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Abstract

We investigate empirically what may be the effects of Monetary Policy in the North-namely monetary policy normalization by the FED and quantitative easing (QE) by the ECB- on cross border portfolio flows to the South (Emerging Markets). Using a Dynamic Linear Factor Augmented VAR (FAVAR), we find that the FED monetary policy normalization may lead to a reduction in capital inflows in emerging markets between 3-7% of GDP. The sharpest reduction occurs when markets overreact to the FED normalization and the ECB follows suit, rather than following a QE path. In turn, the mildest correction in capital inflows occurs in the current situation (i.e., the FED manages to normalize monetary policy smoothly and the ECB frontloads it's QE). Across regions, Emerging Europe is generally less affected than Latin America and Emerging Asia, the more so the larger the QE by the ECB.

Keywords: monetary policy, capital flows, emerging markets.

JEL: C32, E32, F32, G12.

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1. .Introduction

The impact of FED policies on emerging markets has long been at the core of the policy discussion (Calvo and Mendoza, 1996 and Calvo, Leiderman and Mendoza, 1996)

Since the eruption of the global financial crisis in 2008, this issue has received a new wave of attention as monetary policies in the North, especially by the FED but also the European Central Bank (ECB), the Bank of Japan and the Bank of England, have entered unchartered territories either by still expanding the central bank balance sheet massively or by starting to unwind such situation (IMF, 2011,Eichengreen and Gupta 2013, Rey 2013, Filardo 2014, Fratzscher 2014, ,Musalem 2014 and World Bank 2014).. Among the many ways in which Monetary Policy in the North can affect the South we focus on capital flows into emerging markets.

Capital flows are the most immediate transmission vehicles of these monetary shocks through the well-known "Portfolio", "Liquidity" and "Risk taking" channels (Filardo, 2014). Among the different types of capital flows, we focus on portfolio flows as they should be fastest to react compared to FDI and cross-border banking flows.

2. State of the art in modelling portfolio flows

Portfolio flows are characterized for being fickle (Guajardo 2014), subject to volatility regimes, not very persistent (low serial correlation), asymmetric in their response to shocks and conditional on the economic and financial conditions of both home and host countries. Besides, their dynamics are highly conditional on the nature of global shocks. To make things even harder, in terms of modelling portfolio flows, the increasing integration of financial markets at a global level makes global drivers of portfolio flows a key variable to explain their behaviour. It goes without saying that one of those key global drivers is monetary policy in the North as we shall explain in more detail below.

More generally, the academic literature since the mid-nineties has identified a number of such global drivers of portfolio flows, such as economic activity in both developed and emerging markets, global financing conditions (brilliantly portrayed by Calvo's real interest cycle already in Calvo, et al. 1996 and at Calvo & Mendoza 1996) and the degree of market risk appetite in different instances but most recently by Rey (2013). Such global factors are identified in such literature as "push" factors for capital flows from Developed Markets into Emerging Economies. At the same time, the literature recognizes the importance of local (pull) factors in attracting capital flows into recipient countries.

Among all of these push and pull factors, this paper concentrates on a key push one, namely Monetary Policy Decisions in the North and how it affects capital flows in the South, i.e. in the emerging world. This question is obviously very timely given the FED's and ECB's current situation. It is so timely that all empirical studies that we are aware of do not cover the current cycle (i.e., FED tapering and

tightening and the ECB quantitative easing). In fact, most of the existing papers cover the previous shock, namely the FED quantitative easing (Beckaert, Hourova, and Lo Duca 2013 and Eichengreen and Goupta 2013, among others).

3. Our approach

The approach we follow borrows from the existing literature on determinants of capital flows but goes well beyond in two ways.

First of all, not only monetary policy action by the FED is covered but also that of the ECB and, more interestingly, the interaction between the two. This makes our analysis much closer to reality than previous ones focusing on the FED only.

Second, it develops a more sophisticated empirical methodology to analyse the traditional framework of push and pull factors by finding the different transmission channels that catalyse them into each country capital inflows.

3.1 The model

We develop a two-step FAVAR model of capital flows in the spirit of Ramadorai and Gupta (2013), Agripino and Rey (2012) and Fratzscher (2011).[2] We combine unobservable global and regional factors with global variables as activity, interest rates and risk aversion, specific variables of both Developed and Emerging Economies as a way to replicate the idea of push and pull factors in a richer setting. In that vein, we provide a richer than usual taxonomy of latent factors since we add to the usual global common factor, four additional factors.

First, a developed market shock (DM), which affects countries above investment grade. Second the emerging market factor (EM) which only affects markets whose ratings are at or below investment grade. Third, the safe heaven (SH) channel only affects countries with top rating and finally, an idiosyncratic country factor. All of these channels, in addition to the global one (GL), which we relate to global risk aversion, are assumed to be totally unrelated, therefore orthogonal by construction. Within this framework monetary policy decisions are transmitted through all of these four channels as will be further explained later.

Initially we use a Dynamic Factor Model (DFM) as the first step to estimate the five transmission channels previously described. As a second step, we develop a FAVAR model whereby global macroeconomic and financial variables (accounting for the origin of push and pull shocks) for both developed and emerging markets countries relate to the dynamic factors of portfolio flows in order to make simulations. Finally, the FAVAR model will allow us to recover any particular country flows through their relationship (i.e. weight) in the different transmission channels previously explained.

