



## IV SPECIAL FEATURES

### A PORTFOLIO FLOWS TO EMERGING MARKET ECONOMIES: DETERMINANTS AND DOMESTIC IMPACT

*This special feature describes the recent wave of private capital flows to emerging market economies (EMEs), analyses the drivers of the flows and discusses the impact of portfolio flows on domestic macro-financial conditions. Currently, private capital flows to emerging markets are characterised by a surge in portfolio inflows which have reached similar levels to those prevailing prior to the onset of the financial crisis in 2007. The prospect of sudden stops and reversals sometimes associated with strong portfolio inflows can complicate the management of domestic macro-financial conditions in EMEs with potential negative financial stability implications. One of the key risks over the medium term linked to such flows is a boom/bust cycle in one or more systemically important emerging economies, along with the unwinding of imbalances and possible contagion. A bust could create severe disruptions in global financial markets and affect the euro area through a rise in global risk aversion, as well as through direct real economy and financial market linkages.*

#### INTRODUCTION

Total private capital inflows to EMEs have rebounded steadily from the financial market turbulence that followed the bankruptcy of Lehman Brothers at the end of 2008. However, the rebound has been uneven across different categories of flows. While the recovery of foreign direct investment (FDI) and banking flows has been sluggish overall and displayed substantial differences across regions, portfolio investment flows into emerging market equity and debt securities have been strong. Recently, the size of portfolio inflows reached unprecedented levels in absolute terms and historically high levels relative to the economies of recipient countries.

While capital flows form an integral and natural ingredient of international macroeconomic

efficiency in normal circumstances, strong and potentially volatile portfolio inflows can complicate the management of domestic macro-financial conditions in EMEs. This could entail negative financial stability implications through the unravelling of imbalances and contagion. Over the short term, portfolio flows driven by volatile factors, such as, for example, herding behaviour among investors, the search for yield and global risk appetite, could lead to a mispricing of financial assets, with the associated risk of a sudden adjustment. Over the medium term, prolonged strong net portfolio inflows could inflate asset prices and fuel credit growth, raising the risk of boom/bust cycles in one or more EMEs. Such a bust could create severe disruptions in global financial markets and affect the euro area through a rise in global risk aversion, as well as through direct real economy and financial linkages.

#### THE CURRENT WAVE OF PRIVATE CAPITAL FLOWS TO EMERGING MARKET ECONOMIES

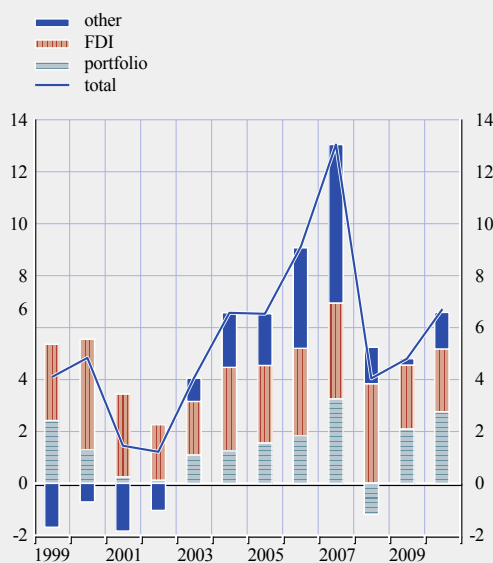
The recent evolution of total private flows to EMEs has been somewhat volatile, as they decreased sharply in 2008, stagnated in 2009 and recovered in 2010 (see Chart A.1).<sup>1</sup> In conjunction with this volatility, the composition of private flows has also changed. While in 2007 banking flows and FDI were the largest components, this picture changed with the onset of the crisis. FDI and banking flows contracted strongly in 2008 and 2009, while portfolio investment increased sharply after the outflows recorded in 2008. As a consequence, in 2010 portfolio flows accounted for a large fraction of total private capital inflows.

In 2010, from a historical point of view, the size of portfolio flows was unprecedented in absolute terms, while relative to the economies of recipient countries (i.e. in terms of GDP), it reached levels similar to those recorded in 2007, just prior to the financial crisis.

