

## Global excess liquidity and asset prices in emerging countries: -a pvar approach

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## **Abstract**

The overly accommodating monetary policy is often accused of creating surplus liquidity and bubbles on the asset markets. In particular, it could have contributed to strong capital inflows in emerging countries, which may have had a significant impact on financial stability in these countries, affecting domestic financing conditions and creating a risk of upward pressures on asset prices. We focus in this paper on the impact of global excess liquidity on good and asset prices for a set of emerging market countries by estimating a panel VAR model. We define first global liquidity and highlight situations of excess liquidity. We then find that excess liquidity at the global level has spillover effects on output and price level in emerging countries. The impact on real estate and commodity prices in emerging countries is less clear.

**Keywords:** Global liquidity, excess liquidity indicators, crises indicators, emerging countries, financial crisis

**JEL classification:** E44, E52, F3, G01.

## **1. Introduction**

Over recent years, the concept of global liquidity has become a matter of concern. If traditionally, analyses focused on the impact of growing liquidity deriving from the ease of monetary conditions on aggregate demand, others studies have been interested in the impact of global liquidity on asset prices, essentially at country-levels. Given the increasing degree of financial integration including financial innovations during the last fifteen years, coupled with the high degree of capital mobility, monetary expansion in advanced economies, resulting in an environment of generally low interest rates, gives rise to an increase in global liquidity encouraging international investors to favor carry-trades opportunities. These strategies coming from investors seeking for higher yields promote strong capital flows from those markets to emerging markets exhibiting higher interest rates and stronger economic development prospects. Non-resident investors may also benefit from exposure to appreciating foreign currencies.

However, the surge of capital inflows to emerging markets may have some harmful consequences for financial stability. A related strand of literature has pointed out the strong implications of global liquidity on financial stability, in particular in relation to investors' risk appetite and the high level of volatility that characterizes cross-border capital flows (European Central Bank, 2011). In a context of abundant global liquidity and the accompanying decline in risk aversion, strong capital inflows from international investors searching higher yield would likely have an impact on domestic financing conditions and exert upward pressures on exchange rates and asset prices in emerging markets receiving those flows. Indeed, to prevent their currencies from an excessive appreciation and a deterioration of cost-competitiveness, central banks in emerging markets economies have been incited to pursue or reinforce foreign exchange accumulation. These foreign exchange interventions have forced monetary authorities to create additional money to absorb those dollar

inflows. The result was an increase in the monetary base of these countries which was sometimes transferred to the real economy through an increase in domestic credit supply.

The strong volatility of these capital flows, essentially in the form of portfolio investments, raises also concerns about sudden-stop episodes or capital outflows which may threaten financial stability in several different ways. First, during episodes of inflows, emerging markets face upward pressures on asset and real estate prices, sometimes well-above fundamental values, and on exchange rates leading to undesired real exchange rate appreciation which undermines competitive gains. Second, those inflows bring funding costs lower which encourage the financial and non-financial private sector in emerging market economies to increase its debt leverage fueling balance sheet mismatches (i.e. a deterioration of the debt/equity ratio). It raises the issue of financial instability in the event of a wave of risk aversion leading to a dramatic withdrawal of capital and a sudden hike in funding costs. Third, a large part of bond issues and cross-border banking credits appear to be denominated in dollars, also with a short maturity, causing foreign currency and maturity mismatches on balance sheets of the private sector. They expose non-exporting companies (whose revenue flows are likely to be denominated in local currency) to the risk of depreciation in the local currency but also to the risk of funding liquidity. Finally, other than the potential risks of capital inflows on financial instability, they also curb monetary policy management in emerging markets countries. Authorities are hesitant to continue tightening the monetary conditions even if inflationary pressure persists. Central Bank interventions to limit an appreciation of their currencies are also accompanied by an expansion of the monetary base (because interventions are not fully sterilized), encouraging the distribution of credit and thus feeding inflationary pressures.

Conversely, episodes of sudden stops of inflows (in worst case episodes of sudden withdrawal) are also a factor of financial instability by their negative impacts on funding costs (cf. infra) and on the path of exchange rates. Countries that rely heavily on external funding to finance their economic activity



are the most exposed to sudden stops with higher risks of economic contraction. Generally speaking, the volatility of capital flows indirectly influences economic activity by increasing uncertainty that weighs heavily on choices on investment and consumption of both businesses and households.

Global liquidity grew steadily from the beginning of the last decade and accelerated from mid-2007 when financial crisis started with subprime mortgage losses and liquidity shortage among financial institutions in the United States. The crises intensified with Lehman collapse, spreading across markets and countries and turning into a full-blown global financial crisis. In order to mitigate the effect of the crisis, monetary authorities, starting with the FED, responded aggressively by taking unprecedented measures, using traditional monetary policy tools as well as unconventional monetary policy actions, to counter disruptions in the supply of liquidity. In the same way, between 2003 and 2007, net private capital flows to emerging markets increased from roughly \$280 bn to more than \$1200 bn before dramatically falling in 2008 and 2009 by almost 50% to \$622 bn and \$602 bn respectively (according to the IIF estimates). Capital inflows in emerging markets revived sharply in 2010, reaching almost \$910 bn on the back of strong economic fundamentals, and hence positive global risk perception in an environment of global excess liquidity. The surged of inflows have thus prompted several countries to implement macro-prudential framework (South Korea, Indonesia for example) or to take explicit measures of capital controls (like in Brazil) in an effort to curb financial assets appreciation, preventing them from rising too much. Thereby, global excess liquidity seems to have been strongly associated with capital flows from advanced countries to emerging markets ones for more than a decade.