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[2] 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).

3.2 The first step: Dynamic Factor Model (DFM) of Portfolio Flows

As in Doz, Giannone, Reichlin (2006), Watson and Reis (2010), Agrippino and Rey H. (2013) among others, we build on the hypothesis that portfolio flows conceal an unobserved structure of dynamic latent factors that can be expressed as a Dynamic Factor Model (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[3].

Our version of a Dynamic Factor Model is shown below. This comprises a measurement equation block (1) and a state equation block (2).

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

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

Both blocks together build the a State Space Model in which 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[4]. As such we obtain that any portfolio flow (y^i) can be decomposed in five components (global, safe haven, developed, emerging and idiosyncratic) plus an error term as expressed below:

$$y^{i,*}(t) = c^i_{global} \times F_{global,it} + c^i_{sh} \times F_{shit} + c^i_{Dev\,x} F_{devit} + c^i_{EM\,x} F_{emit} + c^i_{IDI}*F_{idiosyncratict} + e_{it}$$

By imposing zero restrictions on the Matrix C we can identify the common components as follows:

For a Developed Market Flows [y^{DM}] we restrict $C_{em} = C_{sh} = 0$ to obtain:

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

For Emerging Market Flows [y^{EM}] the restriction $C_{dev} = C_{sh} = 0$ will yield

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

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[3] 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.

[4] Where, in the measurement equation block (1), 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. In any case, the number of factors shall be less than the number of dependent variables (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 matrix C_t we impose null restrictions a priori and allow the model to estimate parameters from the starting values[4]. Finally, Vt 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

For Safe Haven Markets Flows [y^{SH}] $C_{EM} = C_{sh} = 0$

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

The state equation block (2) describes the dynamics of the mentioned latent factors Factors (F) of capital flows or how they evolve over time according to a VAR process of order p[5]. Finally, the relation of the covariance matrices of noise and signals (Σ_w) relative to Σ_V) is the noise to signal ratio to be optimized under a Kalman filter.

3.3 The second step: Factor Augmented VAR (FAVAR) model

The Dynamic Factor Model computed in the first step 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 and financial conditions. Thus, only information about capital flows is required in the first step.

To complement the DFM model, in the second step we combine the portfolio flows information included in factors (F) with those related with macroeconomic and financial push and pull factors (Y) through a VAR model. This will allow as estimate a FAVAR structure allowing time dynamics between the three elements of the analysis: macroeconomic and financial variables, factors, and flows. Furthermore, the FAVAR stands as:

$$[Y_t, F_t]' = B(L) * [Y_{t-p}, F_{t-p}]' + V_t \qquad (3)$$

In (3) Yt and Ft stand for economic and financial variables,. The vector of economic and financial variables $Y_t = \{Y_{t\_dm}, Y_{t\_em}, i_{t\_us}, i_{t\_ez}, VIX_t, EMBI_t\}$ includes variables representing the Developed Economies economic activity ($Y_{\_dm}$, $Y_{\_em}$), Emerging Markets economic activity ($Y_{\_em}$), the US long term interest rate ($i_{\_us}$), the Eurozone long term interest rate ($i_{\_ez}$), a global risk aversion variable proxied by the VIX index (Y_ VIX) and an specific risk variable for emerging markets (Y_EMBI).

These variables are combined with capital flows factors F_t, including a global factor of portfolio flows (F_g), a safe haven factor (F_{sh}) and specific factors for developed assets (F_d) and emerging assets (F_{em}). **B**(L) is a lag polynomial of finite order d , which may include a priori restrictions as in the structural VAR literature. The Et stands for the vector Error Term in each regression related through Covariance matrix Sigma. The error term **v** (t) is mean zero with covariance matrix sigma ($\sum$)

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5 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. Ft are the already mentioned latent factors (Txk). A(L) is the matrix of parameters that defines the transmission of the equation. Parameters At can be fixed or not, and in our case its not fixed as it evolves from the latest estimation. Finally, Vt is the matrix of shocks to the transition equation or "Signal".

Following Bernanke, Boivin and Eliasz (2003) the model is estimated by means of maximum likelihood with Bayesian techniques. The identification of the model is achieved by restricting the matrix to be lower triangular with variable ordered in the following way:

Macroeconomic and financial variables are included in the first place and ordered according their contemporaneous response to news or shocks. We consider the order economic activity, long term interest rate and risk variables. Thus economic variables act as "slow-moving" variables or largely determined in the current period (period t), this will be followed by long term interest rates (the US and the Eurozone) and finally by the risk variables (the VIX and the Emerging Market related Embi). Furthermore, we order from "slow moving" variables represented by the economic situation to "fast-moving" interest rates and financial variables as we consider them more sensitive to economic and interest rates news or shocks. Besides this, variables relative to developed countries or assets will be first.

The portfolio flows factors follow economic and financial variables as we consider them as "fast-moving" variables or highly sensitive to contemporaneous economic and financial news or shock. They are ordered from global and safe haven factors to specific developed and emerging.