<sup>1</sup> The sample of EMEs analysed in this section includes 19 countries: Argentina, Brazil, Chile, Colombia, Croatia, Hong Kong, India, Indonesia, Malaysia, Mexico, Pakistan, Peru, the Philippines, Russia, South Africa, South Korea, Thailand, Turkey and Venezuela.

**Chart A.1 Total private capital flows into emerging market economies**

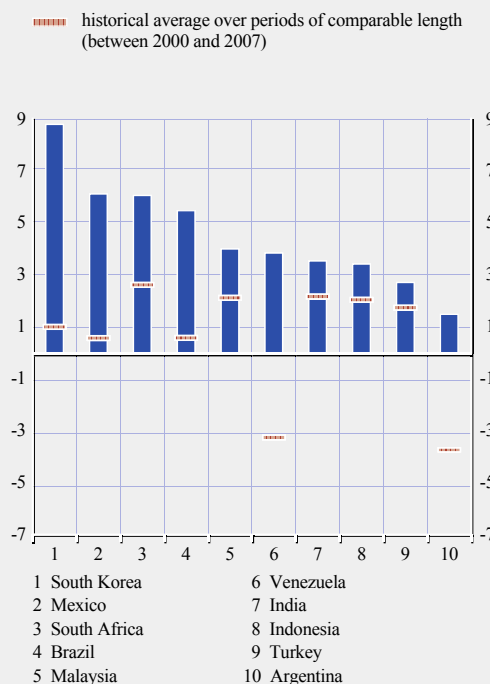
(1999 – 2010; percentage of GDP)



Source: IMF.  
Notes: Other flows include banking flows. Based on 19 emerging market economies (see footnote 1 in this special feature).

**Chart A.2 Top ten recipients of net portfolio inflows to emerging market economies**

(cumulated net inflows between Q2 2009 and Q4 2010; percentage of GDP)



Source: IMF.  
Note: Based on a set of countries including 19 emerging market economies (see footnote 1 in this special feature).

Chart A.2 shows the cumulated net portfolio inflows between the second quarter of 2009 and the last quarter of 2010 in the top ten recipient countries. For the purposes of comparison, the chart also shows the average cumulated flows in time intervals of comparable length (seven quarters) in the pre-crisis period, between 2000 and 2007. Overall, net portfolio inflows exceed historical averages in all of the top ten recipient countries.<sup>2</sup>

Looking forward, sustained and even larger portfolio flows to EMEs cannot be excluded. The attractiveness of EMEs as an asset class has increased in the aftermath of the crisis for a number of structural reasons. These include their strong resilience thus far to the financial crisis, perceived sounder fundamentals in the form of a favourable growth outlook, relatively strong fiscal positions in some

regions and comparatively stable banking sectors. Against this background, institutional investors might be expected to adjust their portfolios by allocating more weight to the EMEs. Large capital flows could materialise, as EMEs overall have low weights in actual fund allocation compared with commonly used benchmarks.<sup>3</sup>

2 High frequency data on portfolio investment show that net inflows into EMEs were weak overall in the first quarter of 2011 owing to geopolitical tensions and the earthquake in Japan. However, recent data show that net portfolio inflows picked up in April 2011.

3 The share that institutional investors allocate to EME equities is small compared with the share of EMEs in world market capitalisation and in the commonly used benchmark indexes. The International Monetary Fund (IMF) estimates that a 1% reallocation of global equity and security holdings by institutional investors in the United States, the euro area, Japan and the United Kingdom would result in around USD 500 billion worth of inflows into EME portfolios. See IMF, *Global Financial Stability Report: Sovereigns, Funding and Systemic Liquidity*, October 2010.