Set again this backdrop, this study empirically investigates the relative impact of global excess liquidity on financial stability for a set of emerging countries. For this purpose, in a first step, we collect measures of monetary bases for industrialized and emerging countries, and then compute a global indicator of global excess liquidity. In a second time, we estimate a panel VAR model in order to identify

the impact of a shock of excess global liquidity<sup>1</sup> on emerging assets and real estate prices for a set of 16 emerging countries. The contribution of this paper is threefold. First, we focus on emerging countries as few studies have investigated the link between excess global liquidity and asset prices in those countries. Second, to our knowledge, the econometric panel var (pvar) approach used in this paper has not been yet investigated in previous studies on this topic (a shock of global liquidity on financial stability has been until yet estimated only with aggregate data). Third, we compute an original global liquidity indicator which represents roughly the monetary base at the world level, compared to others measures of global liquidity proxied by monetary aggregates in the G5 countries<sup>2</sup>.

The remainder of the paper is organized as follows. Section 2 provides an overview and some stylized facts about global liquidity and several measures to assess periods of excess global liquidity. Section 3 presents a review of existing literature on the impact of global liquidity in terms of financial instability. Section 4 presents our data set as well as our empirical model, including details on methodology to construct our global liquidity indicator. Results on econometric tests are detailed on section 5. Section 6 concludes.

## **2. Measures of global excess liquidity**

The concept of global liquidity could be defined as the aggregate of domestic liquidity that can be used for payments and transfers for current international transactions. Set against this background, the concept of external convertibility of the currency is important as it can influence the liquidity at the domestic level of others countries.

During the last global financial crisis, the excess of global liquidity combined with liquidity shortfalls on financial markets fuelled a “liquidity paradox” (Chandrasekhar and Ghosh, 2009). This points out the (twofold) multiple dimensions of liquidity: the monetary versus market and funding

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<sup>1</sup> Global liquidity in the spillover analysis excludes the 16 countries under investigation.

<sup>2</sup> Belke et al. (2010) use aggregates data for eleven developed countries.

concepts. Monetary liquidity traditionally refers to the *official* liquidity and can be defined according to the BIS as the “funding that is unconditionally available to settle claims through central banks” (Bank of International Settlement, 2011). In this sense monetary liquidity represents overall funding conditions in the whole economy. Conversely market and funding liquidity broadly refers to the *private* liquidity, i.e. created by the financial and non-financial sectors through cross-border operations (BIS, 2011). More precisely, market liquidity can be defined as the ease to trade financial assets (i.e. without created disruptions on these prices) whereas funding liquidity generally represents the ease for financial institutions to obtain funding. For our purpose, we will focus particularly on monetary liquidity.

Contributions to the literature provide several indicators to assess this concept of global liquidity. In particular, two categories of indicators can be identified: quantitative measures and price measures.

The main quantitative measures include monetary aggregates and credit aggregates. The former can be viewed as an extension of liquidity measures at the domestic level. Baks & Kramer (1999) proposed several aggregate indicators for the G-7 countries, based on narrow and broad money, using three different methods (GDP-weighted and unweighted growth rate of both narrow and broad money and lastly Divisia indices of global money growth).

Domestic credit (scaled by GDP) was also used as quantitative measure of global liquidity as it can be considered as the major counterpart of money supply (Gouteron & Szpiro (2005)).

In addition, global liquidity can be proxied by reserve money and/or foreign exchange reserves. Artus & Virard (2010) define global liquidity as “the money created by central banks around the world”, i.e. all monetary bases. Another strand of literature focuses on foreign exchange reserves to assess global liquidity<sup>3</sup>, where they could sometimes be associated with reserve money of advanced economies

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<sup>3</sup> Foreign exchange reserves can be considered as the main counterpart of reserve money.

(Darius & Radde (2010) and De Nicolo & Wiegand (2007)). Indeed, these measures take into account the increasing role of liquidity created by emerging market economies.

Based on these various indicators, norms have been established to distinguish periods of global excess liquidity to shortage liquidity periods. The leading works on this topic are largely based on those of Baks & Kramer (1999). They consider as a norm for global liquidity the rate of GDP growth in the economy. This threshold relies on the quantitative theory of money expressed by  $M.V = P.Y$ , with  $M$  the total amount of money in circulation in a country during a defined period,  $V$  the turnover in the money supply, i.e. the transactions velocity of money,  $Y$  the real output and  $P$  the corresponding price level.

$$\frac{M}{PY} = \frac{1}{V} = k$$

Following the hypothesis of a relatively stable velocity of money related to the quantity theory of money, we get after linearization and differentiation of the last equation:

$$\tilde{m}_t = m_t - g_t$$

With  $\tilde{m}_t$  the excess money growth observed,  $m_t$  the growth rate of money in the economy and  $g_t$  the growth rate of GDP. Thereby, the threshold of excess liquidity may be defined when the growth in money supply exceeds the growth rate of GDP.

As underlined by Gouteron & Szpiro (2005), this threshold represents the one required for the “normal” economic development of the economy without creating a situation of overheating. In other words, it is the level of liquidity compatible with the objective of price stability.