Once the model is identified, we can estimate the portfolio flow factors conditional to the evolution of macro-economic and financial variables in the alternative scenarios. The individual country flows can be then recovered back from the forecasted factors by means of the estimated measurement equation block (1) described above (i.e multiplying factors by matrix C).

This two-step procedure is equivalent to simultaneous estimation of a Steady State Space conditional on the macro-economic endowment, thereof an Augmented State Space.

3.4 Data to measure portfolio flows

There are two different databases that are being used for the purpose of analyzing portfolio flows in the literature. The first, which is the official balance of payment (BoP) data, as reported by the IMF, is more comprehensive and more consistent with local accounting of country net liabilities.

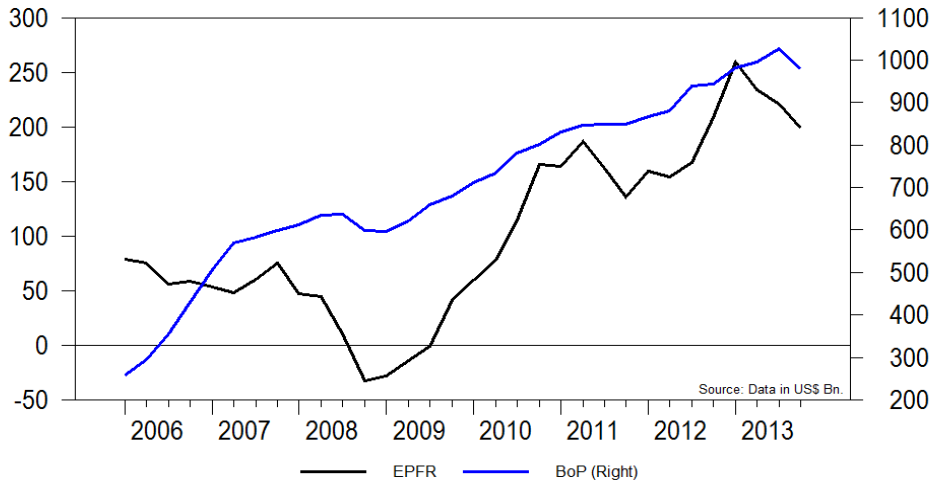
However, for a study like ours where timely data is of the essence, balance of payments data has the drawback of being updated with two to three quarters' delay. In addition, its quarterly frequency can be too low to analyze the immediate impact of a monetary policy action. Both, the timing and the relatively low frequency, explain why researchers are increasingly using a different database, namely the EPFR (Lundblad and Ramadorai (2012) and Miao and Pant (2012)). Such database focuses on portfolio flows by mandate. It has the advantage of its high frequency (as high as daily but also weekly and monthly) and timing. In fact the time gap to official local central bank's data is only a couple of weeks.

The key question, of course, is how representative is EPFR data of total portfolio flows. After inspecting the data, it seems clear to us that it is not as representative as it may seem (see Figure 3.4-1). In fact, there is a 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 in capital flows ton EMEs to have happened with the third wave of Fed QE while BOP would data shows that such imbalance actually started much earlier, with the first wave of FED QE.

There are several reasons for this difference. First, EPFR uses its own definition of Institutional investors, this is different from that of BoP data. In fact, it pays less attention to retail investors as opposed to institutional ones. 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). Lastly, EPFR data are skewed towards investments in Mutual funds obliterating other investment instruments. It also focuses more on fixed income than equity.

We, thus, believe that BoP is a better option for our analysis but we develop a strategy to limit its main caveat – timeliness – by transforming EPFR data as we shall describe below. In fact, first we compile our own data set (which goes back to Q1 1980) as an extension of IMFs BoP data drawing from Filardo et al (2013). Second, since the IMFs data-set ends in 1Q 2014 and we need to get as close as possible to the time frame of FED tapering and ECB QE, we use now-casting techniques in the spirit of Miao and Pant (2012) to estimate capital flows further down the road. Besides, we use our DFM/FAVAR model to exploit the information imbedded in the most updated weekly EPFR data. Now-casting BoP through the use of EPFR data is possible despite the differences since both flow data sets have identical reaction patterns to global shocks. Figure A.10 shows this feature.

[Figure 3.4-1] Comparision BoP vs EPFR Portfolio Flows data



Our new dataset consists of a balanced panel of quarterly Net Portfolio Flows[6] covering the period from 2005Q1 to 2014Q3 (T=59) for (N=40) countries[7] with equal share of Developed (DME) and Emerging (EME) Economies. We do not start in 1980 although the data is available because of the same reasons offered by Seidel et al. (2012), namely the existence of various volatility regimes between 1980 and 2005. It has been widely documented how portfolios have increased the share of foreign ownership as well as institutional investors, more generally so 2005 seems like a good starting point as it allows to cover the situation right before the global financial crisis without going too far behind into a totally different structural situation for capital flows.

Regarding the data choice, we use 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[8] while avoiding endogeneity problems in the modeling. This would have been the case, had we used nominal GDP as a denominator. 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 previous research.