### DETERMINANTS OF NET PORTFOLIO INFLOWS

To quantify the impact of different drivers on net portfolio inflows across EMEs, an econometric model is used to explain net portfolio inflows in one country with push and pull factors having different degrees of volatility. In particular, the determinants of net portfolio inflows in 19 countries across emerging market regions are analysed. The explanatory variables are global risk aversion (as proxied by the VIX index), domestic short-term interest rate differentials versus the United States (at a three-month maturity)<sup>4</sup>, past equity returns and, lastly, fundamentals, as measured by the change in business surveys or growth in industrial production.<sup>5</sup> The dataset includes monthly data from January 2000 to February 2011.<sup>6</sup>

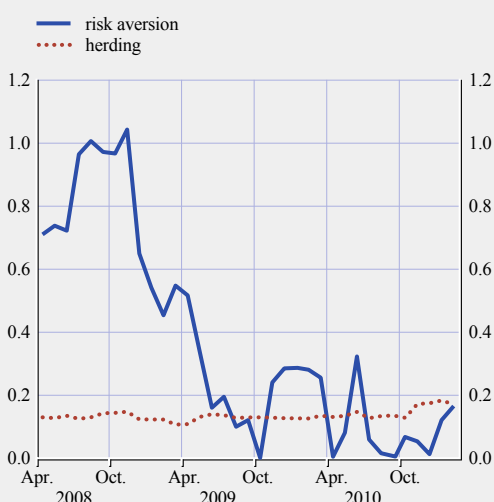
In the econometric model, time-varying regression coefficients aim to capture the fact that the focus of market participants can change over time and thus the determinants of portfolio flows also change across periods. For example, immediately after the bankruptcy of Lehman Brothers, international investors exited from

risky positions in emerging markets in what could be described as a disorderly manner, with scant regard for country or region-specific fundamentals. In that period, the allocation decisions of international investors seem to have been mainly driven by a strong increase in risk aversion. More recently, several analysts have suggested that investors have been searching for yield, and therefore the market focus may be on increasing interest rate differentials between emerging markets and advanced economies. The use of time-varying loading coefficients makes it possible to track the relative importance of such different determinants of portfolio flows over time.

Charts A.3 and A.4 show the average (across countries) measures of dependence of portfolio flows on the explanatory variables included in the model.<sup>7</sup> While these measures only indirectly

**Chart A.3 Dependence of net portfolio inflows to emerging market economies on risk aversion and herding**

(Apr. 2008 – Feb. 2011)



Sources: EPFR, Thomson Reuters Datastream and ECB calculations.

Note: The measures of dependence have been computed as the average of the standardised absolute value of the estimated coefficients ( $\beta$ s) across countries.

4 While interest rate differentials are affected by fundamentals, we list them among the volatile determinants of portfolio flows because they also reflect a number of other factors (including credit and liquidity risk, both at the domestic and global level) which can contribute to making them more volatile than fundamentals. This taxonomy appears to be empirically validated by the model's results, which indicate substantial time variation in the sensitivity of portfolio flows to this factor, i.e. the search for yield is stronger in certain periods

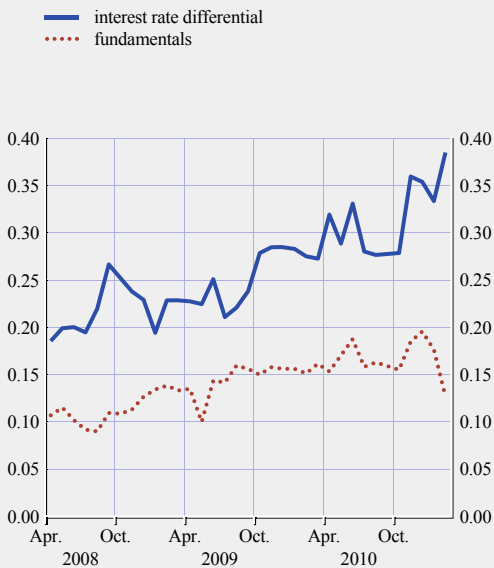
5 The loading coefficient of past local equity returns is often used as an approximation of the importance of herding behaviour among international investors (see IMF, *Global Financial Stability Report: Sovereigns, Funding and Systemic Liquidity*, October 2010). Herding behaviour essentially describes a "backward looking" investment strategy where investors follow market trends in imitation of other investors, i.e. they invest in countries where returns have been higher in the recent past. This strategy, by creating self-reinforcing cycles, could have negative financial stability implications in terms of volatility of net inflows and cause asset prices to deviate strongly from fundamentals, creating boom/bust cycles.

