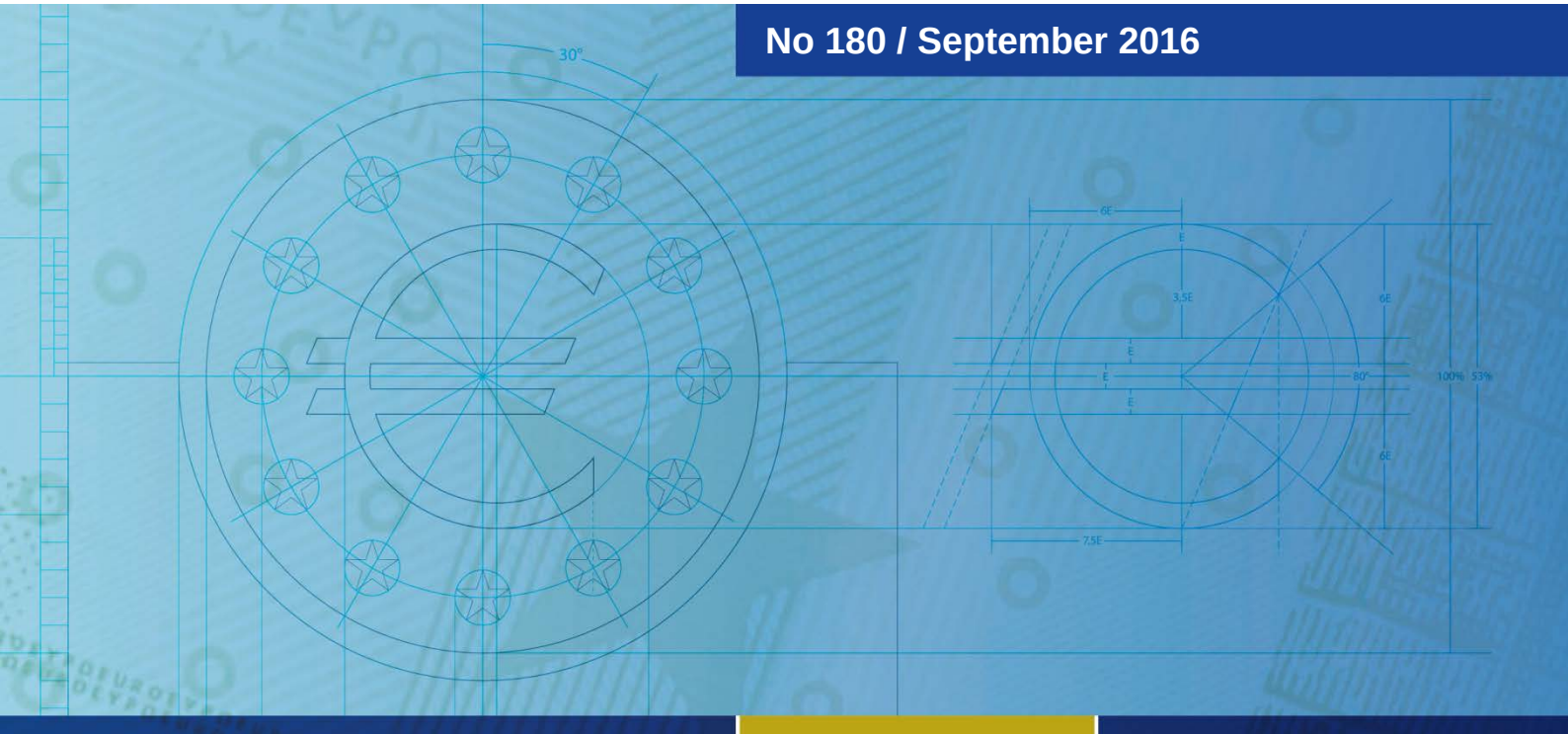
EUROPEAN CENTRAL BANK

EUROSYSTEM

Occasional Paper Series

IRC Task Force on IMF issues

Dealing with large and volatile capital flows and the role of the IMF



No 180 / September 2016

Note: This Occasional Paper should not be reported as representing the views of the European Central Bank (ECB). The views expressed are those of the authors and do not necessarily reflect those of the ECB

Contents

Abstract

The last decade has been characterised by the pronounced volatility of capital flows. While cross-border capital flows can have many benefits for both advanced and emerging market economies, they may also carry risks, which require appropriate policy responses. Disentangling the push from the pull factors driving capital flows is key to designing appropriate policies to deal with them. Strong institutions, sound fundamentals and a large domestic investor base tend to shield economies from adverse global conditions and attract less volatile types of capital. However, when the policy space for using traditional macroeconomic policies is limited, countries may also turn to macroprudential and capital flow management policies in a pragmatic manner. The IMF can play an important role in helping countries to deal with capital flows, through its surveillance and lending policy and through international cooperation.

Keywords: capital flows; capital flow management; international cooperation; IMF

JEL codes: F3; F32; F38; F42; F65; G28

Non-technical summary

In the context of the current international policy debate on how to deal with large, volatile capital flows and the related work in progress at the G20, the OECD and the IMF, this paper provides analytical background material and considers the role that the Fund could play in assisting its members in this matter. The paper documents the recent dynamics and patterns in international capital flows; reviews the literature on the benefits, costs and drivers of cross-border capital flows; analyses the tools employed by recipient countries to manage capital flows –including macroprudential policies (MPPs) and capital flow management measures (CFMs); summarises the international initiatives aimed at providing common principles for using these measures; and considers the role that the IMF could play in assisting its members in dealing with capital flows.

The past decade has been characterised by the pronounced volatility of capital flows. Gross capital flows experienced a large surge in the years that preceded the global financial crisis, and then declined sharply after the fall of Lehman Brothers. The capital flow component that contracted the most during the crisis was the "other investments" (mainly banking flows), while foreign direct investment flows remained relatively stable. The size of the capital flows directed to emerging market economies (EMEs), relative to those directed to advanced economies (AEs), increased significantly after the crisis, coinciding with strong economic growth in many EMEs and expansionary monetary policy in major AEs. In the post-crisis years, gross capital flows to both EMEs and AEs have shown greater volatility, particularly since the so-called "taper tantrum" episode in 2013. Trends in 2015 showed a decrease in gross inflows to EMEs, which coincided with a slowdown in major EMEs, the steep fall in oil prices (and other commodity prices) and a marked appreciation of the US dollar.

Cross-border capital flows can have many benefits for both AEs and EMEs; however, they may also carry risks, which require appropriate policy responses. There is agreement that inflows of capital are largely beneficial to recipient countries, as foreign capital can finance investment, stimulate economic growth and increase consumer welfare by enabling households to better smooth consumption over time. Yet there are also risks linked to the procyclicality and volatility of capital flows, and these increase with the size of the flows. Short-term debt flows, in particular, are often volatile and disruptive, posing serious challenges for policymakers. The risks associated with capital flows also increase when the opening of an EME financial account takes place prematurely or too fast. This calls for an appropriate policy framework to deal with capital flows.

Disentangling push from pull factors is key to designing appropriate policies to deal with capital flows. Where pull factors (such as domestic macroeconomic fundamentals and quality of institutions) are the dominant drivers, policies aimed at improving the local macro environment are key to stabilising capital flows; macroprudential policies may also be required. Where push factors (such as

fluctuations in global risk aversion or AE interest rates) are the dominant drivers, additional tools might also need to be deployed, including CFMs. Push drivers are more relevant in periods of global stress, while local pull factors are dominant in tranquil times.

Strong institutions, sound fundamentals and a large domestic investor base tend to shield economies from adverse global conditions and attract less volatile types of capital. Countries with strong macroeconomic fundamentals and efficient institutions (including sufficiently developed financial markets), an open trade regime, and a stable domestic investor base are less vulnerable to adverse global conditions. Moreover, building strong fundamentals helps countries to attract stable foreign financing in quiet periods.

When the policy space for using traditional macroeconomic policies is limited, countries may also turn to MPPs and CFMs in a pragmatic manner. MPPs are an important first line of defence and should be deployed on an ongoing basis to ensure sound domestic financial systems. To ensure the effectiveness of MPPs, reciprocity frameworks could be applied to macroprudential tools, aside from the countercyclical capital buffer, where international cooperation is thought to be required. The Financial Stability Board (FSB) workstream on asset managers and market liquidity risks to address structural vulnerabilities from asset management activities is an important step towards extending the regulatory perimeter beyond banking, and beyond a focus on recipient countries. CFMs also have a role to play in certain circumstances. Their use has increased since the financial crisis, including the use of currency-based measures, in order to discourage banking inflows. This reflects an increasing awareness of the dangers of currency mismatches and the build-up of foreign currency liabilities. The empirical literature on the effectiveness of MPPs and CFMs has so far produced mixed findings. MPPs are found to be effective in mitigating certain components of systemic risk, but less so in reducing foreign capital inflows, while there is still no consensus on the impact of CFMs on the level of capital inflows.

The IMF can play an important role in helping countries to deal with capital flows, through its surveillance, its role in international cooperation on related policies, and its lending policy:

- **Surveillance.** Given the diversity of country experiences with capital flows, the Fund should provide tailored, granular advice at the bilateral level. Recent initiatives to strengthen balance sheet analysis, the surveillance of the financial sector and macrofinancial linkages, and the monitoring of structural issues will help improve the analysis of and advice on capital flows and related policies. Through its multilateral surveillance, the Fund has a key role to play in the analysis of cross-border spillovers arising from monetary and financial sector policies in systemic countries, as well as from the use of MPPs and CFMs in a broad variety of countries. In this latter respect, consideration could be given to strengthening the focus of the Fund's work, without extending the Fund's jurisdiction to the financial account. More importantly, the IMF is now engaged in reviewing its Institutional View on the Liberalization and Management of Capital Flows, based on a comprehensive analysis of country experiences. This

review should be underpinned by a new holistic framework emphasising the relations between MPPs and CFMs.

- **International cooperation on policies related to capital flows.** There are three major initiatives at the international level to coordinate the use of MPPs and CFMs: the OECD Code of Liberalization of Capital Movements, the G20 Coherent Conclusions, and the IMF Institutional View. The Fund can play a central role in establishing common ground for CFMs, advising on country and region-specific conditions, as well as on global factors that need to be taken into account in order to assess the appropriateness of CFMs. Continued cooperation between the IMF and other institutions will be important for assessing measures that are both MPPs and CFMs. The Fund also plays a central role in the international efforts to close data gaps.

- **Lending.** The upcoming review of the Fund's lending toolkit will consider how to address the challenges posed by increasing financial globalisation and capital flow volatility, taking into account the wider context of the global financial safety net. While regular programmes are best equipped to overcome balance of payments challenges, the review will explore how an adjustment of the toolkit (possibly with a short-term instrument) could better address these concerns while limiting political costs and safeguarding Fund resources, and examine how to address the stigma associated with IMF precautionary facilities.

1 Introduction

The scale, composition and volatility of international financial flows are once again major concerns for policymakers around the world. The current transitions (at the global level and in systemically important economies), the environment of asynchronous monetary policy in major advanced economies (AEs), and the ongoing growth moderation in large emerging market economies (EMEs), against the backdrop of a steep decline in commodity prices, have given rise to increased financial market volatility. Large swings in cross-border capital flows can have consequences for domestic stability and are a channel for the transmission of shocks and spillovers among economies.

As such, the capacity of individual countries and the international monetary system as a whole to deal with capital flows is high on the international policy agenda, and work is ongoing at the IMF, G20 and OECD in this respect. In particular, the Fund's most recent work programme includes a review of country experiences and emerging issues as regards the handling of capital flows. Further work will bring together the workstreams on capital flow management and macroprudential policies to further strengthen guidance for member countries. The G20 has reactivated its International Financial Architecture Working Group (IFA WG), working on measures that would promote an orderly functioning of the international monetary and financial system, including capital flows. Finally, the OECD is working on an update of its Code of Liberalization of Capital Movements, and, together with the IMF, will report to the G20 on approaches to macroprudential policies (MPP) and capital flow management measures (CFM).