5. The Scenarios

We construct six plausible scenarios for Monetary Policy in the North (where North applies to the Fed and the ECB)[9]. While the Fed will almost certainly normalize monetary relatively soon, the ECB faces economic stagnation in Europe and deflation risks, opening the door to QE. [10]

We quantify the likely effects of such changes in monetary policy in the North by using the IMF estimate of the FED's having detracted 100 bps of the term premium with QE (here the 10 year rate of a US Treasury bond) which will need to go back to the term premium once the FED normalizes monetary policy. In the same spirit, we will use our own quantification of the implicit drop in long term

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[6] 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

[7] The countries of our database are: USA, Japan, Canada, UK, Sweden, 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

[8] EME net portfolio flows are by definition non stationary and so does ADF reflect (see Miao and Pant 2012)

[9] We borrow from the World Bank's Global Economic Prospects 2013 Chapter III and from IMFs WEO 2014/4 to construct the scenarios.

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

yields expected from the ECB QE (between 40 to 60 bps on the 10 year rate of the German Treasury Bond).

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

[5.1] FED normalizes monetary policy as expected; ECB does not introduce QE

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 the10 year US Treasury rate.). This is consistent with a fist hike in Fed Funds after Q2 2015 and reaching 2% by mid-2016. The ECB remains uncommitted to QE (i.e. follows the line before Draghi's announcement in September 2014). Within our model, this basically means that the German Bond 10 year rate is set to evolve according to the dynamics of the model. Risk Aversion (measured by the ViX index) steadily increases reaching its long run average as liquidity and risk appetite tapers off. This does not represent, however, a surprise shock.

[5.2] FED overshoots monetary policy normalization while the ECB does not introduce QE

The Fed surprises the market with unanticipated signs of faster monetary normalization. The market overreacts[11] so that the US 10 year Treasury rates hike 150 bps in the next two quarters. As in the previous scenario, the ECB remains pre-Draghi so that Germany' bond rates just follow the model dynamics. The ViX, however, temporarily hikes to sovereign/financial crisis levels for a quarter, signifying the reaction of the market to the unexpected monetary policy shock from the FED. After one period, risk aversion swiftly returns back to the original path towards the long run average as agents incorporate the news.

[5.3] ECB introduces QE while the FED normalizes monetary policy as expected

In line with Draghi's announcement in September 2014, the ECB introduces QUE which brings German Bonds' 10 year rates down 20 basis points each quarter between 4Q14 and 2Q15. The Fed maintains the monetary policy normalization as expected (i.e., as in the first scenario). Risk follows the normalization path described above as no unexpected news emerge but slightly more gradual as risk appetite remains in some regions. This scenario is obviously very similar to the current situation.

[5.4] The Fed overshooting while the ECB introduces QE

Cyclical momentums in the US (activity uptick) and EUR (deflation fears and economic stagnation) visibly defer and render monetary Policy utterly asynchronic between the ECB and FED. More specifically, while the ECB starts the pre-

[11] This scenario follows the one described in World Bank (2014)

committed monetary stimulus bringing the path of Germany bond 10 year rates as described in scenario 5.3, the FED signals faster monetary policy normalization triggering an overshooting of the US Treasury 10y rates as described in Scenario 5.2.

[5.5] FED overshooting and frontloaded QE by the ECB

The workings of scenario 3 apply but the markets overreact to the ECB pre-committed QE, frontloading the effect of QE and, thus, bringing the German 10y rate down 50 bps in the two immediate quarters. In this scenario, the spike in global risk aversion (the VIX) lasts longer than in scenario 5.3 inflicting a longer damage than initially expected on capital flows. The underlying reason is the fear of a European economy not really recovering from deflation and/or stagnation.

[5.6] Delayed Fed Normalization and Frontloaded ECB's QE

Signs of weak activity and downward pressure on prices bring the FED to delay the monetary normalization two more quarters. Such delay implies that US that Government rates hardly increase (long rates in US reach 2.6 by the end of 2016, 200 bps less than the original tapering plan). The European economy is also very week so the QE is frontloaded as in the previous scenario. This is the scenario where long term rates remain the lowest in both areas, with a positive impact on portfolio flows towards the South.

6. Results

First, we offer a short description of the model's functioning so as to better understand our simulation results thereafter.

Capital flows to both Developed and Emerging Markets 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 DFM converged and found a global solution providing a set of factors that replicate all stylized facts in the dynamics of capital flows since 2005to 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 (proxied by the VIX and domestically by the EMBI) and c) activity (measured 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 Figure A-4.The GLOBAL factor is pro-cyclical to economic activity but countercyclical to the financial conditions and risk aversion (in other

words, it is pro-cyclical to 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 flight to quality (where the safe haven factor increases abruptly as a result of increased risk aversion).

6.1 Simulation Results

We follow the aforementioned scenarios regarding monetary policy in the North to simulate their impact on portfolio flows in emerging economies.

Results from Scenario [5.1][12]

FED monetary normalization without surprises yields mild negative effects on emerging market portfolio flows as shown in the graphs below. In any event there is portfolio reallocation away from emerging market assets. The tightening shock is channeled as a contraction of the Global Factor, (implying a reduction 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). Instead, the Developed Market Factor contracts, channeling the effect of the monetary shock that renders emerging market assets less attractive. Global and Emerging Channels dominate upon the Developed and Safe Haven. Under this scenario, median emerging market portfolio flows would lose close to 3.6% of GDP by end of the forecasting horizon, Q4 2017 (see Table 6.2 and Graph A.2 in the Appendix). This would imply an absolute loss in the stock of net portfolio liabilities of emerging markets of around US$ 140 billion by Q4 2017 (10.7% of the total stock).

