risk on Risk off Capital Flows, Leverage and Safe Assets' ADBI Working Paper Series num. 405, Asian Development Bank.

IIF Research Note and Series (2013 and onwards), 'Capital Flows to Emerging Market Economies' and 'Capital Flows Tracker'. IIF.

Takats Elod and Vela, Abraham (2014) 'The Transmission of Unconventional Monetary Policy to the Emerging Markets, BIS papers num. 78, August 2014

Miao, Yanilang and Pant, Malika (2012), ' Coincident Indicators of Capital Flows' IMF Working Paper Series IMF WP/12/55

deCadenas-Santiago, Gonzalo, Mendez-Marcano, Rodolfo and Ortiz Vidal-Abarca, Alvaro. A DLM/FAVAR approach for analysing and forecasting portfolio flows, BBVA Working Paper Series XXX, September 2014.

deCadenas-Santiago, Gonzalo, García-Herrero, Alicia and Ortiz-Vidal Abarca, Alvaro. On the pull and push effects of Capital Requirements, BBVA Working Paper Series XXX, September 2014.

Olaberria, E. (2014), "US Long Term Interest Rates and Capital Flows to Emerging Economies", OECD Economics Department Working Papers, No. 1155, OECD Publishing.

Stock, James H. and Watson, Mark W. (2005) Implications of Dynamic Factor Models for VAR Analysis, NBER Working Paper No. 11467. July 2005

Ludovic Gauvin, Cameron McLoughlin and Dennis Reinhardt (2014), Policy uncertainty spillovers to emerging markets – evidence from capital flows. BoE Workins papers September 2014.

Bernanke, B. S., & Blinder, A. S. (1992). "The federal funds rate and the channels of monetary transmission". American Economic Review, 82(4), 901-921.

Bernanke, B. S., Boivin, J., & Eliasz, P. (2005). "Measuring the effects of monetary policy: a factor augmented vector autoregressive (FAVAR) approach". The Quarterly Journal of Economics, 120(1), 387-422.

Bernanke, B. S., & Mihov, I. (1998). "Measuring monetary policy". The Quarterly Journal of Economics,113(3), 869-902.

OECD (2014). "Spillover Effects from Exiting Highly Expansionary Monetary Policies". OECD Economics Department Working Papers, No. 111

APPENDIX

A.1 History Box, Latent factors and Events

On inspection of the following graph the model allows portraying portfolio flow history from the perspective of its latent factors/channels

1) Global excess liquidity episodes bode well with an expansion of the global factor (increased global demand) and a retrenchment of the safe haven factor (increase in the risk appetite).

2) The Lehman Crisis is attached to a retrenchment of the global factor and portfolio reallocation between emerging and developed countries especially as monetary measures were implemented. Here the EM and DM move with opposite signs capturing that.

[Chart 7] Latent factors and stylized facts
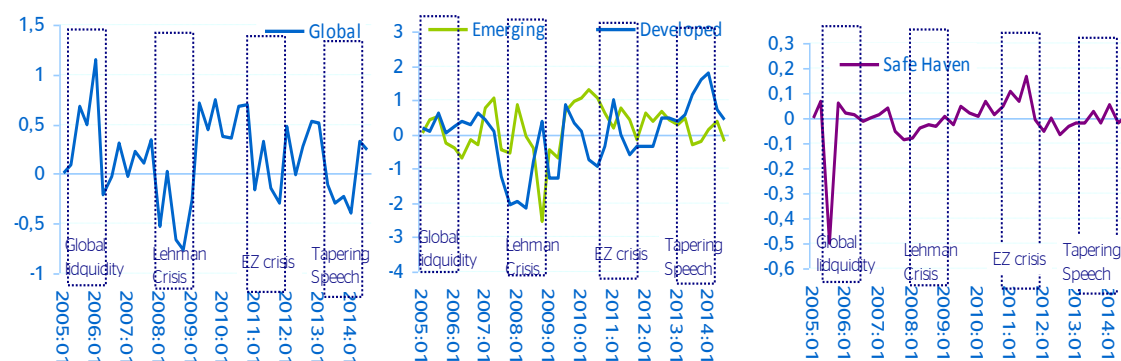
3) The Eurozone crisis is portrayed as a retrenchment of global, developed and emerging factors capital flows who started also a flight to quality to safe haven countries, thereof the uptick of the SH factor in our storyline.

4) The third phase of monetary easing in the US and Europe brought a new surge of the global geared demand with and portfolio flows returning from safer markets into emerging markets (portfolio rebalancing). This bodes well with the correction of the Safe Haven factor and an increase in the DM factor.