6 The source of net portfolio inflows data is EPFR Global. Other data used in the analysis are provided by Thomson Reuters. See footnote 1 for the countries included in the study.

7 The measures of dependence have been computed as the average of the standardised absolute value of the estimated coefficients ( $\beta$ s) across countries. The estimated  $\beta$ s are statistically significant in almost all of the periods, with some particular exceptions. For example, the estimated  $\beta$  of the interest rate differential is not statistically significant (at the 90% confidence level) between November 2008 and January 2009, after the collapse of Lehman Brothers. This supports the conclusion that investors' decisions in that period were driven by other factors, such as risk aversion, while interest rate differentials were less of a concern. The significance of the estimated  $\beta$ s is assessed by looking at the filter uncertainty that is calculated from the Kalman filtering iteration (see, for example, J. Durbin and S.J. Koopman, *Time Series Analysis by State Space Methods*, Oxford Statistical Science Series, Vol. 24, 2001).

**Chart A.4 Dependence of net portfolio inflows to emerging market economies on interest rate differentials and fundamentals**

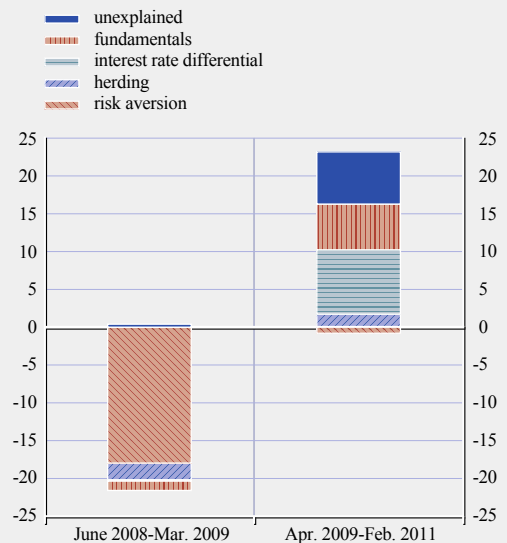
(Apr. 2008 - Feb. 2011)



Sources: EPFR, Thomson Reuters Datastream and ECB calculations. Note: The measures of dependence have been computed as the average of the standardised absolute value of the estimated coefficients ( $\beta$ s) across countries.

**Chart A.5 Contribution of different factors to cumulated portfolio outflows – crisis and recovery period**

(percentage of asset under management)



Sources: EPFR, Thomson Reuters Datastream and ECB calculations.

Notes: The contribution at each time period  $t$  is computed by multiplying the value of the explanatory variable at time  $t$  by the value of the estimated loading coefficient for the variable for that period. Contributions are summed up over the reference periods: June 2008-March 2009 and April 2009-February 2011.

reflect the contributions of each factor to the flows, they show the evolution of the relative importance of each factor across periods, reflecting the change in market participants' focus on different determinants over time.<sup>8</sup>

First, Chart A.3 shows that risk aversion was an important driver of flows during the acute phase of the crisis at the end of 2008. During 2009 and 2010, as market conditions improved, the importance of risk aversion gradually declined. The dependence of flows on risk aversion increased again at the end of 2009 and beginning of 2010 owing to sovereign tensions in Europe, although it remained well below the peak recorded at the end of 2008. Herding behaviour, by contrast, appears to have differed little over the last two years.

Second, the dependence of portfolio flows on interest rate differentials between emerging and advanced economies has increased since

March 2009 (see Chart A.4), supporting the idea that the recent wave of portfolio flows reflects an increase in carry trades and the search for yield.

Third, the dependence of portfolio flows on fundamentals has also increased overall since October 2008, reflecting the increased attention paid by investors to developments in EMEs' fundamentals (see Chart A.4).