Other measures of excess liquidity have been used such as the money overhang, which represents the deviation between the actual level of money supply expressed in nominal terms with an equilibrium value being a function of long-term demand for money. A combination of this indicator and that of Baks & Kramer (1999) is the real money gap. It represents the deviation of the actual quantity of

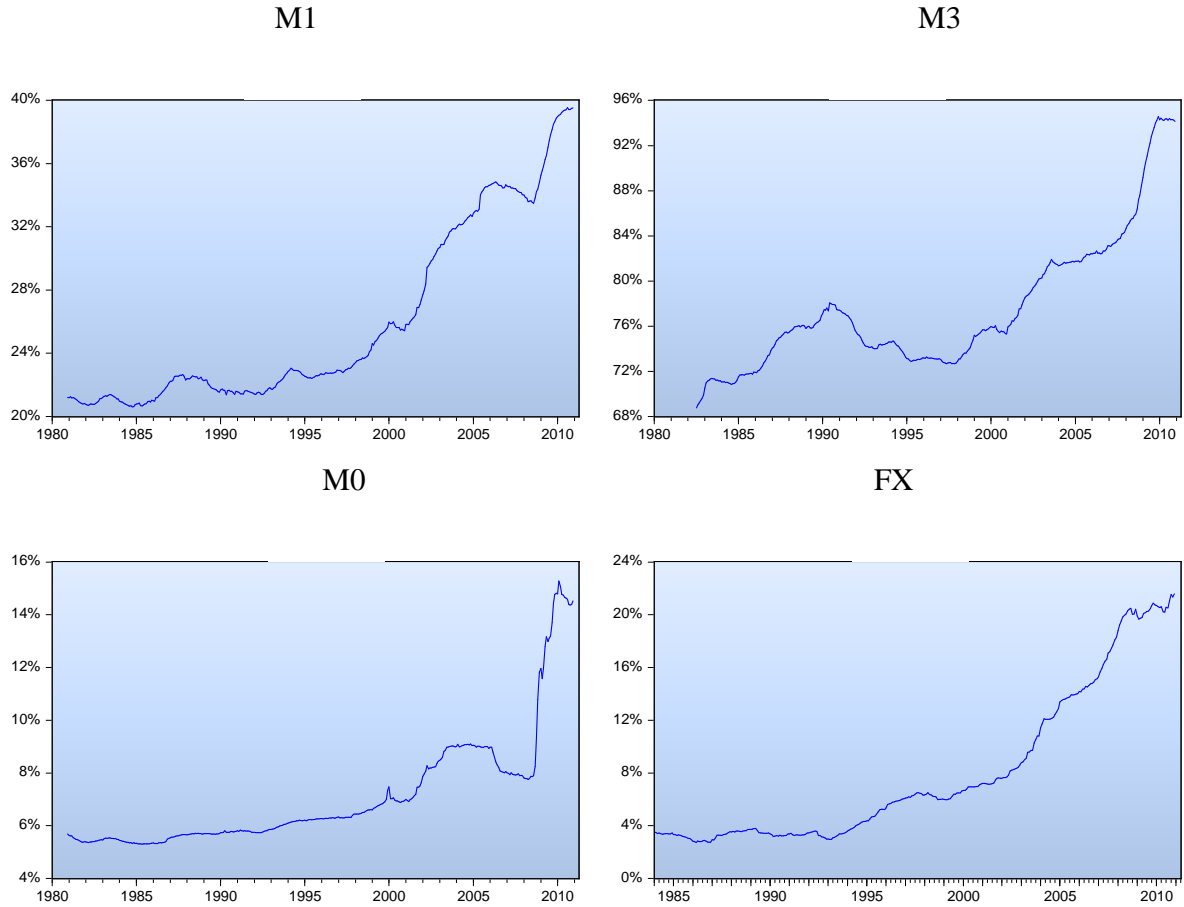
money in real terms. This is based on the quantitative theory of money and incorporates a specification of the velocity of circulation of money (Berger and Harjes, 2009). Other indicators are based on credit, featuring notably the differential in the rate of growth of credit and that of GDP. Another measure, the credit gap, is proposed by Borio & Lowe (2002). A credit gap is defined when “the ratio of credit to GDP deviates from its tendency towards a specific value”. According to these authors, the deviation (measured by the variance of the ratio) must exceed four percentage points from its trend to be described as excessive. The method used to determine the threshold is drawn from the works of Kaminsky & Reinhart (1999).

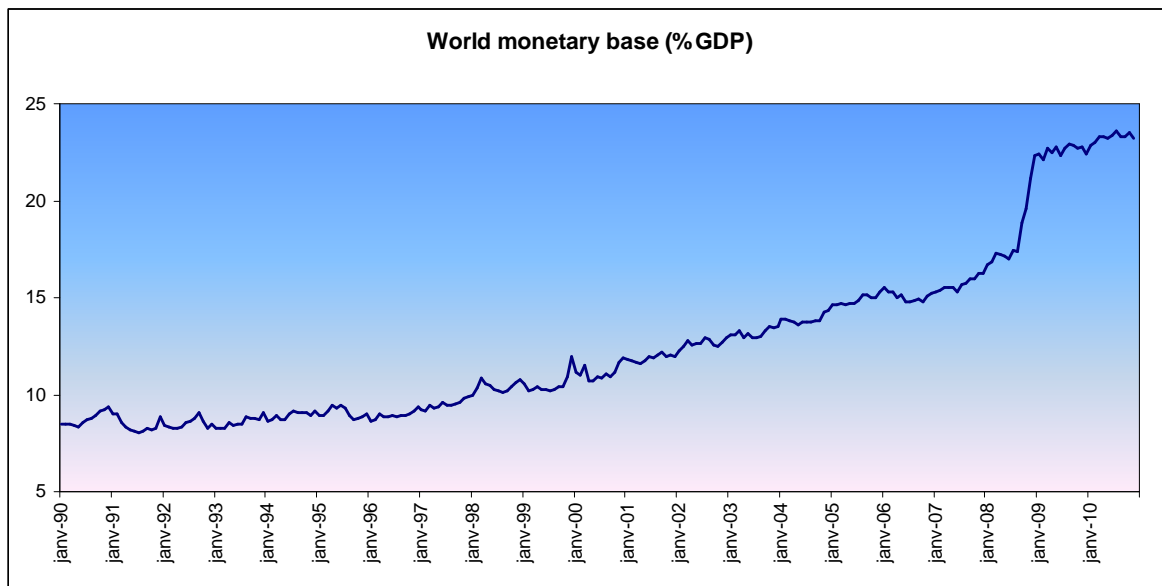
Besides these quantitative indicators, price indicators can be considered. There is a fairly close relationship between prices and quantities. De Nicolo & Wiegand (2007) propose an indicator of global excess liquidity based on the deviation of short-term nominal interest rate from the Taylor rate. The Taylor rate results from reactions of monetary authorities to output gap and inflation differential and reveals the preference of central banks underlying the conduct of monetary policy. Therefore, the gap between this threshold (Taylor rate) and the short run nominal interest rate could reflect an excess of money supply, if the current rate is below the Taylor rate. A second approach is presented by Gouteron & Szpiro (2005). According to them, excess of monetary liquidity would be assessed by the difference between the short term real interest rate and the natural interest rate deriving from the long run growth.