This paper by the IRC Task Force on IMF Issues aims to contribute to these discussions by providing background material on the analysis of capital flows, and considers the role the IMF could play in assisting its members in dealing with them. Based on its Institutional View, which was adopted in 2012 to guide the Fund's assessments in the context of surveillance and its advice to members, the Fund is in the process of reviewing experiences with capital flow management. Given that the institution does not have jurisdiction over the financial account, its assistance is provided through regular surveillance and by playing an active role in promoting international cooperation, as well as through its role in the global financial safety net (GFSN), providing both insurance and lending.

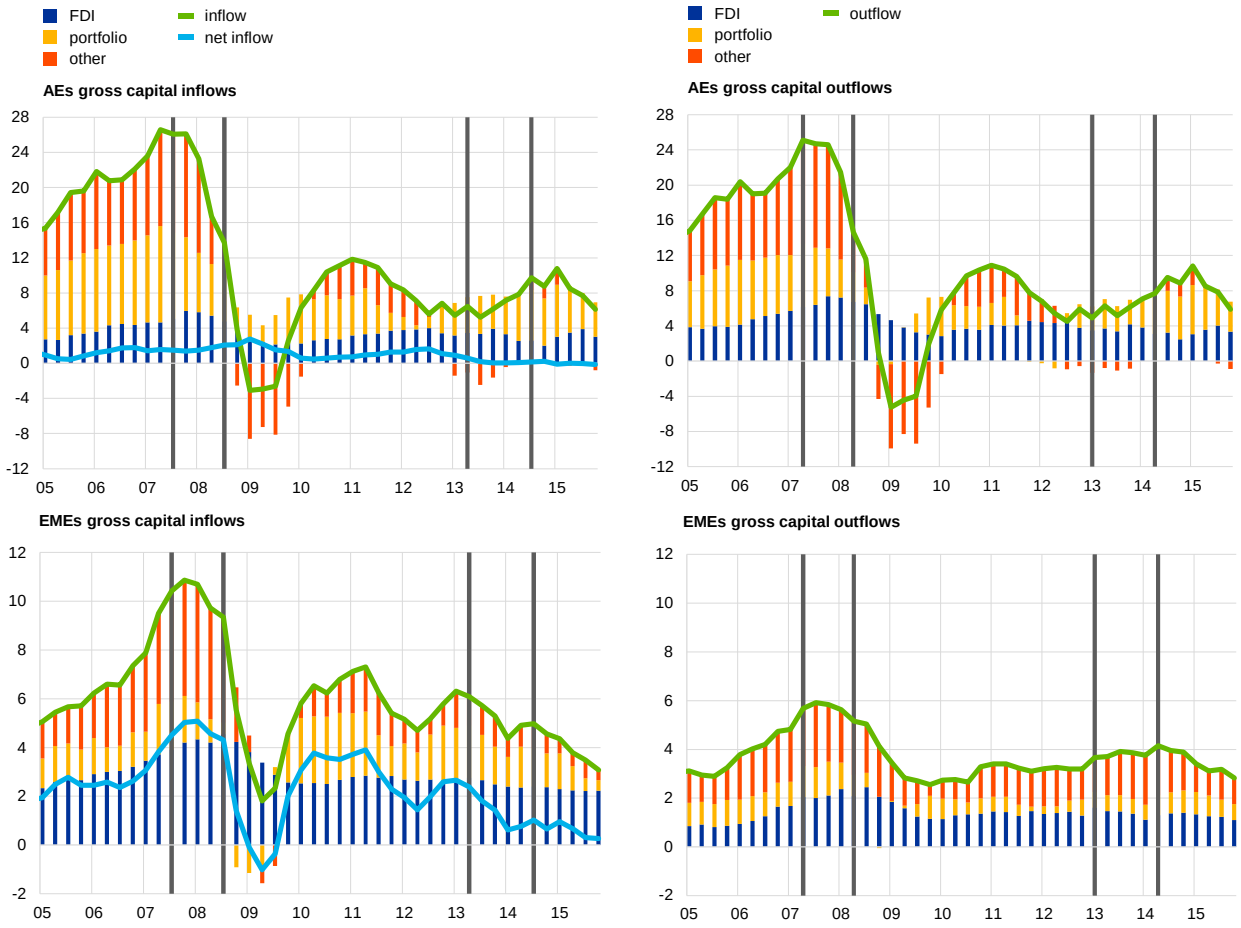
The report is structured as follows. Section 2 provides a snapshot of recent dynamics and patterns in international capital flows, looking at both gross and net flows, and puts these dynamics into a historical context. Section 3 reviews the extensive theoretical and empirical literature on the benefits, costs and drivers of cross-border capital flows. Section 4 looks at the tools employed by recipient countries to manage capital flows and the international initiatives aimed at providing a set of principles on how to handle capital flows. Section 5 considers the role the IMF could play in assisting both recipient and source countries and promoting international cooperation for a more stable international monetary system.

2 Dynamics in capital flows

This section discusses recent capital flow dynamics in both AEs and EMEs, including their volatility and composition. While recent data point to a substantial moderation of capital flows, the past decade has seen substantial surges and declines in international flows.

Chart 1
AE and EME capital flows

(percent of gdp, annual sum of flows)



Note: Data are in quarterly frequency for a sample of 24 AEs and 43 EMEs from the IMF Balance of Payments Statistics. China is excluded because of limited data availability. AEs and EMEs follow the IMF definition used in the World Economic Outlook. Vertical bars represent interbank liquidity squeeze (2007), fall of Lehman (2008), "taper tantrum" episode (2013) and start of oil price decline/start of US dollar appreciation (2014) respectively.

Gross capital flows[1] have shown large surges and slowdowns over the past decade (**Chart 1**). Before the global financial crisis, gross capital inflows increased

[1] Gross capital inflows are defined as net acquisition of domestic assets by non-residents; gross capital outflows as net acquisition of foreign assets by residents, excluding reserve assets; and net capital flows as the difference between gross capital inflows and outflows.

strongly, reaching around 26% of GDP in AEs and 11% of GDP in EMEs at their peak in 2007, mainly on the back of a surge in flows of other investments. This was

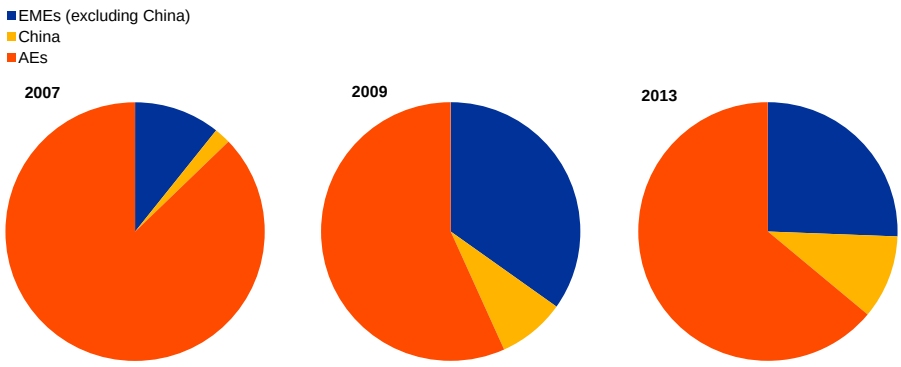
followed by a steep decline in 2008-09 during the global financial turmoil after the fall of Lehman Brothers. Although there was a swift rebound in 2010-11, total gross capital flows relative to GDP remain roughly half their pre-crisis size. More recently, gross capital flows, especially those directed to EMEs, have experienced a steep decline.

The proportion of capital flows directed to EMEs has increased since the crisis. Before the crisis the proportion of capital flows directed to EMEs was very low, but after the collapse of Lehman Brothers, as many EMEs recovered swiftly and major AEs loosened monetary policy and started quantitative easing (QE) programmes, the share of inflows directed to EMEs increased and reached a peak in 2009. Afterwards that proportion decreased again (see **Chart 2**), with the exception of the share of inflows directed to China, which continued to increase.

Chart 2

AE and EME gross capital inflows

(percent of total)



Data for an evolving sample of 24 AEs and 44 EMEs from the IMF Balance of Payments Statistics.

In the post-crisis years, gross capital flows of both AEs and EMEs have shown high volatility. While AE inflows and outflows have been more volatile than EME flows since oil prices started to fall in 2014, inflows to EMEs were the most affected by the "taper tantrum", when the Federal Reserve announced in May 2013 that it might start tapering off its bond purchases later that year (Annex 1). Net flows display similar trends but lower volatility, due to the dynamics of the three underlying components of total capital flows.[2] The downward trend in net capital flows to EMEs is mainly the result of a marked slowdown in gross inflows, while gross outflows increased slightly up until 2014. Recently, China has experienced a marked reduction in the volume of capital inflows (see Annex 2).

[2] Total capital flows are based on the IMF Balance of Payments Statistics and consist of three components (foreign direct investment (FDI); portfolio investments; and other investments, including bank loans, deposits and trade credit) which exclude derivatives.

In recent years, FDI has made up about half of the capital inflows to EMEs, while the other half is roughly evenly split between portfolio inflows and other investments. Portfolio inflows have doubled compared with the period before the crisis, on the back of a growing corporate bond market in EMEs. Other investments make up close to half of total outflows (despite decreasing in recent quarters) and FDI flows about one-third.

The composition of capital flows to AEs has also changed since the crisis. In recent years, gross capital inflows to and outflows from AEs have for the most part been portfolio and FDI flows. This is in sharp contrast to the pre-crisis years, when other investments made up approximately half of total gross inflows and outflows. This shrinking of other investments could be attributed to a retrenchment of banks to their home markets and is the main reason why total capital flows to and from AEs have not recovered to pre-crisis levels. While portfolio flows have recovered to a level slightly lower than before the crisis, FDI flows have remained relatively stable. In the euro area, capital flows have recovered in the aggregate since the sovereign debt crisis, albeit with significant country differences (see Annex 3).

Recent data point to a substantial moderation of capital flows, in the case of both AEs and EMEs. Inflows to and outflows from AEs decreased from more than 10% of GDP in the first quarter of 2015 to roughly 7.5% in the third quarter of 2015. This moderation reflects a reduction in portfolio flows and other investments, while FDI flows slightly increased. In EMEs, gross inflows roughly halved in 2015, coinciding with a slowdown in activity in major EMEs, the steep fall in oil prices (and other commodity prices) and a marked appreciation of the US dollar. Oil producers, such as Brazil, Russia and Mexico, experienced strong capital outflows and currency depreciations. Furthermore, countries with strong trading ties with China were significantly affected. Indonesia, for instance, faced a 53% drop in capital flows in the third quarter of 2015. The US dollar appreciation, in anticipation of the US monetary policy tightening, has further adversely affected countries with US dollar-denominated corporate and government debt, such as Brazil, India, Indonesia, Russia, South Africa and Turkey. In 2015, the decrease in gross inflows was mainly driven by lower portfolio investment. By contrast, gross outflows declined mostly on account of a reduction in other investments. FDI inflows and outflows were relatively unaffected.