Results from Scenario [5.2]

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 previous scenario but these would be exacerbated with a sudden and temporary hike in 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 portfolio flows. The loss of portfolio inflows into EMEs would thus be much larger, namely about 5.6% of GDP until the end of 2017. The total loss accumulated in the stock of portfolio flows into EMEs would amount to some US$ 184 billion or 14% of the total stock (see Table 6.2 and Graph A.3 in the Appendix).

Results from Scenario [5.3]

[12] See section 5 for description

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 5.1 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 about US$ 105bn or 8.2% of the total stock(see Table 6.2 and Graph A.4 in the Appendix).

Results from Scenario [5.4]

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 5.1 (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 to 138 US$ Bn or 10.5% of the total stock of liabilities in EMEs (see Table 6.2 and Graph A.5 in the Appendix).

Results from Scenario [5.5]

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 Bund). 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 (Global Risk Aversion would additionally increase or last longer than envisaged) Emerging Markets would be hit and stay longer depressed than in scenario 5.3, Safe havens would marginally increase and the upside adjustment in EM markets would remain.

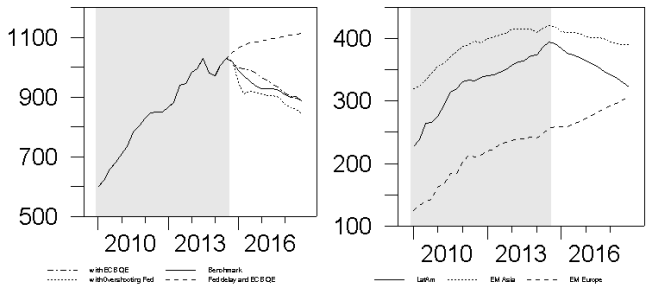
In this situation a portfolio reallocation will still take place with incremental flight to quality. The net effect would be partially compensated by the undershooting action of the ECB but that would not be sufficient to stop the drain of flows away of EMEs. We estimate in this case capital flows would lose 3.9% of GDP cumulative by the end of the forecasting horizon (Q4 2017), 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 6.2 and Graph A.6 in the Appendix).

Results from Scenario [5.6][13]

It is unlikely, although 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 (see Table 6.2 and Graph A.7 in the Appendix).

[Figure 6.1] Global Accumulated Portfolio Flows in US$ Bn.
(Left are Global Flows within main scenario Bands; Right are Regional Flows in the median Scenario)



[Table 6.1] Portfolio Flows. Scenario Simulation by Region (Cum. as % GDP)

[13] See section 5 for description

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%

Summing up, monetary policy in the North does have quite a large impact on Emerging Market portfolio inflows. All plausible scenarios (which include some degree of normalization of US monetary policy) yield a reduction in flows between 1.7% and 5.6% of GDP by the end of 2017. Our results are not too different in size from those foreseen at IMFs WEO April 2013in equivalent policy and risk aversion periods. This would imply that

1) 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 6.1), 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). Particularly, 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 6.2] Emerging Markets Portfolio 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

7. Conclusions

This paper uses a FAVAR model to analyse the effect of monetary policy by central banks in the Western countries (USA and Eurozone) on portfolio flows to Emerging Markets.

The results of the simulations show that portfolio flows to Emerging Markets will contract as the FED normalizes its Monetary Policy and the ECB QE will only marginally offset that effect. Besides, the buffer effect of the ECB policy will not be common across regions, the effect is stronger in Emerging Europe and practically non-existent elsewhere (Asia and Latin America).

The magnitude of the expected shortfall in portfolio flows will depend on the market anticipation as well as the sentiment in international markets as measured by the degree of our proxy of risk aversion. Thus, the estimated downfall of portfolio flows into emerging markets will range between -1.7% of GDP in the mildest scenario (very close to current one) and scenario to -5,6% of GDP in the worst one.

The normalization of monetary policy will have different effects in different regional markets. Latin America and Asia would undergo the largest reductions in portfolio flows as they are more portfolio integrated and dependent on FED policies than the Emerging Europe countries. The latter, will also be supported by the ECB´s policy buffer of QE. According to our results Latin America will be more affected than Asia. There may be some fundamental or market technical reasons for this. First, weaker fundamental could be behind this higher impact. Second, some countries have stronger degree of portfolio integration in some important indexes (i.e Brazil and Mexico in important bond indexes as the EMBI) which can prompt higher volatility in portfolio flows.