Chart A.5 shows the impact of different factors on cumulated net portfolio inflows in the months around the peak of the financial crisis in September 2008, and over the recovery period starting in April 2009. The contribution of each factor has been computed by multiplying the value of the factor by the estimated  $\beta$  coefficient in each month and then cumulating over the reference period.

<sup>8</sup> The contribution of each explanatory variable  $i$  (see below) is computed as the product of the estimated  $\beta_i$  and the explanatory variable  $i$ . The measures of dependence reflect only the  $\beta$ s.

The model suggests that during the peak of the crisis (June 2008 to March 2009) strong outflows from emerging markets were mostly related to an unprecedented increase in risk aversion, whereas the period from April 2009 to February 2011 reflected a combination of different factors (see Chart A.5). While modelled fundamentals played a role in driving the inflows from April 2009, it appears that volatile factors (herding and interest rate differentials) also contributed substantially to the inflows. In particular, the interest rate differential between emerging market and advanced economies became the most important explanatory factor among those included in the model. While, overall, the included factors explain much of the variance in capital flows, it is worth noting that part of these flows over the recovery period remains unexplained. The existence of a persistent and positive component in net inflows that is not explained by the model suggests that some structural factors could be having an impact on capital flows into EMEs. This supports the view of a generalised portfolio reallocation, whereby international investors are structurally increasing asset allocations into EME assets.

#### DOMESTIC IMPACT OF PORTFOLIO FLOWS

While the capital flows form an integral and natural ingredient of international macroeconomic efficiency under normal circumstances, the current size of portfolio flows and the potential for even stronger flows raise financial stability concerns. In the past, strong waves of net portfolio inflows have preceded episodes of financial instability in emerging markets, such as, for example, the Mexican crisis in 1994 and the Asian crisis in 1997.<sup>9</sup>

Portfolio flows have been the most volatile component of private capital flows, and sudden stops or quick reversals of flows can have detrimental effects on the recipient economies. Exchange rate and asset price volatility could increase substantially and domestic financing conditions deteriorate suddenly.

If portfolio flows prove to be persistent, e.g. owing to structural portfolio rebalancing by international investors, strong net inflows could have a destabilising impact on emerging market economies through several channels.

First, strong net inflows can produce undesired real exchange rate appreciation, leading to overshooting and undermining the competitiveness of the economy.

Second, they can cause asset mispricing by placing further upward pressure on assets in countries where valuations are already high. To illustrate this, country-specific VAR models were estimated using monthly data for a sample of 19 EMEs.<sup>10</sup> Next to net portfolio inflows, the world business cycle as well as domestic industrial production, inflation, policy interest rates and stock market prices were included in the model. According to the model estimates, a shock to net portfolio inflows has a strong effect on equity prices across emerging markets and produces a monthly increase in equity prices of around 3.5% (see Chart A.6). In a number of countries, the effect of portfolio flows on equity prices persists for two to three months. The effect is economically relevant across emerging markets as the shock to portfolio flows explains a large part of the variation in equity prices.<sup>11</sup> In the context of stretched asset valuations in EMEs, strong portfolio inflows could add pressure to asset prices and lead to prices deviating substantially from their fundamental values.

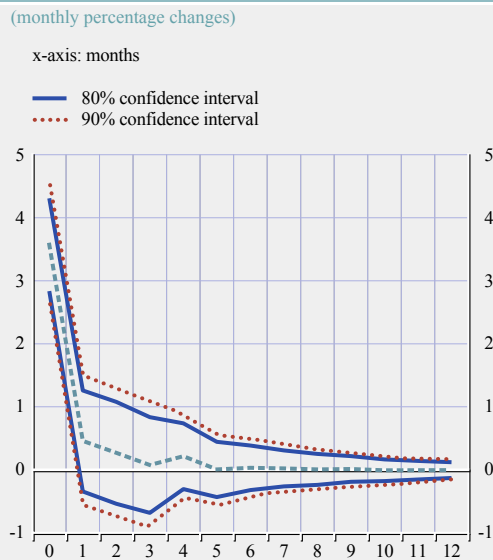
Third, by easing domestic monetary and financing conditions, portfolio inflows can add strong inflationary pressures in those countries

9 See, for example, B. Eichengreen and A. Mody, "Interest Rates in the North and Capital Flows to the South: Is There a Missing Link?", *International Finance*, Vol. 1, Issue 1, October 1998.