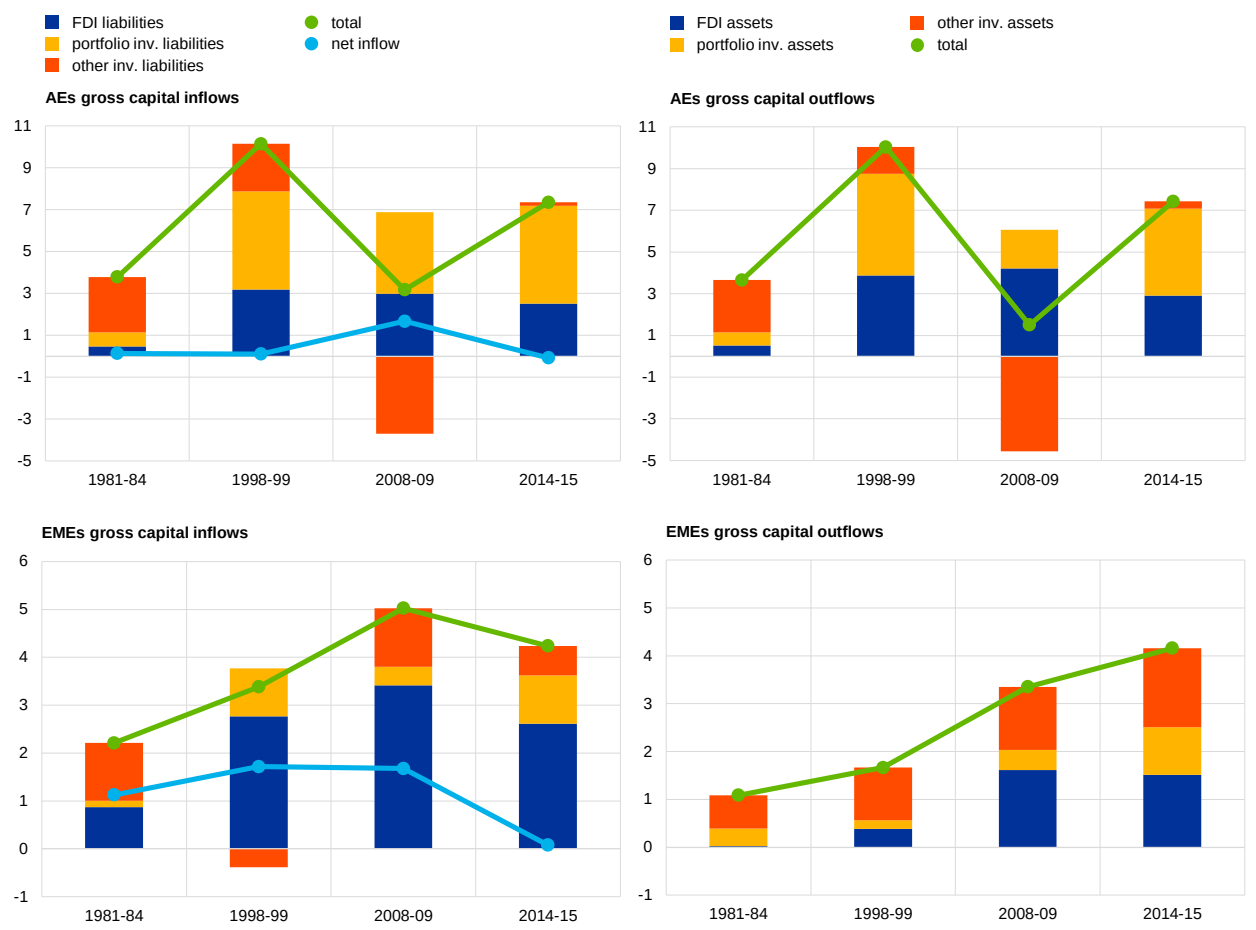
Taking a historical perspective, recent trends differ – to varying degrees – from previous crisis episodes in terms of size, composition and variability. Recent EME gross capital outflows are substantially larger than the flows seen during the global crises of the early 1980s, late 1990s and, to a lesser extent, 2008-09 (**Chart 3**). The composition of recent AE gross capital flows is broadly comparable to that in the late 1990s bar lower other flows, while EMEs exhibit an increasing share of portfolio investment flows compared with during the 2008-09 crisis. Recent gross capital flow volatility has been high by historical standards for both AEs and EMEs, though not as high as during the 2008-09 crisis (see **Table 1**). It is also noteworthy that gross capital flows were almost consistently more volatile in AEs than in EMEs during past periods of marked slowdowns, with the wedge increasing across each historical crisis episode. Other investment is the most volatile

component across all past major downturns for both AEs and EMEs, though it was recently marginally surpassed by portfolio inflows to EMEs. FDI flows, by contrast, are generally regarded as the most stable component of gross capital flows in relative terms, with the notable exception of gross inflows in EMEs during historical crises.

Chart 3

Historical cycles of capital flows

(percent of group nominal gdp)



Note: Data for an evolving sample of up to 24 AEs and 43 EMEs (excluding China) from the IMF Balance of Payments Statistics.

Table 1

Volatility of capital flows

		1981-84	1998-99	2008-09	2014-15
AE gross capital inflows	FDI liabilities	0.01	0.23	0.44	0.35
	Portfolio investment liabilities	0.05	0.45	1.05	0.81
	Other investment liabilities	0.31	0.72	2.64	1.06
	Total	0.25	0.90	3.42	0.88
AE gross capital outflows	FDI assets	0.02	0.31	0.57	0.27
	Portfolio investment assets	0.02	0.50	0.95	0.71
	Other investment assets	0.18	0.51	2.16	0.87
	Total	0.17	0.58	2.51	1.14
EME gross capital inflows	FDI liabilities	0.03	0.26	0.33	0.16
	Portfolio investment liabilities	0.00	0.16	0.25	0.37
	Other investment liabilities	0.31	0.43	0.83	0.33
	Total	0.31	0.69	1.29	0.52
EME gross capital outflows	FDI assets	0.00	0.02	0.11	0.10
	Portfolio investment assets	0.00	0.05	0.21	0.10
	Other investment assets	0.07	0.33	0.60	0.44
	Total	0.07	0.32	0.65	0.43

Note: Reported charts correspond to the median country's volatility as a percent of own nominal GDP of sample countries across each episode. Volatility is calculated as the median absolute deviation of the four-quarter moving sum of capital flows corresponding to each period of significant downturn per country. Data for an evolving sample of up to 24 AEs and 43 EMEs (excluding China) is from the IMF Balance of Payments Statistics for capital flows and the IMF World Economic Outlook of Spring 2016 for nominal GDP.

3 Impact and drivers of capital flows

This section reviews the theoretical literature on the costs and benefits of international capital flows, as well as the empirical evidence on the subject, in order to highlight the conditions under which financial flows are most beneficial to growth. It then reviews the literature on the global and domestic drivers of capital flows.

3.1 Costs and benefits of international capital flows

According to the traditional neoclassical approach, international capital flows are driven by differences in productivity… Traditionally, capital flows have been assessed from a theoretical point of view using the standard Solow growth model and its extensions. These models predict that flows will be determined by capital productivity, with capital flowing from richer countries to countries with a lower capital stock and a wider range of profitable investments, especially benefiting industries with a high demand for capital. Under the assumption that borrowers have access to risk-free capital, net capital flows represent a Pareto improvement because they benefit both capital exporters and capital importers.

…and are predicted to yield several benefits for the recipient country. Higher investment as a share of GDP should lead to higher growth – at least temporarily[3] – and a number of additional positive effects, including: (i) consumption smoothing, as a country that is temporarily poorer can borrow against future income, or lend when it is temporarily richer (Obstfeld and Rogoff, 1996); (ii) efficiency gains and improved allocation of capital, driven by the intensified competition, increased liquidity, better management know-how and governance structures associated with capital inflows[4]; (iii) reduced vulnerabilities, as portfolio diversification makes for better risk diversification, as well as an enhanced absorption capacity of local shocks due to increased global integration; and (iv) increased self-discipline and signalling of stability-oriented policies, as the potential outflow of capital raises the costs of unsound economic policy and corruption.[5]

However, these predictions crucially depend on the underlying model. The standard Solow growth model makes several quite restrictive assumptions;[6] other models that incorporate distortions usually do not bear out the above implications and result in less positive predictions.[7] Several authors have argued that capital markets possess characteristics that preclude the adoption of the free trade paradigm. Thus, problems of incomplete information and imperfect market

3 Henry (2007), DeLong (2004), Rodrik and Subramanian (2009).

4 Kose et al. (2009), Henry (2007).

5 Gourinchas and Jeanne (2013), Kose et al. (2009).

6 One sector model without exchange rates or risk, no differing institutions, information asymmetries or other distortions.

7 Rodrik and Subramanian (2009), Stiglitz (2010).

mechanisms result in significant adverse selection and moral hazard, making capital markets especially prone to herd behaviour and panic. This could – via cross-border spillovers – even impact countries with sound fundamentals. Furthermore, in a second-best world (à la Lancaster and Lipsey, 1956), eliminating restrictions on asset trades does not necessarily improve allocative efficiency – it may even make it worse.[8]

The direction and impact of capital flows as predicted by the neo-classical model cannot be readily substantiated… In practice, international capital flows do not conform to prediction, as they tend to flow "uphill" (from poor to rich countries) instead of "downhill" as predicted by the theory. This "Lucas puzzle" is not really surprising.[9] Risk-adjusted returns may well be lower in countries with less-developed financial markets and weaker institutions. In addition, the allocative ability of weaker financial systems can be questioned. Safe haven effects would further amplify this trend. Further, the current account is not procyclical, as the intertemporal approach would suggest (due to economic agents saving more during a boom in order to smooth consumption during a downturn), but rather countercyclical (moving to a deficit, or positive net capital inflows, when the economy booms). Finally, countries with faster (productivity) growth, which assumedly possess a higher productivity of capital, exhibit lower net flows than slower-growing countries (allocation puzzle).[10]

…and there are mixed effects in recipient emerging economies. Cross-country studies have not linked greater openness to stronger growth. On the contrary, the reverse seems to be true: emerging and developing economies that received lower inflows grew faster than those with larger inflows.[11] Other studies point to additional possible negative effects of financial account liberalisation, like a reduction in the labour share of income,[12] and associated significant, persistent increases in inequality. This seems to be stronger in countries with weak financial institutions and when liberalisation is followed by a financial crisis. Further, access to foreign capital is not necessarily linked to disciplined budget constraint, and might be coupled with a longer duration of misguided policies.[13]

Capital inflows are volatile, tend to increase the volatility of macroeconomic variables, and can act as a transmitter of shocks to integrated countries. High variability and low predictability of capital flows seems pervasive among all economies.[14] Inflows are associated with increased volatility in consumption, boom-bust cycles and currency mismatches that can increase the risk of economic

---

8 Turner (2010), Bhagwati (1998), Obstfeld (2005), Stiglitz (2000).

9 Lucas (1990) first noted this tendency. See also Prasad et al. (2007) and DeLong (2004).

10 Gourinchas and Jeanne (2013), Prasad et al. (2007a). Gourinchas and Jeanne discuss higher savings and reserves in faster growing countries as possible explanations.

11 Rey (2015), Kose et al. (2009), Prasad et al. (2007), CGFS (2009), although there is, possibly, a time-varying effect, with the costs and benefits materialising only after a lag (Bussière and Fratzscher, 2008).

12 Furceri and Loungani (2015).

13 Rodrik and Subramanian (2009). The extent to which markets go along with misaligned policies is hard to gauge and depends on several factors, including the nature and maturity of capital flows. For a certain range of fundamentals, multiple equilibria can arise, implying that market volatility can increase very quickly (Obstfeld, 1994).

14 Bluedorn et al. (2013).

financial crises. Surges can result in substantial real exchange rate appreciations through higher interest rates, increased demand for non-traded goods and rising real wages, thereby leading to "Dutch disease" problems and hampering successful development.[15] Increased capital flows can also act as a transmitter of shocks between more integrated emerging markets, as they are increasingly vulnerable to changes in market sentiment and exchange rate pressures. If the shocks propagated through the international system are severe enough – as with the global financial crisis – even reasonably stable countries may get caught up in the maelstrom of sudden stops and sharp reversals.[16] Consequently, even under flexible exchange rates, the sheer size of gross capital flows may render an independent monetary policy more difficult or even impossible.