In sum, delaying and watering down the Fed's Monetary Policy Normalization together with Frontloading ECB QE would be only way to sustain the current pace in EMEs portfolio flow accumulation. In any case, the end of the ultra-loose monetary policy by the FED will be accompanied by a more or less intense decline in portfolio flows,

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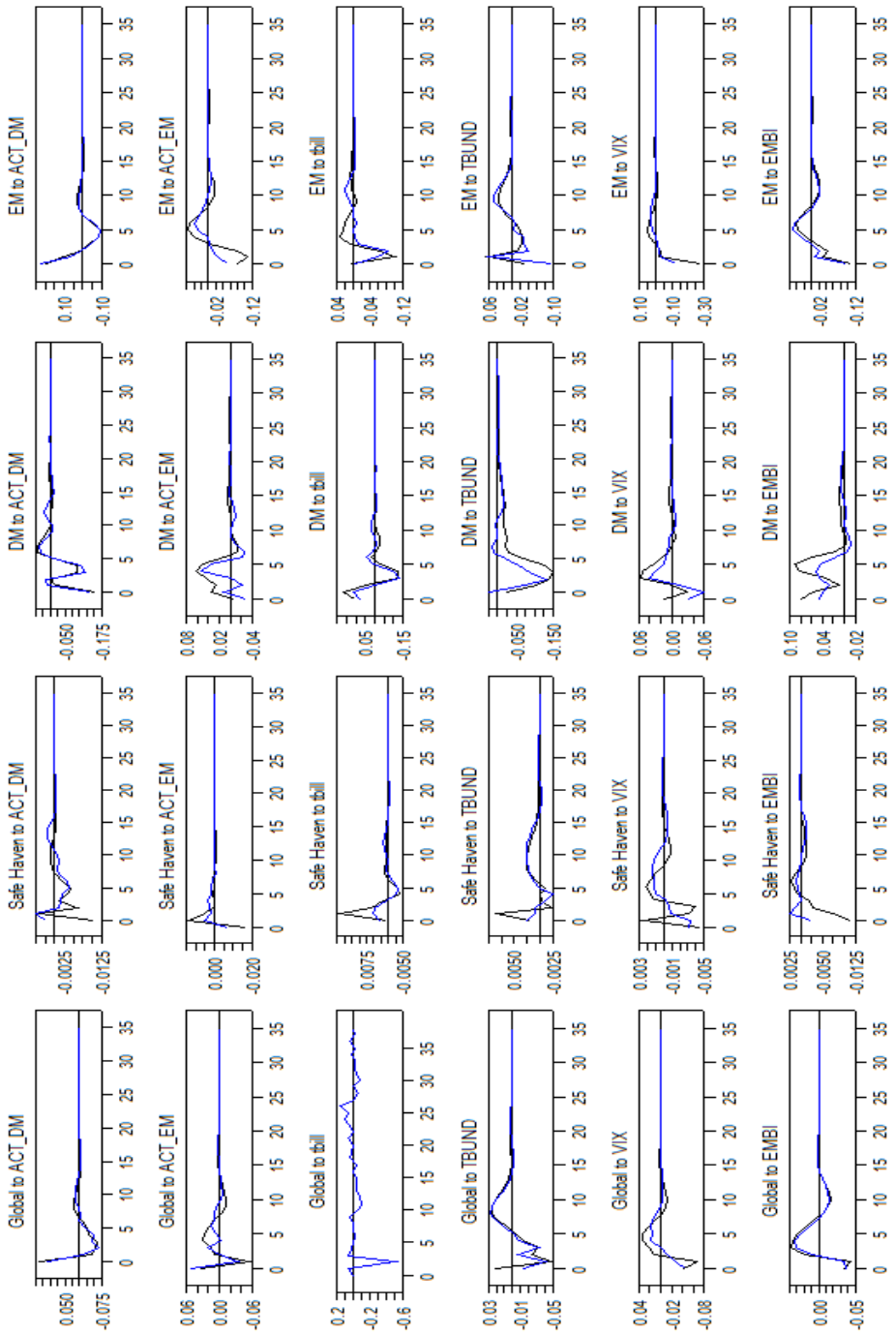
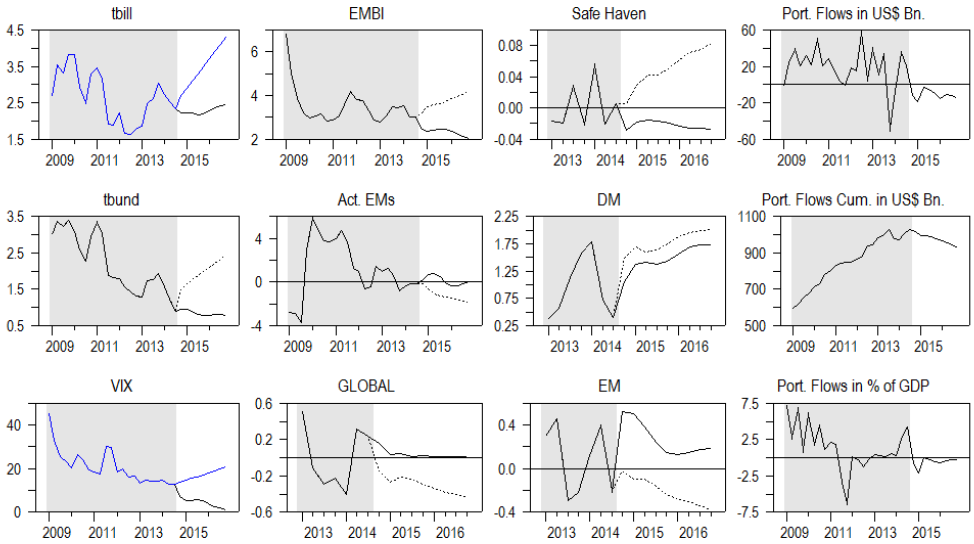
APPENDIX

[Figure A.4] Impulse Response Function Analysis of the Latent Factors to the Variables in the FAVAR. Comparison of Balance of Payments Data and EPFR Data.