We have constructed several indicators in order to assess the possible excess of global liquidity. The first ones define the excess liquidity as a ratio of a monetary aggregate to nominal GDP (Figure 1). *M0*, *M1* and *M3* are based on the monetary supply of industrialised countries only. Foreign currency reserves (*FX*) are those of OPEC countries, China, India and Japan. The *world monetary base* aggregate represents the global monetary base coming from the IMF data translated at the current exchange rate. It includes the US, the euro zone, Japan, the UK, Australia, Canada, eight Asian emerging countries,

China, OPEC countries, Central and Eastern European countries, Russia and seven Latin American emerging countries. These aggregates are expressed as percentage of GDP.

**Figure 1 Global liquidity indicators (% GDP)**



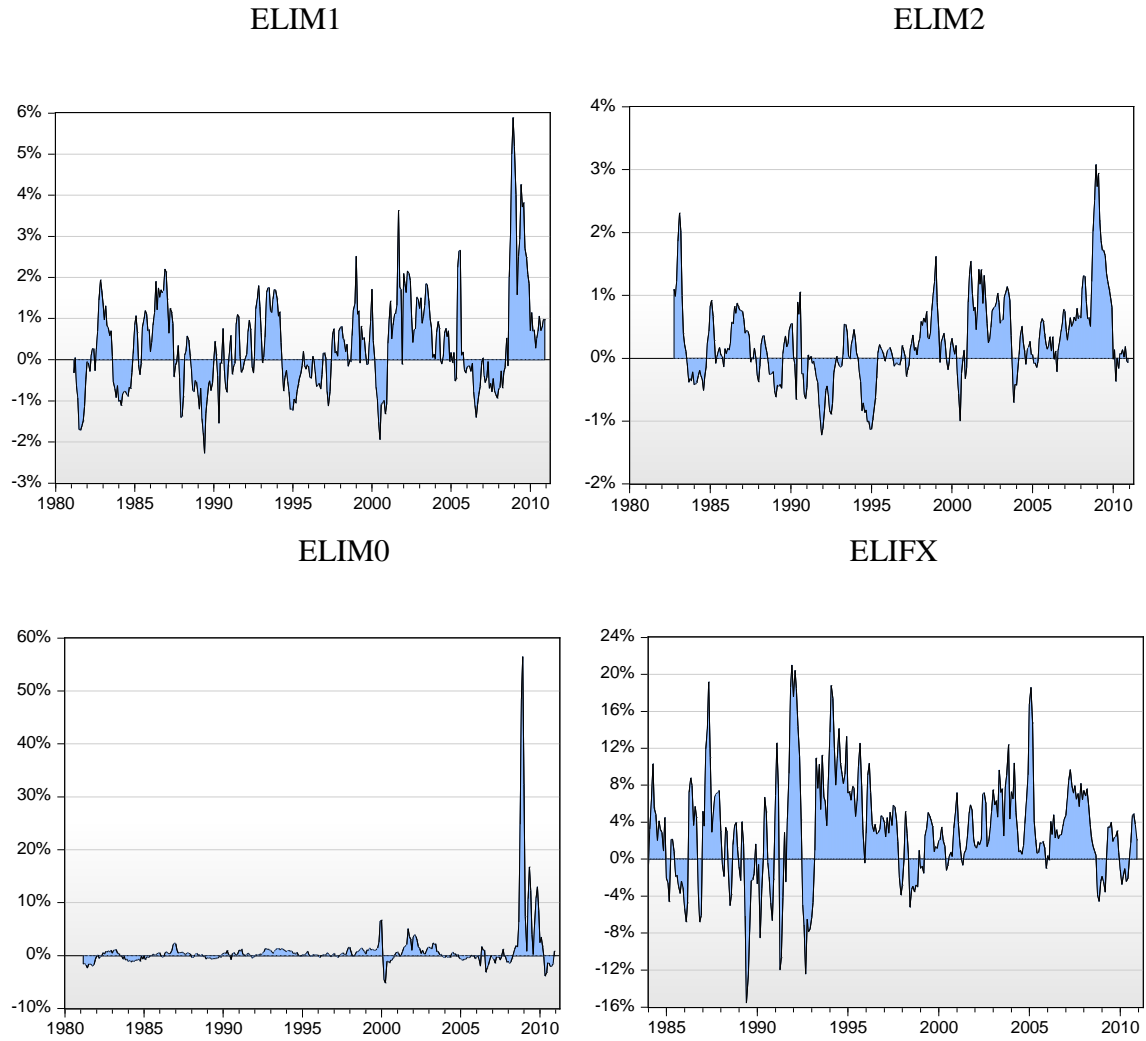


Regardless of the measurement (global monetary base (M0), broad (M3) and narrow (M1) monetary aggregates or foreign currency reserves as percentage of GDP<sup>1</sup>), it seems that global liquidity stayed fairly stable up to 1995 and has increased sharply from this date. This is confirmed with the indicators based on the growth differential between money supply and GDP (figure 2). We use several indicators named *ELIM0*, *ELIM1* and *ELIM3* (respectively the differences between the growth rates of M0, M1 and M3 aggregates and the growth rate of GDP in industrialised countries), and the growth rate of foreign currency reserves (*ELIFX*). In the same way, we calculate the differential between the growth rate of the “world” monetary base and the growth rate of the “world” nominal GDP (*World elim0*).