5) The tapering talk triggered a surge for demand of developed market securities despite the global demand was still depressed. A reallocation between emerging and developed markets can be seen in the last part of the dynamics of DME and EME factors.

A Bayesian Moving Average Approach is a technique to draw large number of possible model combinations using a set of variables and to calculate (on behalf of a prior belief of possible candidates) the amount and posterior probability of explanatory variables for a model. Our BMA exercise on the GLOBAL factor deemed global risk, global rates and activity as variables that with probability ~1 should be included in a (FAVAR) model.
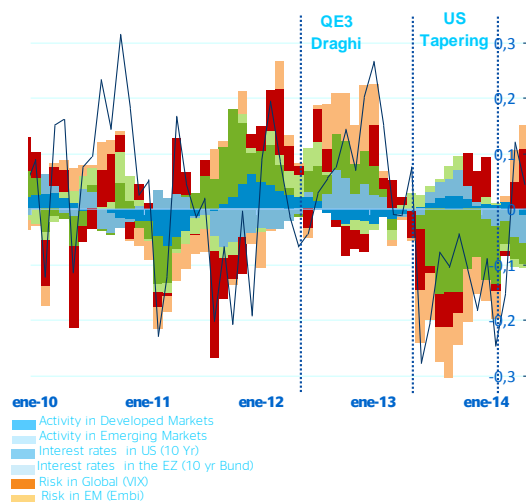
A.2. Deconstructing Factors

[Chart 8] Bayesian Moving Average Approach (posterior probability of model inclusion of candidate regressors for the Global factor)
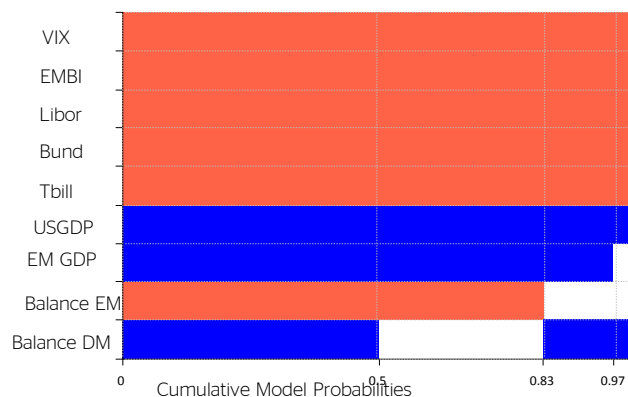
[Chart 9] Factor Variance Decomposition of the Global Factor

The factor variance decomposition of the global factor shows how stages of strong capital flows to Emerging Markets here as the increase in the Global Factor (and the EME factor) correspond during the Draghi and QE3 times to increased risk appetite, supporting liquidity and Emerging Market Groth, being liquidity derived from monetary policy move relevant but no as much as during the tapering phase, when risk appetite and liquidity contracted amid the wording of the tapering in May 2013. More recently (first quarter of 2014) a renewed risk appetite and less burdensome liquidity endowment helped reactivating global demand for flows.