Given the difficulty in finding clear empirical benefits associated with financial account liberalisation in EMEs, several studies have sought to identify the conditions under which capital inflows may be more beneficial. The lack of conclusive empirical evidence could be due to the different growth effects of different flows, or the pervasive presence of distortions. Moreover, the level of development of the recipient economy and certain local policy measures may make a difference.[17] In this respect, the literature examines two main issues: the composition of capital flows and the thresholds in terms of the economic and institutional conditions that ensure a positive effect from capital inflows.

- **Composition: long-term, non-debt flows are preferable to short-term debt flows.** There is a well-established link between FDI, financial depth and growth, and the more stable characteristics of FDI when compared with short-term and/or debt flows. However, the benefits of FDI seem to be correlated with the stage of an economy's development. For instance, FDI outcomes are better in manufacturing than in commodities, perhaps due to limited spillovers from the primary sector or to threshold effects.[18] Portfolio equity flows are also seen as having a positive influence on growth, as supported by an analysis of equity market liberalisations. By contrast, short-term debt flows have often proved to be very volatile and disruptive, suffering strongly from herd effects.

- **Thresholds: a stable macroeconomic environment and the level of institutional development seem to play a key role for a successful liberalisation strategy.** The interaction of a stable macroeconomic environment with efficient institutions, including sufficiently developed financial markets and an open trade regime, allows for a reasonable handling of risks and realisation of benefits from capital flows.[19] The following points are

[15] Bluedorn et al. (2013), Rey (2015), IMF (2007), Kose et al. (2009), Rodrik (2007), Stiglitz (2005), and Bussière, Schmidt and Valla (2016).

[16] Rey (2015), Obstfeld (2014), Kose et al. (2011).

[17] Blanchard et al. (2015), Gourinchas and Jeannne (2013), Rodrik and Subramanian (2009), CGFS (2009). A dissenting view is expressed by Henry (2007) and by Block and Forbes (2004), who hold the benefits of liberalisation to be substantial and the criticism ill-founded.

[18] Investment projects in the primary sector are often large investment project with little domestic involvement. See Rey (2015), CGFS (2009), Kose et al (2011), Kose et al (2009), Prasad et al. (2007) and Turner (2010) for a discussion of different flows.

[19] Kose et al (2011), IMF (2007), Prasad et al. (2007).

mentioned frequently as the thresholds or pre-conditions that make financial account openness most beneficial:[20] fiscal stability; price stability and credibility of central banks to anchor expectations; flexible exchange rates;[21] robust property rights and enforceable judicial rules; a well-capitalised and effectively regulated and supervised financial sector; sound accounting standards (meaningful information can be transmitted to investors); and strong corporate governance and low corruption. When a country does not meet the institutional bar, a better strategy might be to aim for shallow integration, including substantial regulatory differences to lower volatile capital flows.[22]

3.2 Main drivers of capital flows

The drivers of international capital flows are typically classified into two categories: "push" factors and "pull" factors. Both categories can be mapped to the portfolio decisions of financial investors such as banks, insurers, pension funds, investment funds and private savers. "Pull" factors (i.e. domestic factors) originate in the recipient countries. These factors include, inter alia, better growth performance and a more stable macroeconomic outlook; they signal genuine improvements in the risk-return profile of assets issued domestically that help to attract more capital from abroad. However, the risk cannot be excluded that over-expansionary macroeconomic policies might create local asset price bubbles, which are in turn further inflated by foreign capital inflows. "Push" factors (i.e. external or global factors), by contrast, originate in the investing/lending countries. They drive capital outwards because of the comparatively lower attractiveness of debtors in advanced economies, or because of higher availability of funding liquidity. A major "push" factor driving capital into EMEs is ample global liquidity, or, broadly speaking, an easing of financial conditions on cross-border markets. For example, reductions in interest rates in AEs are likely to encourage international investors to search for higher yields in EMEs. Likewise, reductions in investors' risk perception can increase credit supply in international markets and spur cross-border investment.

From a policy perspective, it is important to establish which factors actually drive cross-border capital movements: disentangling push from pull factors is a key first step in designing appropriate policies to deal with capital flows. When capital flows are driven mainly by country-specific characteristics, or when country-specific factors play a significant role in determining the sensitivity of individual economies to global shocks, reducing the volatility of capital flows would require national policymakers to improve the local environment by implementing sound macroeconomic policies and, in specific cases, macro-prudential measures (e.g. when overly expansionary monetary policies create local asset price bubbles

[20] Kose et al (2011), Kose et al. (2009), Obstfeld (2005) and Mishkin (2007).

[21] Kose et al. (2009), Fischer (2006).

[22] The underlying idea is that in an inherent second-best world, the best policy approaches might be those that consciously introduce distortions of their own. An example would be the Chinese special economic zones or the export strategies of countries like South Korea. See Rodrik (2007), Rodrik and Subramanian (2009) and Stiglitz (2010).

that could be further inflated by foreign capital inflows). To the extent that cross-border flows at the world level are driven by global shocks, such as shifts in risk aversion or financial conditions in major AEs, they could prove to be suboptimal for recipient countries, as they could generate dangerous asset and credit booms and busts, and increase the risk of abrupt capital flow reversals. While, in this case too, sound macroeconomic policies and strong frameworks have an important role to play, further tools might need to be deployed and could imply the use of CFMs or MPPs.

3.2.1 Overview of the empirical literature and main policy implications

A broad consensus exists on the importance of push factors – especially shifts in risk aversion and interest rates in key economies – as drivers of capital flows. Both the earlier literature on the drivers of capital flows, dating back to the 1990s, and more recent studies identify a clear relationship between interest rates in key AEs and portfolio flows, with low rates spurring investment in high-yielding EMEs.[23] Many recent papers have also found a strong role for investors' risk perception. Low risk aversion underpinned portfolio flows to emerging markets during the first half of the 2000s, while abrupt spikes in risk perception explained to a large extent the retrenchment in portfolio investment experienced by both advanced and developing countries in the first phase of the recent crisis.[24] Taking a longer-term perspective confirms that extreme episodes of capital flows (stops, surges, flights and retrenchments) from 1980 through to 2009 were mostly driven by changes in risk aversion.[25]

Monetary conditions in the United States and investors' risk perception may generate boom-bust dynamics in capital flows at the global level. Financial conditions in the United States, insofar as they determine changes in risk aversion and uncertainty, may be the leading forces that generate large common movements in cross-border capital flows, asset prices, credit growth and bank leverage at the world level, giving rise to what has been termed the "Global Financial Cycle". For instance, a loose US monetary policy might reduce investors' risk perception, thus spurring cross-border investment flows and credit growth at the world level. Changes in US financial conditions propagate internationally through the leverage of large financial institutions and create boom-bust dynamics in capital flows wherever capital is freely mobile.[26] Surges and retrenchments in investment flows, being driven by

[23] The earlier literature on the drivers of capital flows studied the experiences of a number of Latin American and Asian countries, which became the destination of large portfolio flows in the first half of the 1990s. Many papers (e.g., Calvo et al. 1993, 1996; Fernandez-Arias 1996; Taylor and Sarno 1997) have shown that the loose monetary policy implemented in the United States in 1990-91, by reducing the attractiveness of debtors in advanced economies, contributed to triggering investment in EMEs. Among the more recent studies dealing with the role of international interest rates are World Bank (1997), Baek (2006), Ghosh et al. (2014), and Sarno et al. (2016).

[24] Ahmed and Zlate (2014), Cerutti et al. (2014), Milesi-Ferretti and Tille (2011), Fratzscher (2012).

[25] Forbes and Warnock (2012).

[26] Rey (2013), Miranda-Agrippino and Rey (2015), Bruno and Shin (2015), Reinhart and Reinhart (2008), Lane and McQuade (2014).

financial conditions in centre economies, might turn out to be non-optimal for the cyclical phase of many recipient countries.

While conventional and unconventional monetary policy in centre economies may be important in driving flows at the world level, EMEs are particularly vulnerable to shifts in this factor. US monetary tightening triggers a contraction of economic activity both in advanced and emerging economies, but only the latter tend to suffer portfolio outflows after the shock.[27] Emerging European countries experienced a particularly pronounced boom-bust cycle of capital flows in the pre- and post-crisis years, which was mainly due to shifts in global factors.[28] The US quantitative easing programme generated, in its first phase, sizeable flows out of EMEs and, in the subsequent expansions, considerable inflows towards developing economies, thus amplifying the procyclicality of capital flows to emerging countries.[29] The announcement in May 2013 that the Federal Reserve might start tapering off its bond purchases later that year generated abrupt capital outflows from emerging economies. The so-called "taper tantrum" episode highlighted the high vulnerability of EMEs to Fed policy expectations.[30]

From a policy perspective, the relevance of push factors is one rationale for the use of capital account management and macroprudential measures. The empirical literature points to a world in which push factors are a strong force that shape the pattern of cross-border capital flows and especially affect emerging economies, which may be exposed to suboptimal swings in investment flows. This overall picture may justify the use of financial account management measures in EMEs, of which the use and effectiveness will be discussed in Section 4.1. Limiting the leverage of big financial institutions through appropriate macroprudential and financial policies might also be useful, given the role these financial intermediaries play in transmitting shocks across borders.

That said, the sensitivity of countries to push drivers depends on country-specific characteristics – large, liquid domestic financial markets and a substantial exposure to global banks seem to increase an economy's vulnerability to global conditions. While the literature has reached a consensus on the importance of push drivers, it also shows that considerable heterogeneity exists in the financial sensitivity of countries to global conditions. In this respect, many studies find that developing economies with large and highly liquid financial markets, and those that rely more on international mutual funds and global banks for their external financing, tend to be more exposed to shifts in global conditions. By contrast, an ample domestic investor base and a low share of debt denominated in a foreign currency contribute to shielding developing economies from global financial shocks.[31]

---

27 Dedola et al. (2015).

28 Eller et al. (2016).

29 Fratzscher et al. (2013), Lim et al. (2014), Tillmann (2016).

30 See Dahlhaus and Vasishta (2014) and Koepke (2014), among others.

31 Cerutti et al. (2015), Eichengreen and Gupta (2014), Ahmed et al. (2015), IMF (2014b).

There is a broad consensus that high institutional quality protects both advanced and developing economies against adverse shifts in global conditions, such as a reduction in global liquidity triggered by hikes in investors' risk aversion or a sudden monetary tightening in centre economies. During the recent crisis, for instance, spikes in global risk perception triggered lower capital outflows from those economies characterised by sound political and financial institutions. More generally, residents of countries with strong institutions tend, in periods of global financial stress, to invest more domestically, thus mitigating against the decline in gross inflows due to tightened global conditions.[32]

The effectiveness of other country-specific features, such as a high level of foreign exchange (FX) reserves or sound macroeconomic fundamentals, in mitigating countries' vulnerability to adverse swings in push factors is less clear. Ample FX reserves made residents more willing to invest their savings domestically during several episodes of global stress in the 1990s and 2000s, thus mitigating against the lack of foreign financing.[33] Nevertheless, a high level of reserves did not protect EMEs from external pressures during either the great retrenchment or the taper tantrum episode.[34] Strong macroeconomic fundamentals (such as low inflation, a small budget deficit and low public debt) were effective in limiting the scale of the retrenchment in portfolio flows experienced by advanced and developing economies during the recent crisis. Still, the effectiveness of sound fundamentals in protecting countries from adverse swings in global factors is less clear when analysing other episodes, like the taper tantrum.[35]

Research findings suggest that policymakers could reduce economies' vulnerability to swings in global factors by promoting the formation of an ample domestic investor base and improving the quality of local institutions. The relevance of certain country-specific characteristics in determining countries' sensitivity to global drivers hints that targeted domestic policies can be used to shield the local economy from global conditions. By promoting country-specific features – such as an ample domestic investor base, a large share of local currency debt and high quality local institutions – policymakers can contribute to insulating the economy from changes in global factors. Monitoring and collecting information about a country's foreign investor base, especially about global banks and mutual funds, may also be of some utility to local authorities.[36]

The literature is in broad agreement that push factors are more relevant in periods of global stress, while pull drivers are dominant in tranquil times. For

---

32 Fratzscher (2012) and Alonso (2015). Analyses are generally less conclusive as regards the effectiveness of institutional quality in insulating economies against push-driven capital inflows. See Fratzscher et al. (2013) and Cerutti et al. (2014) for studies that support their effectiveness, and Ghosh et al. (2014) for the opposite view.