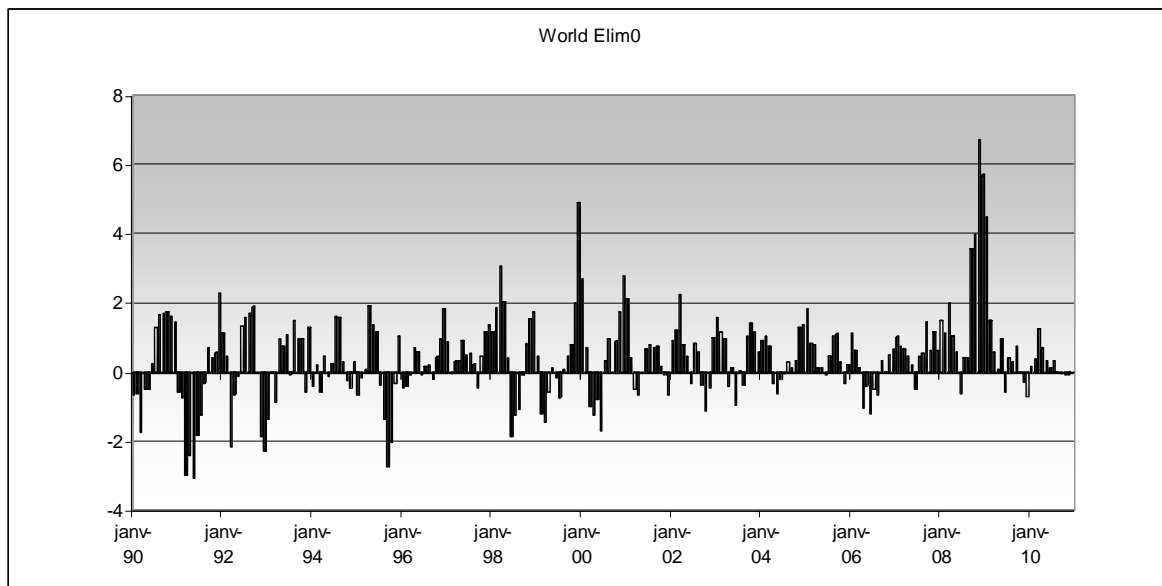
Indicators of excess liquidity provide overall confirmation of this breaking point in the trend. Prior to 1995, excess liquidity was relatively low and only for rather brief periods. These surpluses were accompanied by, fairly cyclically, declines in liquidity or even deficits. As regards indicators based on M1 or M3 aggregate, surplus liquidity followed a path around 0 and fluctuations appears to be relatively weaker than those observed few years later. The same pattern is evident in terms of foreign exchange reserves. Before 1995, the growth rate in foreign exchange reserves increased slowly and even

decreased for oil-exporting countries. The decline in oil prices as from 1980 had been followed by a slow down of foreign currency reserves.

**Figure 2. Global excess liquidity indicators**







It is thus as from 1995 that global excess liquidity really became an issue. All indicators point out the global liquidity growth exceeding the growth rate of GDP. Phases of surplus liquidity become increasingly of importance in terms of amount and also for longer period. From 1995, global liquidity, based for example on M1 aggregate and, to a lesser extent, on M3 started to grow on the back of several interest rate cuts, leading by the Japanese monetary authorities, prompted by the banking and financial crisis that hit the economy. The low interest rate environment in Japan coupled with the introduction of the Euro in 1999, which has been accompanied by an increase of money supply above the target established by the ECB (+ 4.5%)<sup>4</sup>, could also have played a major role.

The domestic credit, although held back during the 2000 Internet crisis, started to climb again on the back of large expansionist monetary policies pursued by central banks in advanced countries (Federal Reserve, ECB, etc.) after the dot.com crisis. The excess liquidity reflected in ELIM1 during the first part of the 2000s is also obvious, except between 2005 and 2006 where major Central Banks in

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<sup>4</sup> This argument must be viewed carefully in the context of exogenous factors linked to institutional and statistics changing.

advanced countries tightened monetary conditions. Finally the current financial crisis and measures adopted by monetary authorities have boosted liquidity once more.

Since 1995, foreign currency reserves have risen exponentially with the development of Brazil, India and China and the huge oil revenues generated by OPEC countries. These countries with current account surpluses along with Japan have thus considerable available resources that can earn a return on the capital markets.

Lastly, turning to monetary bases, once again the charts indicate that the phases of surplus liquidity are becoming more frequent and wider than the phases of a liquidity deficit, and also that imbalances are growing over time.

### **3. The impact of global excess liquidity on emerging economies**

In a global environment characterized by excess liquidity, which can be attributed in large part to monetary easing in advanced countries, international investors increase their demand for higher-return assets to optimize the risk-return ratio of their portfolio. This excess liquidity encouraged capital flows to emerging markets, leading upward pressures, sometimes excessive on both asset prices and exchange rates in these countries.