[Chart 10] Impulse Response Function Analysis of the Latent Factors to the Variables in the FAVAR. Comparison of Balance of Payments Data and EPFR Data.
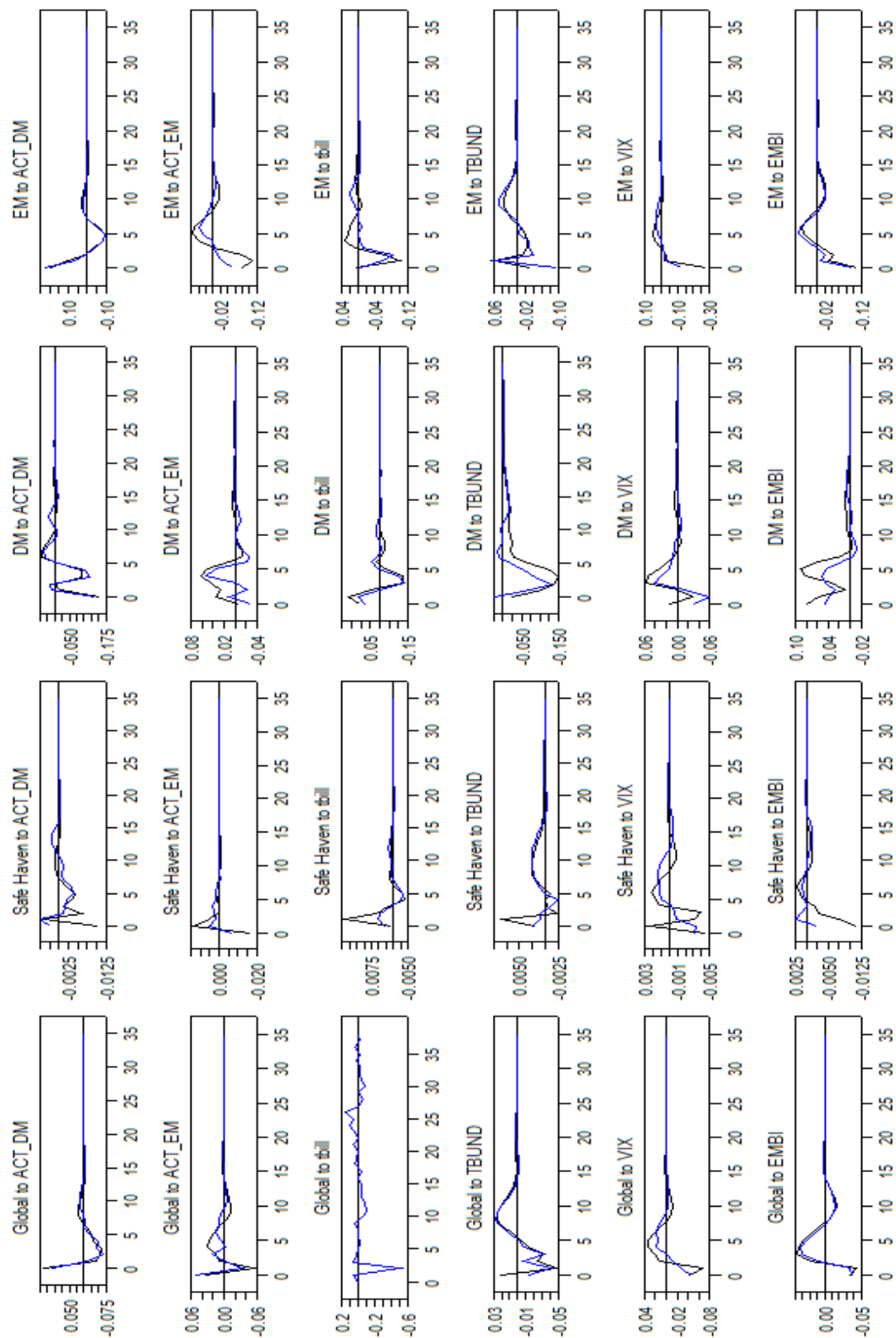
Working Paper

2014

14/29 **Gonzalo de Cadenas-Santiago, Alicia García-Herrero and Álvaro Ortiz Vidal-Abarca:** Monetary policy in the North and portfolio flows in the South.

14/28 **Alfonos Arellano, Noelia Cámara and David Tuesta:** The effect of self-confidence on financial literacy.

14/27 **Alfonos Arellano, Noelia Cámara y David Tuesta:** El efecto de la autoconfianza en el conocimiento financiero.

14/26 **Noelia Cámara and David Tuesta:** Measuring Financial Inclusion: A Multidimensional Index.

14/25 **Ángel de la Fuente:** La evolución de la financiación de las comunidades autónomas de régimen común, 2002-2012.

14/24 **Jesús Fernández-Villaverde, Pablo Guerrón-Quintana, Juan F. Rubio-Ramírez:** Estimating Dynamic Equilibrium Models with Stochastic Volatility.

14/23 **Ana Rubio, Jaime Zurita, Olga Gouveia, Macarena Ruesta, José Félix Izquierdo, Irene Roibas:** Análisis de la concentración y competencia en el sector bancario.

14/22 **Ángel de la Fuente:** La financiación de las comunidades autónomas de régimen común en 2012.

14/21 **Leonardo Villar, David Forero:** Escenarios de vulnerabilidad fiscal para la economía colombiana.

14/20 **David Tuesta:** La economía informal y las restricciones que impone sobre las cotizaciones al régimen de pensiones en América Latina.

14/19 **David Tuesta:** The informal economy and the constraints that it imposes on pension contributions in Latin America.

14/18 **Santiago Fernández de Lis, María Abascal, Tatiana Alonso, Wojciech Golecki:** A banking union for Europe: making virtue of necessity.

14/17 **Angel de la Fuente:** Las finanzas autonómicas en 2013 y entre 2003 y 2013.

14/16 **Alicia Garcia-Herrero, Sumedh Deorukhkar:** What explains India's surge in outward direct investment?

14/15 **Ximena Peña, Carmen Hoyo, David Tuesta:** Determinants of financial inclusion in Mexico based on the 2012 National Financial Inclusion Survey (ENIF).