33 Alberola et al. (2016).

34 Fratzscher (2012) and Eichengreen and Gupta (2014). Cerutti et al. (2015) find that surges and decreases in investors' risk perception affect countries irrespective of their stock of reserves.

35 Fratzscher (2012), Mishra et al. (2014), Ahmed et al. (2015), Aizenman et al. (2014), Eichengreen and Gupta (2014).

36 IMF (2014b), Cerutti et al. (2015), Fratzscher (2012), Fratzscher et al. (2013), Alberola et al. (2016), Mishra et al. (2014), Ahmed et al. (2014).

example, changes to risk perception were particularly important in shaping the pattern of international flows in 2007 and 2008 – years in which market tensions were extreme and the crisis most severe. By contrast, country-specific fundamentals, institutions and policies were the dominant factors behind the cross-border flows observed during the recovery period.[37] These results suggest that sound institutions, fundamentals and policies might be useful in attracting stable foreign financing in tranquil periods.

The relative importance of push and pull factors also depends on the type of flows, with bank flows strongly dependent on country-specific characteristics and FDI less affected by global drivers. FDI flows tend not to be dependent on shifts in global interest rates, and are the least affected by swings in risk aversion.[38] Country-specific characteristics, by contrast, tend to matter; economies with good governance, a smaller government and reduced expropriation risks are more likely to receive FDI flows.[39] FDI is also driven by certain unique determinants, such as taxation policies, trade protection and low corruption. As regards banking flows, there is robust evidence to suggest that they are dependent on domestic output growth, local stock markets, and institutional quality, besides being influenced by global risk aversion.[40] Specific factors affecting banking flows include the equity performance of the banking sector and banking regulation in both the borrower and the lending country.[41]

Policymakers might want to take advantage of this heterogeneity across flows and promote country-specific characteristics that favour more stable types of investment. As FDI is more resilient than other types of flows and less prone to creating macro and financial vulnerabilities, policymakers might want to encourage this type of investment.[42] In this regard, research shows that country-specific factors can change the composition of foreign inflows. Strong property rights, for example, imply more stable forms of financing, in the form of FDI, while weak property rights tend to be associated to more bank lending.[43] A further option for policymakers would be to act through particular country-specific factors that influence one type of flow only, such as tax treatment and trade protection for FDI, or banking regulation for credit flows.

37 Fratzscher (2012), Milesi-Ferretti and Tille (2011), Lo Duca (2012).

38 Milesi-Ferretti and Tille (2011).

39 Albuquerque (2005), Biglaiser and DeRouen (2006).

40 Koepke (2015).

41 Cerutti et al. (2015), Forbes et al. (2016b).

42 Bussière et al. (2016), Ghosh et al. (2016).

43 Wei (2000a, 2000b, 2006), Alonso (2015).

4 Tools to deal with international capital flows

This section takes stock of the tools that countries have at their disposal to deal with unfavourable capital flows. It discusses the different kinds of domestic tools (MPPs and CFMs) and the international initiatives for their harmonisation.

4.1 Domestic tools

In managing large, volatile capital flows, both AEs and EMEs can face policy challenges when using traditional domestic macroeconomic policies. In response to capital inflows, economies can alter monetary and fiscal policies where policy space is available, as well as resorting to exchange rate and foreign exchange reserve management. Cutting interest rates can be an effective way to reduce capital inflows, although it may lead to inflationary pressures. Fiscal tightening can help to reduce currency appreciation, but it may harm economic growth (and may also face political hurdles). Allowing the exchange rate to appreciate can be an effective tool for achieving external adjustment, but it may also lead to competitiveness losses. Finally, accumulating reserves can help to smoothen the effect of inflows on the exchange rate, yet it may also entail costs.[44] The policy mix deemed appropriate for dealing with capital inflows using traditional tools is underpinned by country-specific fundamentals and domestic macroeconomic conditions.

Bearing these factors in mind, as well as the limited policy space available when using traditional tools, MPPs and other CFMs have also been used. MPPs are "prudential tools that are primarily designed to limit systemic financial risk and maintain financial system stability", whereas CFMs are "measures (often price-based or administrative) that are designed to limit capital flows" (IMF, 2012). CFMs are made up of both residency-based measures (also referred to as capital controls) – such as taxes on capital inflows and quantitative limits on borrowing from abroad – and measures that do not discriminate on the basis of residency, including prudential measures such as currency-based measures aimed at limiting capital flows (see **Figure**). MPPs are applied regardless of whether the origin of the shock is domestic or foreign. They can be time-varying or permanent, and include measures aimed at enhancing the resilience of the financial system, such as higher capital adequacy

[44] With reserves, the costs relate to the opportunity costs of holding reserves rather than engaging in other investment opportunities, and the financial costs associated with the yield differential between holding foreign reserves compared with domestic sterilisation tools. Although holding reserves helps to self-insure economies against foreign currency shocks, holding excessive levels of reserves can lead to price distortions in exchange rates (e.g. Ghosh et al., 2012). Moreover, a depletion of reserves in the face of a large external shock send a negative signal to markets on the sustainability of the domestic macroeconomic framework (e.g. Aizenman and Sun, 2009). The global financial safety net (GFSN) integrates the use of reserves into a wider package of defence against external shocks to the financial account (see Section 5.3 for further details).

ratios and restrictions on loan-to-value ratios. CFMs and MPPs can overlap in scenarios where large capital flows are the source of systemic risk.

Table 2

Examples of CFMs and MPPs

CFMs	MPPs
Taxes on capital inflows	Caps on loan-to-value ratios
Caps on foreign ownership of domestic assets	Caps on debt-to-income ratios
Minimum holding period for capital inflows	Countercyclical capital requirements
Reserve requirements on liabilities of non-residents	Limits on maturity mismatch
	Dynamic provisioning
	Reserve requirements on domestic currency liabilities

Note: Foreign currency-based measures, such as reserve requirements on foreign currency liabilities or limits on bank lending in foreign currency, can be regarded as both CFMs and MPPs where large capital inflows lead to systemic risks in the financial sector.

The use of CFMs has not been uniform… On the basis of a sample of more than 50 countries during the period 2009-15, the IMF reports that almost one-third have resorted to CFMs, in most cases in accordance with the operational framework of the IMF's Institutional View and justified by country-specific circumstances (IMF, 2016b). Regarding CFMs on capital inflows, about one-fifth of the countries resorted mostly to price-based measures, such as taxes and reserve requirements. Only in a few cases did the exchange rate seem undervalued, suggesting that in most instances countries did not use CFMs as a beggar-thy-neighbour tool. However, in most cases CFMs on inflows were not introduced to address financial stability risks. Countries faced with financial stress conditions introduced CFMs to address capital outflows during the last downturn episode in 2013-15, using mainly administrative measures such as limits on specific operations. Brazil provides an interesting case study since it is a highly integrated country in the global financial markets which was very active in market-based capital controls (see Annex 4). China, too, was able to limit the impact of the recent sudden stop in capital flows thanks to the nature of its capital controls (see Annex 2).

…and EMEs have also increasingly resorted to currency-based measures (CBMs) to discourage banking inflows.[45] While before the financial crisis the bulk of the CBMs in place were conventional macroprudential policies (such as limits on the net FX position of banks), most restrictions introduced after the crisis targeted capital inflows and liabilities per se instead of net FX mismatches. CBMs may have played a role in reducing cross-border banking flows.

The use of CBMs reflects the increasing awareness of the dangers of FX mismatches and the build-up of foreign currency liabilities. This holds for both emerging and advanced economies: most AEs built up significant mismatches before the crisis and were forced to borrow from Fed swap facilities to alleviate the constraints on FX liquidity. Capital volatility can have severe implications from a macroeconomic perspective, and can also severely impact the private sector, even in the absence of a deterioration in macroeconomic conditions. For example, before the global financial crisis broke, the balance sheets of the private non-financial sector had seen a significant build-up of FX mismatches. In this regard the ESRB has

[45] This is described by Beck et al. (2015) and De Crescenzio et al. (2015).

issued a recommendation on tighter restrictions on lending in foreign currencies.[46] More recently, the BIS has highlighted the risks surrounding increased external borrowing by non-financial corporations from EMEs through the offshore issuance of debt securities, often in FX. Similarly, in its 2015 report to the G20 on Corporate Funding Structures and Incentives, the FSB sees similar risks emerging, and argues that targeted capital flow management measures are one way to address cross-border leakages of domestic policies to reduce corporate leverage (in addition to reciprocity and greater host control).

The empirical literature on the effectiveness of MPPs and CFMs has so far produced mixed findings (see Box 1). MPPs are found to be effective in mitigating certain components of systemic risk (such as excessive credit growth and the build-up of leverage), but less so in reducing foreign capital inflows. As for CFMs, there is no consensus on their impact: some studies find that they affect largely the composition rather than the level of flows, while the most recent papers have found evidence of a significant impact on the level of capital inflows. The large body of literature that studies the joint effectiveness of MPPs and other CFMs also yields mixed results. Finally, a more recent strand of the literature has emerged that examines spillover effects associated with MPPs and other CFMs.

Box 1
Overview of the literature on the effectiveness of MPPs and other CFMs

The empirical literature on the effectiveness of MPPs has generally found that MPPs are effective in mitigating certain components of systemic risk. Lim et al. (2011) show that MPPs reduce the procyclicality of credit, with notable effects found in relation to caps on loan-to-value ratios, caps on the debt-income ratio, limits on credit growth, reserve requirements and dynamic provisioning. In addition, Borio and Shim (2007) show that MPPs are effective in addressing excessive domestic credit growth to the private sector. More recently, Claessens et al. (2014) have shown that MPPs such as loan-to-value ratios and limits on credit growth and foreign exchange lending can help to mitigate against the build-up of credit and leverage during boom periods. For additional stylised facts on the effectiveness of MPPs, disaggregated by type of measure, see the BIS-IMF-FSB report (2016).

While large, volatile capital inflows have contributed to fuelling credit booms and systemic risk, the literature lacks widespread evidence that MPPs help to reduce foreign capital inflows. Nonetheless, there is some literature to suggest that they can affect capital flows. Bruno, Shim and Shin (2015) provide some evidence that targeted MPPs are effective in slowing banking inflows and bond inflows to the Asia-Pacific region. Beirne and Friedrich (2014) find that MPPs can be effective in reducing capital flows conditional on the structure of the domestic banking sector. As regards the theoretical literature on MPPs, this largely indicates that MPPs can be welfare-enhancing (Lorenzoni, 2008; Korinek, 2010; Federico, 2011).

[46] The ESRB (2015) highlights the importance of non-banks borrowing cross-border or from foreign branches in potentially contributing to excessive credit growth and undermining domestic FX measures. They recommend that home regulators reciprocate host FX measures. Yet the conditions should also be considered under which host countries can take prudential action to mitigate mismatches stemming from cross-border sources in case reciprocity is not forthcoming. The issue seems to be more relevant for corporations than for households, as corporations are more likely to borrow directly cross-border.