To what extent excess liquidity can encourage international investors to search for higher yields, driving asset prices up, especially in emerging markets? Few studies have tackled this question. Most of them focused on the impact of global liquidity on output, inflation and asset prices using VAR models, though only for advanced economies. Sousa and Zaghini (2008) showed that a shock on global liquidity in the G5 countries has a positive impact on real GDP, but only in the short run. The impact on aggregate prices is positive only with a lag. These results are confirmed by those obtained in a single country framework. Back and Kramer (1999) find for the G7 countries that global excess liquidity has a negative

impact on real interest rates but a positive impact on equity prices. They also emphasize cross-country spill-over effects on stock returns and interest rates of a shock on liquidity in a given country. Ruffer and Stracca (2006) also examine the cross-border transmission effects of global excess liquidity, which they find to be significant and positive on production and on broad money in the euro zone and in Japan, though not in the US. They suggest, as did Grilli and Roubini (1995) that the US could be a “leader” internationally as the economy seems to be insulated from a global monetary shock. Belke et al. (2010) studied the interaction between global liquidity and the level of goods and asset prices for eleven OECD countries. Whereas monetary aggregates provide leading information on property prices, gold prices and global GDP deflator, equity prices do not react to liquidity shocks. These results are in line with Giese and Tuxen (2007) who showed that global liquidity has an impact on property prices but not on stock prices. Darius and Radde (2010), also find for the G7 countries that global liquidity provide useful information on property prices – although domestic variables play a more significant role than global variables– though not on equity prices (based on the MSCI world index). All these analyses were conducting by using VAR models and impulse functions.

Studies concerning the impact of liquidity on emerging countries are rather scarce and more recent. Chudik and Fratzscher (2011) compare the role of the tightening of monetary conditions (estimated by the change in the 3-month money market interest rate) and the collapse in risk appetite (evidenced by a shock on the VIX index or the TED spread) in the global transmission of financial crises measured by the change in the stock market index. They show that liquidity shocks are felt more by leading countries, while emerging economies are affected more by changes in risk appetite. Lastly, the IMF (2010) examines the link between growth in global liquidity and asset prices (equity returns) in “receiving” emerging countries. The regression (panel data) indicates that global liquidity is positively associated with equity investments between 2003 and 2009, which may explain the rise in returns.

## 4. Empirical analysis

We investigate the impact of surplus global liquidity on a set of prices for a sample group of 16 emerging economies in Latin America and Asia (Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela, India, Indonesia, Malaysia, Philippines, Taiwan, South Korea, Thailand, Hong Kong and Singapore) over a period from 1990 to 2010 with a monthly frequency<sup>5</sup>.

We collect data on monetary bases (i.e. M0) for a large sample including both advanced and emerging market countries<sup>6</sup>. All data are drawing from the IMF's International Financial Statistics. As monetary bases are expressed in local currencies, we convert all time series in the same unit by using nominal exchange rates against dollar measured at the end of each month. Finally we create a series called the "world" monetary base by simply summing monetary bases for all countries of our sample for each period. The "world" monetary base is expressed in billion dollars. We also create a series called "world" GDP by summing nominal GDPs for our set of countries expressed in dollar terms for each period. In order to study the spillover effects of the global monetary base, we do not include the contribution of the 16 emerging countries to the world monetary base.

Then we construct two indicators of excess global liquidity at the aggregate level. The first one is calculated as the differential between the growth rate of the "world" monetary base and the growth rate of the "world" nominal GDP. The second one is calculated as the ratio of "world" monetary base to "world" nominal GDP expressed in percentage.

In order to identify international transmission of monetary shocks, we used a panel vector autoregression (PVAR) model, developed by I. Love and L. Ziccino (2006). This model allow for individual heterogeneity in the levels of the variables by introducing fixed effects ( $\mu_i$ ). It can be written as:

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<sup>5</sup> But data for some countries are available only on a shorter sample.

<sup>6</sup> The sample includes United States, United Kingdom, Japan, Australia, New Zealand, Sweden, Denmark, and the euro zone for advanced countries. For emerging countries, we include China, South Africa and ten countries from Central and Eastern Europe including Russia and Turkey. The sample comprises also three oil exporting countries, i.e. Qatar, Kuwait and Saudi Arabia.

$$X_{i,t} = \mu_i + \Theta(L)X_{i,t} + \chi_t + \varepsilon_{i,t}$$

with  $i = 1, \dots, N$  ( $N=16$ ),  $t = 1, \dots, T$  ( $T= 252$ )

$\Theta(L)$  is the lag operator.  $X_{i,t}$  is a vector of 6 macroeconomic variables (moy, gdp, cpi, crb, stock, house). Moy is the world monetary base on the world GDP. This global variable excludes the 16 emerging countries under investigation. We order the monetary variable first because it is expected to be more exogenous with respect to the other variables in the short run. In a spillover analysis it is assumed that domestic factors lag behind global factors (Darius and Radde, 2010). The increase of global liquidity is likely to be associated with a rise in aggregate demand and will thus increase the prices of several assets: housing, equity, commodities and consumer goods. For each of the 16 emerging countries, we collect data on real GDP (GDP), a consumer price index (cpi), a house price index (house)<sup>7</sup> and a asset price index (stock). Moreover we include the CRB commodity index (crb), which is a basket of internationally traded commodities, including oil. The Cholesky ordering of our variables follows the literature and the relative sluggishness of variables' response to shocks. In particular, it is standard to order output and prices before equity and property prices (Belke et al. 2010 ; Souza, Zaghini 2008).

Helmert transformation is used in order to remove the individual effects ( $\mu_i$ ) (ie the difference between each variable and its forward mean)<sup>8</sup>. It preserves the orthogonality between transformed variables and lagged regressors. We have also removed the country time dummy variables ( $\chi_i$ ) by subtracting the means of each variable calculated for each country year<sup>9</sup>. Coefficients are estimated by GMM, lagged regressors being used as instruments.

A quarter order PVAR has been estimated using monthly data from January 1990 until December 2010. In order to compute impulse respond function, we identify the shocks using Choleski

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<sup>7</sup> The data on residential property price are not always comparable across countries.

<sup>8</sup> See Arellano, Bover (1995).

<sup>9</sup> Countries specific time dummies capture country specific macro shocks.

decomposition (confidence intervals are generated with Monte Carlo simulations). Results are presented in the following figures.