14/14 **Ximena Peña, Carmen Hoyo, David Tuesta:** Determinantes de la inclusión financiera en México a partir de la ENIF 2012.

14/13 **Mónica Correa-López, Rafael Doménech:** Does anti-competitive service sector regulation harm exporters? Evidence from manufacturing firms in Spain.

14/12 **Jaime Zurita:** La reforma del sector bancario español hasta la recuperación de los flujos de crédito.

14/11 **Alicia García-Herrero, Enestor Dos Santos, Pablo Urbiola, Marcos Dal Bianco, Fernando Soto, Mauricio Hernandez, Arnulfo Rodríguez, Rosario Sánchez, Erikson Castro:** Competitiveness in the Latin American manufacturing sector: trends and determinants.

14/10 **Alicia García-Herrero, Enestor Dos Santos, Pablo Urbiola, Marcos Dal Bianco, Fernando Soto, Mauricio Hernandez, Arnulfo Rodríguez, Rosario Sánchez, Erikson Castro:** Competitividad del sector manufacturero en América Latina: un análisis de las tendencias y determinantes recientes.

14/09 **Noelia Cámara, Ximena Peña, David Tuesta:** Factors that Matter for Financial Inclusion: Evidence from Peru.

14/08 **Javier Alonso, Carmen Hoyo & David Tuesta:** A model for the pension system in Mexico: diagnosis and recommendations.

14/07 **Javier Alonso, Carmen Hoyo & David Tuesta:** Un modelo para el sistema de pensiones en México: diagnóstico y recomendaciones.

14/06 **Rodolfo Méndez-Marcano & José Pineda:** Fiscal Sustainability and Economic Growth in Bolivia.

14/05 **Rodolfo Méndez-Marcano:** Technology, Employment, and the Oil-Countries' Business Cycle.

14/04 **Santiago Fernández de Lis, María Claudia Llanes, Carlos López- Moctezuma, Juan Carlos Rojas & David Tuesta:** Financial inclusion and the role of mobile banking in Colombia: developments and potential.

14/03 **Rafael Doménech:** Pensiones, bienestar y crecimiento económico.

14/02 **Angel de la Fuente & José E. Boscá:** Gasto educativo por regiones y niveles en 2010.

14/01 **Santiago Fernández de Lis, María Claudia Llanes, Carlos López- Moctezuma, Juan Carlos Rojas & David Tuesta.** Inclusión financiera y el papel de la banca móvil en Colombia: desarrollos y potencialidades.

2013

13/38 **Jonas E. Arias, Juan F. Rubio-Ramírez & Daniel F. Waggoner:** Inference Based on SVARs Identied with Sign and Zero Restrictions: Theory and Applications

13/37 **Carmen Hoyo Martínez, Ximena Peña Hidalgo & David Tuesta:** Demand factors that influence financial inclusion in Mexico: analysis of the barriers based on the ENIF survey.

13/36 **Carmen Hoyo Martínez, Ximena Peña Hidalgo & David Tuesta.** Factores de demanda que influyen en la Inclusión Financiera en México: Análisis de las barreras a partir de la ENIF.

13/35 **Carmen Hoyo & David Tuesta.** Financing retirement with real estate assets: an analysis of Mexico

13/34 **Carmen Hoyo & David Tuesta.** Financiando la jubilación con activos inmobiliarios: un análisis de caso para México.

13/33 **Santiago Fernández de Lis & Ana Rubio:** Tendencias a medio plazo en la banca española.

13/32 **Ángel de la Fuente:** La evolución de la financiación de las comunidades autónomas de régimen común, 2002-2011.

13/31 **Noelia Cámara, Ximena Peña, David Tuesta:** Determinantes de la inclusión financiera en Perú.

13/30 **Ángel de la Fuente:** La financiación de las comunidades autónomas de régimen común en 2011.

13/29 **Sara G. Castellanos & Jesús G. Garza-García:** Competition and Efficiency in the Mexican Banking Sector.

13/28 **Jorge Sicilia, Santiago Fernández de Lis & Ana Rubio:** Banking Union: integrating components and complementary measures.

13/27 **Ángel de la Fuente & Rafael Doménech:** Cross-country data on the quantity of schooling: a selective survey and some quality measures.

13/26 **Jorge Sicilia, Santiago Fernández de Lis &Ana Rubio:** Unión Bancaria: elementos integrantes y medidas complementarias.

13/25 **Javier Alonso, Santiago Fernández de Lis, Carlos López-Moctezuma, Rosario Sánchez & David Tuesta:** The potential of mobile banking in Peru as a mechanism for financial inclusion.