A large strand of the literature examines the joint effectiveness of both MPPs and other CFMs, with mixed results as regards the impact on capital flows. Qureshi et al. (2012) find that capital controls and foreign exchange-related MPPs are associated with a lower ratio of lending in foreign currency to total domestic bank credit and a lower proportion of portfolio debt in total external liabilities (see also Zettelmeyer et al., 2010). Habermeier et al. (2011) find that prudential measures on foreign exchange and capital controls, while effective in reducing credit growth, have only a small effect on the volume of flows; yet they can change the composition of flows. Forbes et al. (2015) find that while foreign exchange-related MPPs can reduce financial fragility measures such as bank leverage and bank credit growth, CFMs are not effective in reducing capital flows.

There is a lack of consensus in the literature on the effectiveness of capital controls. Many cross-country studies have found that capital controls largely affect the composition rather than the level of flows. In an extensive meta-study on the empirical literature on CFMs, Magud et al. (2011) find that capital controls can make monetary policy more independent, influence the composition of inflows and, to a lesser extent, reduce exchange rate pressures. However, no significant impact is found on the level of net capital inflows (see also Gochoco-Bautista et al., 2012). Other papers have found that while capital controls can help to reduce capital inflows, the effects tend to be short-lived (e.g. Baba and Kokenyne, 2011). However, Binici et al. (2010) find that capital controls on equities and bonds are effective in reducing capital outflows but have no effect on inflows. Other more recent papers have, however, found that CFMs have clear effects on the level of capital inflows (e.g. Cerutti et al., 2014; Ghosh et al., 2014; Ahmed and Zlate, 2014).[47] Dell'Erba and Reinhardt (2015) find that while capital controls on bond inflows are effective in reducing the likelihood of surges in banking debt flows, they increase the likelihood of surges in financial sector FDI. Single-country as opposed to cross-country studies also tend to find that capital controls can be effective in reducing flows, e.g. Forbes et al. (2016a) in the case of Brazil (see Annex 4 for more details) and Bruno and Shin (2014) for Korea.

A more recent strand of the literature has emerged which examines spillover effects associated with MPPs and other CFMs. Forbes et al. (2016a) find evidence of significant negative externalities following the introduction of a capital control in Brazil (see also Beirne and Friedrich (2014), Ghosh et al. (2014), Giordani et al. (2014) and Pasricha et al. (2015) for evidence of the spillover effects associated with MPPs and other CFMs). Another strand of the literature finds evidence of leakages of MPPs, i.e. an increase in cross-border borrowing (Aiyar et al., 2014; Reinhardt and Sowerbutts, 2015) and non-bank credit (Cizel et al., 2016) after MPP activation.

Another aspect to consider is the complementarity between CFMs and MPPs in the presence of economic overheating, when capital inflows are deemed to stoke financial imbalances. A typical example is when capital inflows into the domestic banking sector are deemed to fuel asset price bubbles; in this case, restrictions on banks' foreign borrowing can be considered both CFMs and MPPs. Ostry et al. (2011) advocate the use of capital restrictions also when capital flows are supposed to circumvent the perimeter of prudential regulation. For example, capital restrictions may be used when financial markets are unsophisticated and the prudential framework underdeveloped. These considerations point to the need to adopt a pragmatic approach, taking into account both the

[47] Cerutti et al. (2014) and Ghosh et al. (2014) focused on cross-border bank flows, while Ahmed and Zlate (2013) examined both total net inflows and net portfolio inflows. It is, of course, difficult to reconcile the heterogeneity of findings in this strand of the literature, given that the papers use different CFM datasets, different time periods, different country groups and examine the impact on different types of capital flow. It is also worth noting that the more recent literature has benefited from the greater availability of data on MPPs and other CFMs both across countries and by type of measure.

benefits and the limits associated with each type of measure. CFMs can also play an important role when, given the limits in the perimeter of financial regulation, prudential measures addressed only at regulated intermediaries might be insufficient to stem capital flows from other sources.

4.2 International initiatives

A number of international initiatives seek to address the lack of clarity concerning the application of domestic and internationally agreed CFMs and MPPs. There are three major initiatives at the international level to coordinate the use of MPPs and CFMs: the OECD Code of Liberalization of Capital Movements (the Code), the G20 Coherent Conclusions of 2011 (CC), and the IMF's Institutional View of 2012 (Institutional View).[48] **Box 2** reviews the main characteristics of these initiatives, as well as the EU framework.

These international initiatives require different levels of commitment from participating countries. The OECD Code is binding for adhering countries, which are governed by specific legal provisions and subjected to a multilateral evaluation. Adherents have to notify and consult with their peers regarding capital flow restrictions between residents and non-residents that are introduced or reimposed, and they are also committed to lift the restrictions once conditions are no longer met. By contrast, the G20 Coherent Conclusions and the IMF Institutional View bear no binding commitment for member countries but provide a framework to determine the conditions under which CFMs are (or are not) justified. Indeed, neither the IMF nor the G20 have jurisdiction in financial account oversight.

All three institutions agree that CFMs should be proportionate, transparent and temporary in order to avoid undue costs and to minimise distortions, unless lingering systemic financial risks persist. CFMs need to be proportional to the risks they are targeting, should not be maintained longer than necessary and should not have an undue bearing on capital flows. They may constitute part of a broader macroprudential approach to protecting the financial system from unwarranted shocks, but they should not preclude sound macroeconomic policy, nor perpetuate inappropriate policies such as keeping exchange rates undervalued.

The IMF Institutional View provides an operational approach on how national authorities should deal with capital flows, specifying the appropriate policy mix and clarifying how and under which circumstances CFMs should be used. The IMF is less clear on whether full liberalisation should be a long-term goal than is the OECD, which assumes that measures should be lifted unless countries specifically used standstill clauses at the point of joining the Codes. On the other hand, compared with the G20 CC, the Institutional View is less restrictive on the use of CFMs. In the G20 CC, CFMs can complement and be employed alongside, rather than as a substitute for, appropriate monetary, exchange rate, foreign reserve

[48] Other multilateral arrangements include the GATT, the EU Treaty, etc.

management and prudential policies. The IMF's Institutional View is more open to the possibility that CFMs could legitimately be used as part of a comprehensive package of macro-policy measures rather than only as a last line of defence.[49]

Within this flexibility, the Institutional View maintains a general approach of transparency, proportionality and non-discrimination. The effectiveness of CFMs depends crucially on the appropriateness of the policy mix. For example, according to the IMF (2011), Korea's experience suggests that if the exchange rate is kept undervalued, CFMs may prove insufficient to achieve external adjustment or to significantly influence capital flows. The Institutional View also recommends that national authorities be transparent, and tailor CFMs on the basis of the specific risks they are designed to address. In this regard, Ostry et al. (2011) draw a distinction between macro concerns (CFMs should be broad and price-based) and financial-stability concerns (CFMs should be targeted to specific flows and instrumented through administrative measures). Within the broad category of CFMs, currency-based measures should be preferred since they avoid discriminating among Fund members, whereas residency-based measures should be used only if other options are ineffective at dealing with disruptive capital inflows.

The IMF also warns about the negative effects of an extended recourse to CFMs from a global perspective. Even though CFMs may have a role in managing financial risks from a domestic perspective, they also imply externalities that should be taken into account. The main costs associated with CFMs concern the misallocation of capital flows and the negative spillovers to other countries. These costs become more material when national authorities resort to CFMs as a substitute for macro-policy adjustments, e.g. keeping the exchange rate undervalued. In order to address the multilateral effects of CFMs, it is crucial to monitor the extent to which they are employed, evaluate whether country circumstances justify their use, and also assess their effectiveness. Further, these measures cannot be evaluated from the viewpoint of each individual economy alone, but should also take the international dimension into consideration to avoid globally suboptimal results. For this reason there is a rationale for stronger international cooperation, so as to better internalise the spillovers from national MPPs and CFMs.

The G20 will discuss further work by the IMF and the OECD on capital flows. The OECD and the IMF have emphasised that their own approaches are largely complementary, specifically that the obligations in the Code do not conflict with the operational framework defined by the Institutional View. The G20's IFA Working Group supports further work on country experiences and the IMF's plan to bring together the work on capital flow management and macroprudential policies.

- *The ongoing review of the Code.* The review is aimed at ensuring the coherence of the Code with the international prudential framework for banks

[49] The IMF Institutional View notes that "In certain circumstances, introducing CFMs can be useful, particularly when underlying macroeconomic conditions are highly uncertain, the room for macroeconomic policy adjustment is limited, or appropriate policies take undue time to be effective". It then goes on to say "CFMs could also be appropriate to safeguard financial stability when inflow surges contribute to systemic risks in the financial sector".

(Basel III), and at enlarging its scope for the international coordination of CFMs.[50] In particular, the focus is on understanding the treatment of measures with a stated prudential objective, such as national adaptations of Basel III type measures differentiating by currency (for instance on the Liquidity Coverage Ratio or the Net Stable Funding Ratio), which can be used as alternatives to CFMs falling under the Code. Hungary, Iceland, Sweden and Turkey, among others, have recently used currency measures beyond Basel III minimum standards.[51] Other measures to be further clarified include prudential measures with a cross-border dimension that are addressed at limiting currency balance sheet mismatches in non-financial sectors, or the review of the flexibility of the Code itself, including an amendment to the two lists of operations (A and B) to take into account the evolution of the international debate on MPPs.

- *Work in progress at the IMF.* The IMF is focusing on providing greater clarity on the use of and best practices regarding prudential CFMs, as well as on clarifying the role of external conditions for countries setting CFMs (see Section 5). According to the IMF (2016b), the national authorities' resort to CFMs after the global financial crisis was in most cases consistent with the operational framework provided by the Institutional View and embedded in an appropriate policy mix. Most countries faced with volatile capital flows allowed exchange rates to act as shock absorbers, used international reserves when available, and moved interest rate counter-cyclically; when CFMs were used, they were mostly warranted by country-specific circumstances.

Importantly, adopting a coordinated approach on measures susceptible to affect capital flows requires addressing the "identification problem" of measures that can be classified either as CFMs or MPPs. There is often no simple way to differentiate between measures aimed at affecting capital flows that can be badged "macroprudential" measures – and thus receive general international acceptability – and those that might be more contentious. While some countries use measures to reduce capital flow volatility and thus risks to domestic financial stability, others are worried that such measures are actually being used to prevent economically warranted exchange rate adjustment. If this divergence of views is considered problematic, one approach is to argue that if the intent of the policy is to reduce risks to domestic financial stability then it can be considered a macroprudential measure, even if it has a direct impact on capital flows. Still, the risk remains that authorities may announce that the motive of the policy is financial stability, when it is actually exchange rate management. The broader and less focused the measure, the more likely a macro-policy motive (such as preventing exchange rate appreciation) as opposed to financial stability objectives.

[50] The Investment Committee adopted the Terms of References in March 2016 for the Review of the Code of Liberalization of Capital Movements as suggested by the Advisory Task Force (ATFC). The roadmap for the review includes two subsequent phases: (i) the diagnostics to be run by the ATFC by October 2017, including a set of recommendations on some key areas (e.g. the treatment of Basel III type measures differentiating by currency); and (ii) the decision-making phase will be conducted by the Investment Committee and is to terminate with the decision review by the Council in special session at the ministerial meeting in May 2018.

[51] Basel III already asks for consideration of consistency between the currencies in which a bank's liquidity risk may arise, and the currencies in which it holds its liquidity.