**Figure 3: Impulse responses to a liquidity shock (moy)**

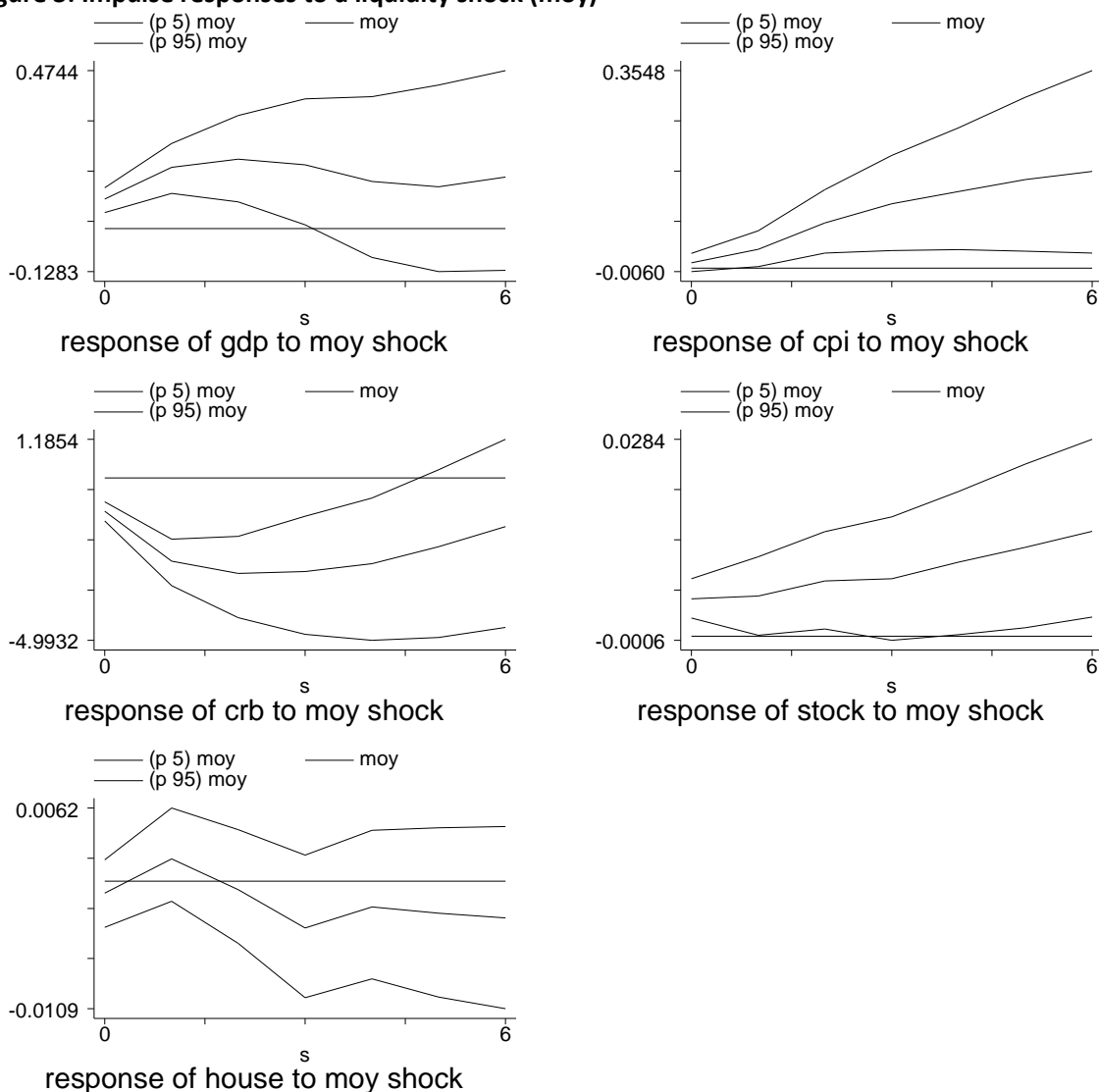


Figure 1 shows that an increase in the global excess liquidity has a positive impact on real GDP in the short run, but this impact disappears in the medium to long run. The effect of monetary shock on prices is quite low in the first months but becomes significantly positive and permanent. These results are consistent with what one expects from a monetary policy shock: it increases output temporarily and

the price level persistently. Excess global liquidity has an impact on emerging economies, as if it were a domestic monetary shock. The impact on asset prices is less significant. As seen in the figure, asset prices index doesn't appear very sensitive to changes in global liquidity. Moreover, asset prices do not show a clearly positive response to a monetary impulse. This weak relationship between global liquidity shocks and share prices is very similar to results obtain for industrialized countries (Ruffer and Stracca 2006, Giese and Tuxen 2007). However, the negative response of the CRB index is rather surprising. As expected, as the supply of house is inelastic relative to other assets, its price reacts more strongly, at least in the short term (Darius, Radde, 2010). This contrasts with the relationship between global excess liquidity and consumer goods prices, which are more supply elastic. The short term cpi response is weaker.

Finally, we present the variance decomposition analysis up to 30 months, using the same choleski ordering. Table 1 indicates the percent of the variation of one variable that is explained by a (one standard deviation) shock in another variable, the excess global liquidity here, accumulated over time.