10 See footnote 1 in this special feature for the composition of the sample.

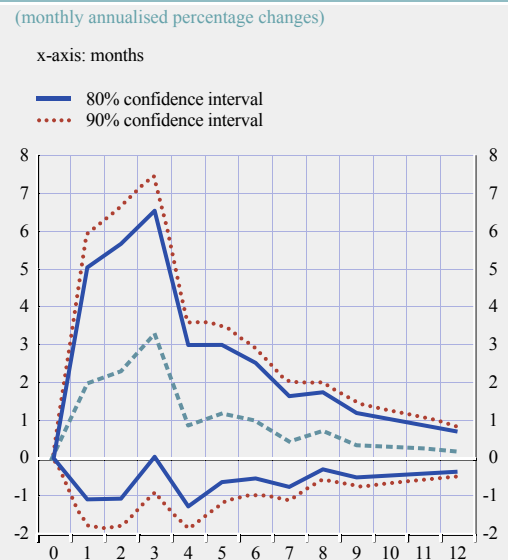
11 The effect varies across countries and displays some negative correlation with the degree of financial development. The larger the stock market capitalisation, the weaker the reaction of equity prices to portfolio flows.

**Chart A.6 Average response of equity prices to a shock to net portfolio inflows to emerging market economies**



Sources: IMF, Thomson Reuters Datastream, Haver Analytics and ECB calculations.  
 Note: Estimated VAR impulse response.

**Chart A.7 Average response of industrial production to a shock to net portfolio inflows to emerging market economies**



Sources: IMF, Thomson Reuters Datastream, Haver Analytics and ECB calculations.  
 Note: Estimated VAR impulse response.

where the economy is close to its potential output.<sup>12</sup> According to the analysis, shocks to net portfolio inflows are found to have a positive impact on industrial production across EMEs (see Chart A.7). The effect reaches a peak around a 3.5% average annualised monthly increase in industrial production three months after the shock. However, the width of the confidence bands shows that there is substantial heterogeneity in the real economy's response to portfolio inflows. Hence, while the economic impact of net portfolio inflows on industrial production may be low for many countries, it is substantial for a number of others, especially in Asia and central and eastern Europe.

Against the background of the potential negative financial stability implications, it is not surprising that the current wave of portfolio flows to EMEs has led to various policy responses and a debate in international fora on their appropriateness. In general, policy responses to manage strong net capital inflows should be tailored to individual countries' circumstances. They should also take into account the nature of the determinants disentangling the role of temporary versus

long-lasting factors. In general, sound domestic macroeconomic policy frameworks and institutions as well as appropriate exchange rate regimes, financial regulation and supervision are the first line of defence against excessive capital volatility. In situations where financial stability risks gain importance, macro-prudential policy measures may be called for to better manage capital flows. From a longer-term perspective, structural policy measures to foster financial deepening will also be necessary.

## CONCLUDING REMARKS

This special feature discussed the recent wave of portfolio inflows into emerging markets. While capital flows are an integral and natural ingredient of international macroeconomic efficiency under normal circumstances, strong portfolio inflows can create pockets of potential instability, particularly in cases where asset price valuations are stretched. In addition, while stable structural factors and fundamentals seem

<sup>12</sup> The effect is even stronger in those countries that are experiencing strong net FDI and banking inflows simultaneously.

to play a role in driving net inflows to EMEs, the evidence presented in this special feature suggests that other volatile factors are at play as well. Strong portfolio inflows could lead to a mispricing of financial assets and volatility and, in the medium term, a boom/bust cycle in one or more systemically important emerging economies. The burst of an asset price bubble in a key EME could create severe disruptions in global financial markets and affect the euro area through a rise in global risk aversion and through direct real and financial linkages. Micro and macro-prudential policies, as well as policies to deepen financial markets and improve the capacity of these economies to absorb persistently large capital inflows, will be crucial to face these challenges.