Box 2
CFM initiatives from international institutions

The OECD Code of Liberalization of Capital Movements (the Code). Adopted in 1961, the Code is adhered to by the OECD member countries (12 of which are G20 countries). Since 2012 it has also been open for adherence by non-OECD G20 countries. The Code focuses on openness, transparency and international cooperation regarding cross-border capital flows, and has promoted a collective view and common disciplines on capital flow management and liberalisation policies among adhering countries.[52] It constitutes the sole binding multilateral agreement that provides for the progressive liberalisation of capital flows. Adhering countries commit themselves to not resort to capital controls or equivalent measures, although they retain the option to introduce new capital flow restrictions (temporary and proportional to the risks) under certain circumstances. In particular, transactions are grouped into two lists (most MPPs fall outside the scope of the Code):[53]

- List A typically refers to long-term investments and bank deposits. The country can invoke derogations for operations under this list, which are conceded only if the conditions provisioned by the Code are satisfied (Article VII), namely in case of a balance of payments crisis or lasting recession.
- List B includes short-term wholesale operations. Adherents can lodge reservations for operations included in this list, which can be obtained by simply respecting procedural requirements.

The G20 Coherent Conclusions (CC). Adopted in 2011, the CC set broad principles on how to deal with large capital flows. National authorities can, under specific country circumstances, resort to capital movement restrictions, provided that these measures are not used as a substitute for macro-policies. In particular, national authorities can resort to CFMs only to address financial systemic risks when there is limited space for other policies considered less distortive and/or when it takes time for these policies to be effective. More generally, CFMs should be part of a comprehensive package of measures, including appropriate monetary, exchange rate, foreign reserve management and prudential policies. The CC also require that CFMs be transparent and properly communicate their scope and objectives; they should be targeted to specific risks and regularly reviewed by domestic authorities, so as to be removed or adapted according to the evolution of the financial conditions.

The IMF Institutional View (Institutional View). Adopted in 2012, this sets a framework for determining the appropriate policy mix when a country is faced with large capital inflows or disruptive outflows. In the first case, policymakers should consider three main options, namely lowering interest rates, allowing currencies to appreciate and accumulating international reserves. According to this approach, CFMs should generally be used once other policy options have been exhausted (e.g. if the exchange rate is overvalued relative to fundamentals, inflation is low and reserves exceed the amount considerate adequate); but uncertain conditions may still warrant controls at an earlier stage of the cycle. In case of destabilising capital outflows, the use of CFMs is

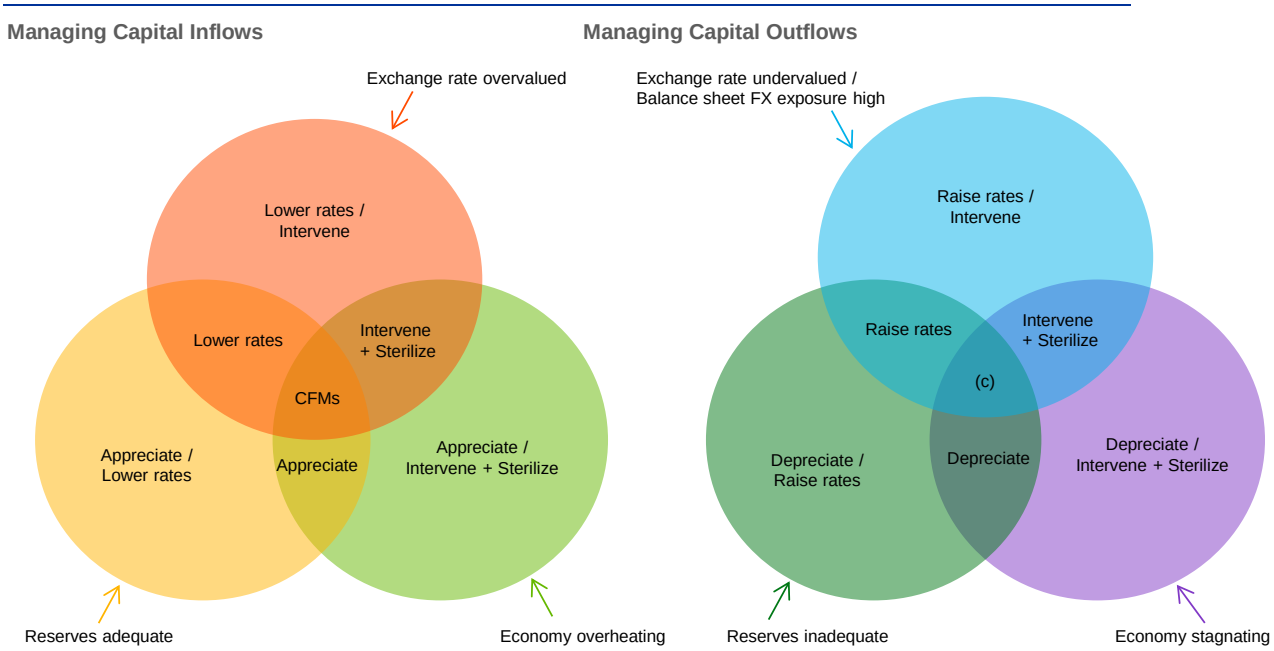
[52] Under Article1 of the Code, members "shall progressively abolish between one another […] restrictions on movements of capital to the extent necessary for effective economic co-operation".

[53] Some CFMs with a macroprudential intent are considered conforming measures. This is, for example, the case for macroprudential measures associated with limits in bank net FX positions which are explicitly (by arrangement among the Code adherents) carved out from the obligations stemming from the Code.

warranted if the country is experiencing a crisis, or when a crisis is imminent and CFMs could prevent a disorderly exchange rate adjustment or depletion of international reserves. They should be used in conjunction with other macro-policies, in particular when these take time to be effective and CFMs may provide breathing space. It is worth noting that the resort to residency-based measures is likely to be the only option available to countries faced with large capital flows to prevent major financial disruptions. Currently a review of countries' experiences is ongoing, taking stock of experiences with the policy advice under the Institutional View and assessing countries' policy responses and their effectiveness.

Figure

The macro-policy framework for CFMs under the IMF Institutional View



Each circle represents cases where the relevant condition is met. For instance, in the right hand diagram, the intersection of all three circles (the area marked "c") reflects cases where the exchange rate is undervalued, reserves are judged to be inadequate, and the economy is stagnating. A country in (c) is likely to be in crisis or imminent crisis. In such cases, alternative options, including official financing and introducing temporary outflow can be useful to support, and not substitute for, the needed macroeconomic adjustment. In crisis circumstances, financial stability considerations can also warrant CFMs to provide breathing space while fundamental policy adjustment is implemented. The diagrams do not prescribe or take a view on the appropriate combination of the three policies – only on circumstances under which each might be appropriate. Source: IMF (2013), IMF (2015a).

The EU framework. The free movement of capital is fundamental to the single market. Articles 63.1 and 63.2 of the Treaty on the Functioning of the European Union (TFEU) state that "all restrictions on the movement of capital between Member States and between Member States and third countries shall be prohibited". However, Article 65 allows for some flexibility to introduce capital controls, recognising "the right of Member States [...] to take all requisite measures to prevent infringements of national law and regulations, in particular in the field of taxation and the prudential supervision of financial institutions", and only if these measures do not constitute a means of arbitrary discrimination or a disguised restriction on the general principle of the free movement of capital (the restrictions imposed in Cyprus, Greece and EEA-member Iceland are recent examples). Note that macroprudential measures are generally consistent with the EU Treaty as long as they are proportionate and are used for financial stability rather than discriminatory reasons.

5 What role for the IMF?

This section discusses the role the IMF could play in assisting its members in dealing with cross-border capital flows. Given that the institution does not have jurisdiction over the financial account,[54] the Fund could in principle help through its regular surveillance and by playing an active role in promoting international cooperation on policies related to capital flows, as well as through its lending function in the global financial safety net (GFSN), providing both insurance and financial assistance to countries experiencing actual or potential balance of payments problems.

5.1 Surveillance and tailored policy advice

The IMF has the expertise to provide monitoring, analysis and advice that combine country-specific knowledge with cross-country expertise and an understanding of global factors affecting capital flows. The Fund is uniquely placed to detect the build-up of risks at the local and global level, understand how domestic vulnerabilities could be amplified by volatile cross-border capital flows, and provide advice on policies to increase resilience and mitigate the negative effects of cross-border spillovers. The overhaul of its surveillance toolkit since 2008 makes the Fund better equipped to oversee international capital flows and related policies. The adoption of the Integrated Surveillance Decision (ISD) and the Financial Surveillance Strategy, the introduction of the Spillover and the External Sector Reports, and the mandatory Financial Sector Assessment Program (FSAPs) for members with systemically important financial sectors, have all contributed to the integration of bilateral and multilateral surveillance, better analysis of linkages and spillovers across sectors and countries, and a strengthening of financial sector surveillance.

Surveillance of capital flows should be granular, country-specific and informed by an understanding of international spillovers and global policy interactions. According to the literature (see Section 3), capital is driven into and out of countries by a combination of global and country-specific factors. Moreover, there is substantial heterogeneity across countries in terms of the volume and composition of capital inflows and outflows, the behaviour of key macroeconomic variables and the policy responses enacted by domestic authorities. As such, the monitoring of cross-border capital flows should be as disaggregated as the data permit, examining gross and net capital flows and their components, the currency and maturity composition of domestic (public and private) debt, and the structure of a country's investor base. The Fund has all the elements to understand how the "global financial cycle" squares with a country's cyclical phase, and to analyse how the characteristics of cross-border capital flows can interact with country-specific circumstances to create potential vulnerabilities.

[54] Past attempts to upgrade the IMF's financial account oversight have not been successful (see Annex 5).

The analysis of "push factors" in driving capital flows has recently started to be incorporated in surveillance. The quality and even-handedness of the Fund's analysis and advice are crucial for improving traction efforts related to capital flows. In the absence of a formal mandate, traction is likely to be higher in destination countries than in source countries, and stronger in times of heightened volatility and capital outflows than in times of bonanzas. In this respect, the analysis of spillovers arising from monetary and financial sector policies in systemic countries, which has been only recently taken up in the World Economic Outlook (WEO), the Global Financial Stability Report (GFSR) and Spillover Reports, should be a key task for the Fund going forward. While IMF members are not required to adjust their domestic policies to support international stability as long as the policies promote the members' own stability, the ISD allows the Fund to address direct outward spillovers, as well as policy interactions and inconsistencies across countries. In its multilateral surveillance and bilateral surveillance with source countries, the Fund should systematically suggest alternative policies that would minimise negative spillovers to the rest of the world.

A key lesson from country experiences is the importance of sound domestic financial systems and of improved overall institutional and policy frameworks to better cope with capital flow volatility and reap the benefits of international financial integration. The Fund has a key role to play in assisting authorities in their efforts to improve overall institutional and policy frameworks, and in pursuing growth-enhancing structural reforms which would help countries increase their capacity to absorb capital inflows and make domestic capital markets more resilient to volatile capital flows. These considerations have a bearing on recent debates at the Fund about the type of structural issues to be covered in bilateral surveillance,[55] perhaps in cooperation with other international institutions (such as the OECD). In addition to the new FSAP programmes, the institution has recently started to include more macro-financial analysis and advice on MPPs in its Article IV consultations. Through its multilateral surveillance, the Fund should also contribute to analysing the cross-border implications of macroprudential policies and CFMs, and support international cooperation on these policies (Section 5.2).

The recent initiative on balance sheet analysis should be strengthened, both in bilateral Article IV reports and in the External Sector Report (ESR). The balance sheet analysis provides a very useful framework for understanding the accumulation of financial stress and its transmission channels, based on an examination of a country's aggregate and sectoral balance sheets. According to its most recent work programme, the IMF is currently working on analytical tools to deepen the analysis of macro-financial linkages, and to assess the risks stemming from rising corporate and household indebtedness and unfinished bank balance sheet repair. At the multilateral level, we welcome the fact that the 2016 ESR once again includes an analysis of net international investment positions (NIIPs) and external balance sheets. The size and composition of external balance sheets is a crucial aspect in any assessment of external vulnerabilities, and the ESR is uniquely placed, among

[55] See e.g. IMF (2015b).

surveillance products, to examine such aspects in a multilaterally consistent approach to the risks posed by the structure of countries' external balance sheets.