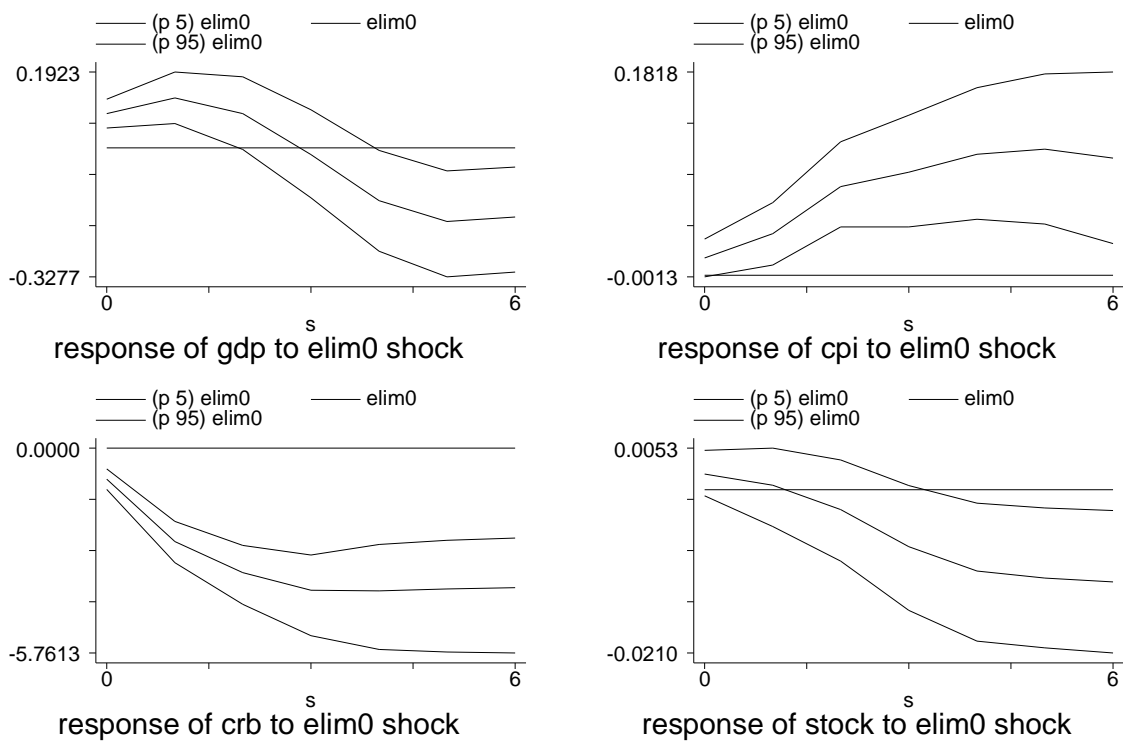
**Table 1. Variance decompositions: percent of variation of the row variable explained by the excess liquidity variable**

	10 months	20 months	30 months
Gdp	2	6.5	11.9
Cpi	2.5	3.8	5.3
Crb	2.7	7.2	18.4
Stock	2.4	9.9	18
House	0.3	0.3	1.4

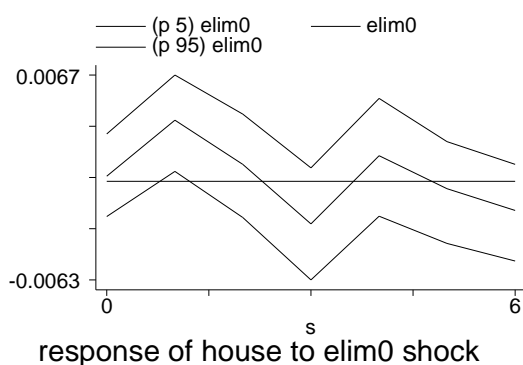
The forecast error variance decomposition shows that the contribution of unexpected monetary shocks is rather limited in the short run, but increases over time. Global excess liquidity explains almost 20% of total variation of commodities prices and stock prices 30 periods ahead (2.5 years). The response of real estate prices is significantly lower.

Our main findings are robust to some alternative specifications of the VAR model, such as in the ordering of the variables or the number of lags (we estimated the same equation with 2 and 3 lags). Another test of robustness was to replace the indicator of excess global liquidity moy (world monetary base on the world GDP) by elim0 (the differential between the growth rate of the world monetary base and the growth rate of the world nominal GDP) (Figure 3). Results are very similar from a qualitative point of view (except for stock prices) although with less statistical significance (in the pvar estimation, as in the variance decompositions, not reported here).

**Figure 3: Impulse responses to a liquidity shock (elim0)**







Finally, our results are broadly in line with previous studies. We found evidence of spillover from excess global liquidity to economic conditions in emerging countries. Global liquidity shocks matter for price and output fluctuations. However, the relationship with asset prices (which includes commodity, property and equity) appears weaker.

## 5. Conclusion

The global excess liquidity, regardless of the indicators used, increased from the mid-ninety, before accelerating again in early 2000 with the easing of monetary policies of industrialized countries, following the collapse of the Internet bubble in the U.S., then in 2008-2009 to the subprime crisis. So far, the relationship between money growth, asset and good prices has been little studied in an international context, and only of industrialized countries. In this paper, we analyze the effects of global monetary shocks on emerging countries. By focusing on spillovers effects of global liquidity and on emerging countries, this paper contributes to the debate. Moreover, our broad liquidity measure allows us to consider the role of international reserves. We find support that excess of global liquidity generates significant spillovers to the emerging countries. It contributes to the increase in GDP and in consumer prices in these countries. However the relationship between global liquidity shocks and share prices or real estate prices is weaker. The findings of this paper are broadly in line with previous studies applied to industrialized countries.

The mixed results on asset prices may have several explanations. First, the monthly frequency of our panel is maybe too short to adequately take into account spillovers. Then it might be useful to distinguish spillovers according to country size. Some authors showed that large-sized countries are more insulated from global liquidity shocks. Finally, as suggested by Darius and Radde (2010), between boom and bust phases of the business cycle, the impact of liquidity may not be symmetric. Especially in periods of global crisis, we would expect a negative rather than positive relationship between liquidity and asset prices. Again, it might be profitable to distinguish sub-periods for the econometric analysis

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