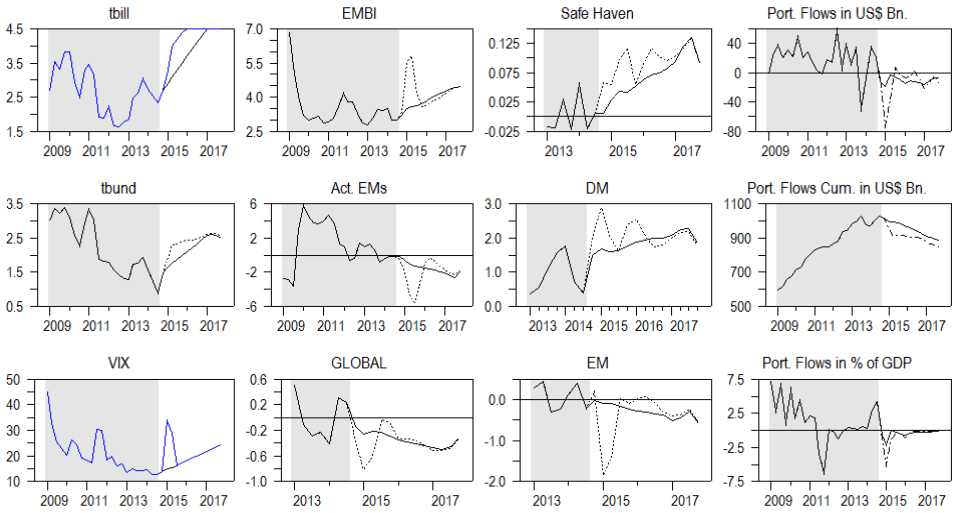
[Figure A.2] FAVAR Model Scenario 5.1 | Benchmark[14]

FED normalizes monetary policy as expected; ECB does not introduce QE



[Figure A.3] FAVAR Model Scenario 5.2 | Overshooting Fed

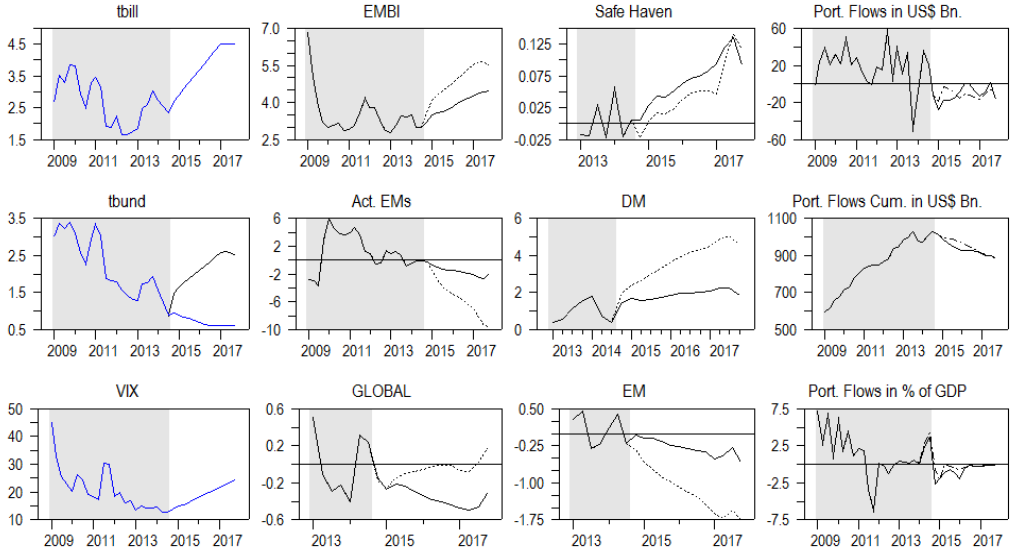
FED overshoots monetary policy normalization while the ECB does not introduce QE