13/24 **Javier Alonso, Santiago Fernández de Lis, Carlos López-Moctezuma, Rosario Sánchez & David Tuesta:** Potencial de la banca móvil en Perú como mecanismo de inclusión financiera.

13/23 **Javier Alonso, Tatiana Alonso, Santiago Fernández de Lis, Cristina Rohde &David Tuesta:** Tendencias regulatorias financieras globales y retos para las Pensiones y Seguros.

13/22 **María Abascal, Tatiana Alonso & Sergio Mayordomo:** Fragmentation in European Financial Markets: Measures, Determinants, and Policy Solutions.

13/21 **Javier Alonso, Tatiana Alonso, Santiago Fernández de Lis, Cristina Rohde & David Tuesta:** Global Financial Regulatory Trends and Challenges for Insurance & Pensions.

13/20 **Javier Alonso, Santiago Fernández de Lis, Carmen Hoyo, Carlos López-Moctezuma & David Tuesta:** Mobile banking in Mexico as a mechanism for financial inclusion: recent developments and a closer look into the potential market.

13/19 **Javier Alonso, Santiago Fernández de Lis, Carmen Hoyo, Carlos López-Moctezuma & David Tuesta:** La banca móvil en México como mecanismo de inclusión financiera: desarrollos recientes y aproximación al mercado potencial.

13/18 **Alicia Garcia-Herrero & Le Xia:** China's RMB Bilateral Swap Agreements: What explains the choice of countries?

13/17 **Santiago Fernández de Lis, Saifeddine Chaibi, Jose Félix Izquierdo, Félix Lores, Ana Rubio & Jaime Zurita:** Some international trends in the regulation of mortgage markets: implications for Spain.

13/16 **Ángel de la Fuente:** Las finanzas autonómicas en boom y en crisis (2003-12).

13/15 **Javier Alonso & David Tuesta, Diego Torres, Begoña Villamide:** Projections of dynamic generational tables and longevity risk in Chile.

13/14 **Maximo Camacho, Marcos Dal Bianco & Jaime Martínez-Martín:** Short-Run Forecasting of Argentine GDP Growth.

13/13 **Alicia Garcia Herrero & Fielding Chen:** Euro-area banks' cross-border lending in the wake of the sovereign crisis.

13/12 **Javier Alonso & David Tuesta, Diego Torres, Begoña Villamide:** Proyecciones de tablas generacionales dinámicas y riesgo de longevidad en Chile.

13/11 **Javier Alonso, María Lamuedra & David Tuesta:** Potentiality of reverse mortgages to supplement pension: the case of Chile.

13/10 **Ángel de la Fuente:** La evolución de la financiación de las comunidades autónomas de régimen común, 2002-2010.

13/09 **Javier Alonso, María Lamuedra & David Tuesta:** Potencialidad del desarrollo de hipotecas inversas: el caso de Chile.

13/08 **Santiago Fernández de Lis, Adriana Haring, Gloria Sorensen, David Tuesta, Alfonso Ugarte:** Banking penetration in Uruguay.

13/07 **Hugo Perea, David Tuesta & Alfonso Ugarte:** Credit and Savings in Peru.

13/06 **K.C. Fung, Alicia Garcia-Herrero, Mario Nigrinis:** Latin American Commodity Export Concentration: Is There a China Effect?

13/05 **Matt Ferchen, Alicia Garcia-Herrero & Mario Nigrinis:** Evaluating Latin America's Commodity Dependence on China.

13/04 **Santiago Fernández de Lis, Adriana Haring, Gloria Sorensen, David Tuesta, Alfonso Ugarte:** Lineamientos para impulsar el proceso de profundización bancaria en Uruguay.

13/03 **Ángel de la Fuente:** El sistema de financiación regional: la liquidación de 2010 y algunas reflexiones sobre la reciente reforma.

13/02 **Ángel de la Fuente:** A mixed splicing procedure for economic time series.

13/01 **Hugo Perea, David Tuesta &Alfonso Ugarte:** Lineamientos para impulsar el Crédito y el Ahorro. Perú.

Click here to access the list of Working Papers published between 2009 and 2012

Click here to access the backlist of Working Papers:

Spanish and English

BBVA Research's publications can be viewed on the following website: **http://www.bbvaresearch.com**

Contact Details:

BBVA Research
Paseo Castellana, 81 – 7º floor
28046 Madrid (Spain)
Tel.: +34 91 374 60 00 y +34 91 537 70 00
Fax: +34 91 374 30 25
bbvaresearch@bbva.com
www.bbvaresearch.com