[14] 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

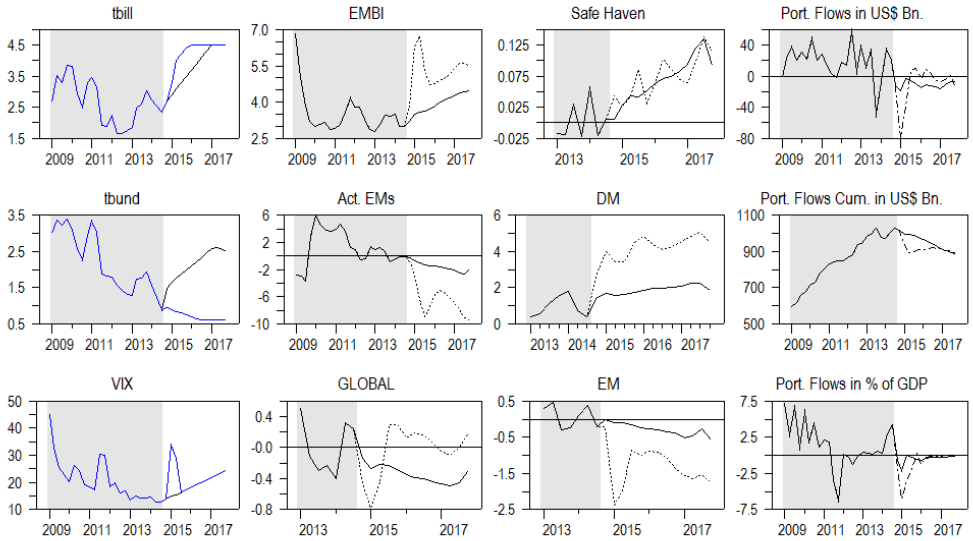
[Figure A.4] FAVAR Model Scenario 5.3 | ECB QE & Regular Fed Normalization

Joint effect of the regular Quantitative Easing planned by the ECB in interaction with regular Monetary Policy Normalization of the Fed,

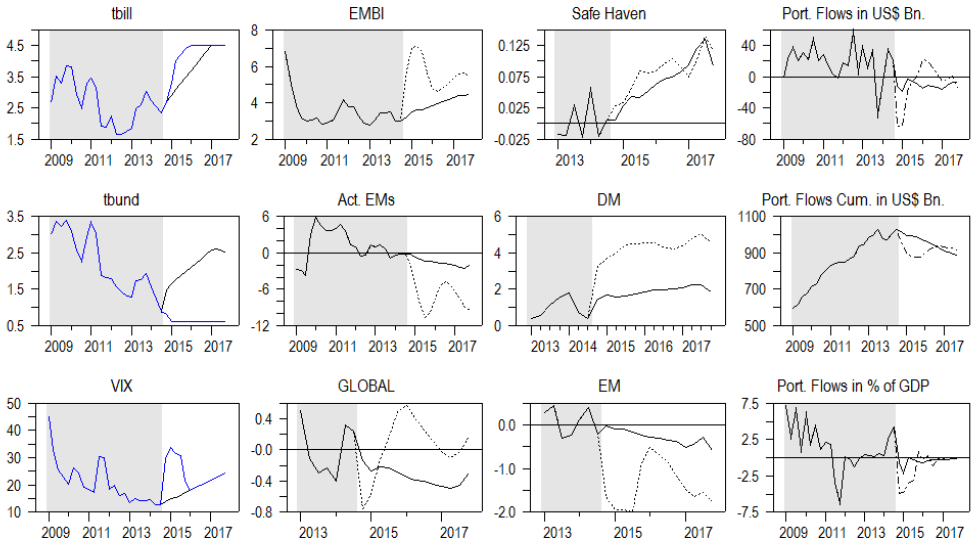


[Figure A.5] FAVAR Model Scenario 5.4 | ECB QE & Overshooting Fed Normalization

Combination of the overshooting reaction to Fed normalization and a moderate easing in Europe

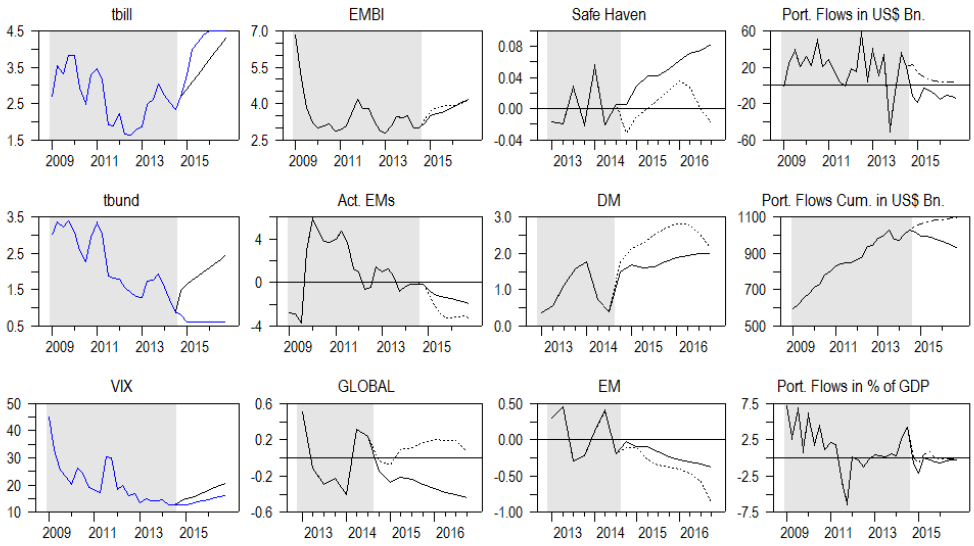


[Figure A.6] FAVAR Model Scenario 5.5 | Frontloaded ECB QE and Overshooting Fed Normalization



[Figure A.7] FAVAR Model Scenario 5.6 | Frontloaded ECB QE and Delayed Fed Normalization

Fed waters down the original plan of monetary policy normalization and ECB frontloads the QE



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