The Fund should continue to provide tailored advice to "frontier" and low-income countries on financial account liberalisation. As Section 3.1 points out, the broad consensus in the literature is that financial account liberalisation should be carefully timed and sequenced, and that there are "thresholds" in terms of macroeconomic stability, financial development and institutional quality. In this respect, the Fund's advice on liberalisation strategies is especially important for the so-called "frontier" economies and low-income countries, but also for larger and more integrated economies held back by insufficient institutional quality expertise and experience. Bilateral surveillance, coupled with technical assistance and capacity building, would help these countries negotiate a successful financial account liberalisation path.

The Institutional View on capital flows and the related guidance issued in 2013 provide a flexible framework for staff to approach capital flow issues with domestic authorities. Most mission chiefs interviewed by the Independent Evaluation Office (2015) indicated that, while in practice the way they analysed the issue of financial account liberalisation in Article IV and technical assistance missions had not changed, the Institutional View had helped discussions with authorities by removing taboos and minimising the stigma associated with imposing capital controls. Gallagher and Tian (2014) stress that the Fund's view of capital controls has changed, with increased support for capital controls "as a result of the crisis and as the vulnerabilities associated with capital flows accentuate". This is often interpreted as a more case-by-case approach to capital flow measures.

The IMF is now reviewing its Institutional View on the Liberalization and Management of Capital Flows, which represents a key yardstick for gauging countries' capital flow-related policies in both bilateral and multilateral surveillance activities. This review should be underpinned by a new holistic framework emphasising the relations between MPPs and CFMs. Furthermore, the review will have to be based on an as thorough and comprehensive body of evidence as possible on actual experience with these policies.

Consideration could be given to strengthening the focus of the Fund's work through appropriate wording of the ISD, without extending the Fund's jurisdiction to the financial account. The ISD sets out the principles of the Fund's work in bilateral and multilateral surveillance. As monitoring and surveillance are essential tools in dealing with the risks of capital flows, and in view of the increasing financial globalisation and heightened risks related, in particular, to short-term capital flows, the wording of the Decision could be strengthened to introduce a clearer focus beyond the currently sporadic references to capital flows.

5.2 International cooperation, capital flow management policies and data gaps

The Fund plays a central role in establishing common ground on CFMs, including advice on how country and region-specific and global conditions influence the appropriate use of CFMs. Continued cooperation between the IMF and other institutions will be important to inform the assessment of policies that are both macroprudential and CFMs, while ensuring that countries receive consistent advice on the appropriateness of such measures. In this respect, the IMF helps to inform the OECD's assessment of measures and potentially its review process of the Code.

FSAPs or Article IV reports can (and do) give advice on the intent, needs and success of specific CFMs applied by countries (identification problem), consistent with the Institutional View. The Fund could evaluate when measures are intended to influence capital flows, or rather to reduce financial stability risks with a possible side effect on capital flows.[56] Importantly, this may include cases where the measure might require derogations or reservations under the OECD Code. In this respect, the IMF can inform the OECD's assessment and peer review process, particularly when CFMs are justified owing to financial stability risks.

The Fund should also have a role in international initiatives to strengthen the monitoring and coordination of MPPs... While strong domestic macroprudential frameworks are an important starting point, international cooperation is also required to manage global risks and globally integrated markets. Further international cooperation would require development of a robust institutional framework and a consensus on which international forum would be best placed to deal with this topic, including shadow banking and asset management issues. Although there will always remain a degree of tension and competition among existing institutions in this respect, at the global level the IMF could and should play a key role in this field. The BIS-FSB-IMF have recently started to review best practices/lessons learned regarding definitions, governance arrangements, operational considerations and international consistency of macroprudential policies. At the European level a lot of progress has been made in the context of the ESRB.

...with a special focus on their relation with CFMs. MPPs can have an important effect in limiting the fallout from rapid capital inflows and their sudden reversal. For example, capital inflows relating to rapid growth in residential real estate mortgage loans can be addressed by tightening lending standards, such as loan-to-value or loan-to-income limits. Broader tools, such as the countercyclical capital buffer (CCyB), could also be useful provided that other countries are adhering to the reciprocity principles, especially in cases where policy leakages are potentially large. The IMF's analytical and surveillance work could help to establish more firmly under which conditions domestic macroprudential measures can succeed in dealing with

[56] See also Beck et al. (2015).

risks around capital flow volatility (and, by implication, help to define the conditions under which CFMs are needed).

One important step to ensure the effectiveness of domestic macroprudential policy and make CFMs less necessary is to reduce the scope for leakages. In situations of increased cross-border or foreign branch lending, there is a risk of the desired impact of prudential policy tightening "leaking" to domestic sectors.[57] One way to deal with leakages is via reciprocity agreements, that is, securing a level playing field in the domestic market by ensuring that foreign regulators apply the same regulations as domestic ones (such as the regime for the CCyB). In this respect, further international cooperation may be warranted to avoid spillovers and regulatory arbitrage, as is already the case among EU countries through the mutual recognition of MPPs in a framework managed by the ESRB. Further research and surveillance on the scope of evasion and leakages, including by the IMF, will help to achieve greater international cooperation to make prudential frameworks more effective.

The Fund should also play a central role in the international efforts to close data gaps and promote research on capital flows. Substantial progress has been made since the global financial crisis, especially through the FSB/IMF data gaps initiative;[58] however, significant data gaps remain across a range of sectors. For example, data gaps still hamper regular surveillance of sectoral external balance sheets and currency, as well as maturity mismatches. Filling in these gaps would help with the analysis of the conditions under which CFM measures are used, fostering international cooperation in dealing with capital flows. Finally, the Fund should continue to advance its research agenda on capital flows and related policies, doing so in cooperation with other international institutions such as the BIS and FSB. The institution should seek to substantiate the surveillance of capital flows through strong analytical underpinnings. Removing some of the uncertainty surrounding the transmission of policies or the effect of capital flows on economic variables – i.e. uncertainty surrounding the size and signs of spillovers – will make cooperation on capital flows easier to achieve.

5.3 Providing insurance and lending

The Fund has a responsibility to assist members experiencing actual or potential balance of payments problems, or, more specifically, "to shorten the duration and lessen the degree of disequilibrium in the international balances of payments of members".[59] The Fund's central role in the GFSN makes it

[57] Reinhardt and Sowerbutts (2015) find evidence that the domestic non-financial sector borrows more from abroad after an increase in capital requirements, but not after an increase in lending standards. This is due to the fact that capital regulation only captures domestic banks and foreign subsidiaries, often leaving foreign branch or direct cross-border lending outside the scope of regulation; by contrast, lending standards are usually applied via conduct-based regulation capturing all products sold in a country.

[58] See, for instance, the FSB-IMF report to the G20, "The G-20 Data Gaps Initiative: Overview of the Work Process in 2016", 22 February 2016.

[59] Article 1, IMF Articles of Agreement.

essential that it has the appropriate lending toolkit to deal with, and insure against, balance of payments problems in the face of volatile capital flows.[60] It does this through ex post lending once balance of payments problems have materialised, and ex ante, through precautionary lending.

Other elements of the GFSN could also provide insurance against volatile capital flows, but they may be more costly or unavailable for a number of countries. The first line of defence for all countries is strong frameworks and sound domestic policies, which help reduce the need for liquidity insurance. Reserves are often seen as the second line of defence against balance of payments problems, but are also deemed a costly form of insurance in the GFSN (IMF, 2016a).[61] In the case of regional financial arrangements (RFAs), many have not been tested in crisis situations, and they exclude a large number of EMEs.[62] Denbee et al. (2016) run a series of stress scenarios to assess the adequacy of the GFSN and find that the current safety net is broadly sufficient in aggregate, although gaps in the GFSN could surface in times of major shocks.

One of the obstacles to broader use of IMF resources is the perceived political cost (or "stigma"). This makes the Fund less attractive as an "insurance policy" and could therefore limit its involvement in potential balance of payments crises. The Fund's most recent additions to its lending toolkit were, inter alia, aimed at reducing the cost associated with using Fund resources by involving limited or no ex post conditionality in its precautionary programmes, the Flexible Credit Line (FCL), the Precautionary and Liquidity Line (PLL) and the Rapid Finance Instrument (RFI) (IMF, 2014a). The use of these new facilities has, however, been limited. Only three countries have been granted access to the FCL (Colombia, Mexico and Poland) and two countries to the PLL (Former Yugoslav Republic of Macedonia and Morocco), while the RFI has remained untested since its introduction in 2011. The main issue with the use of precautionary facilities is that qualifying for them is a challenge, and exiting even more so.

The upcoming review of the Fund's lending toolkit will consider how to address the challenges posed by increasing financial globalisation, capital flows and their volatility. The G20 and the International Monetary and Financial Committee (IMFC) recently endorsed the work to improve the IMF's toolkit. The review should be comprehensive and cover the whole lending toolkit if it is to continue to meet the needs of its members. In the context of this review, the Fund is currently drawing up proposals for a revolving precautionary credit line to assist members in tackling short-term, non-structural balance of payments problems in the face of volatile credit flows. Such an instrument could facilitate propagation of the Fund's institutional view regarding capital account openness, given the moral suasion that can be exerted in country-specific reviews. The design of such an

60 See also Scheubel and Stracca (2016).

61 Rodrik (2006) points out that reserve build-up is rational in view of the significant costs of being less liquid.

62 Total RFA resources amount to around USD 1.3 billion, of which 70% are European RFAs (ESM, EFSF, EFSM), 18% is the Asian Chiang Mai Initiative, and 7% the BRICs Contingency Reserves Arrangement (Garrido et. al 2016).

instrument should address issues related to signalling, the “stigma” associated with the IMF’s precautionary facilities, and the funding of it, given the need to make an efficient use of limited IMF resources.

6 Main messages

Capital flows can have very positive effects in recipient countries. While the predicted direction and impact of capital flows according to the neo-classical model cannot be readily substantiated, there is agreement that inflows of capital can have desirable effects, as foreign capital can finance investment, stimulate economic growth and increase consumer welfare by enabling households to better smooth consumption over time. Whether or not these positive effects materialise will depend on many factors, including the destination of the external financing, as it could, for example, contribute either to enhance productivity or to fuel an asset bubble in the real estate sector.

However, cross-border capital flows carry risks. These risks increase with the size of the flows, their procyclicality and their volatility. In particular, short-term capital flows can pose serious challenges for policymakers. The risks associated with capital flows also increase when the opening up of the financial account takes place prematurely or too fast. Evidence shows that countries with strong institutions and macroeconomic fundamentals tend to attract less volatile types of capital, and are less vulnerable to large swings in capital flows during crisis times.

Disentangling push from pull factors is a necessary step in designing appropriate policies to deal with capital flows. Where push factors (such as rising levels of global risk aversion or interest rates in advanced economies) are the dominant drivers, this can point to the usefulness of MPPs and CFMs introduced by recipient countries in dealing with capital flows. Conversely, where pull factors are dominant, this would suggest priority should be given to the use of traditional macroeconomic policies to deal with external shocks to the financial account. Previous empirical work indicates that push factors tend to be more pervasive during periods of global financial stress, whereas pull factors are more dominant during tranquil times.

The empirical evidence on the effectiveness of MPPs and other CFMs in reducing capital inflows is mixed. MPPs tend to be effective in mitigating certain components of systemic risk, with more limited effects found in reducing capital flows. It is difficult to find a consensus on the effectiveness of CFMs in reducing capital flows: early literature suggested that CFMs affected the composition rather than the level of flows, but more recent studies have suggested that they may also help to reduce the level of flows. Since the IMF's Institutional View was issued in 2012, CFMs have been increasingly recognised as an important part of the toolkit to address macroprudential risks, provided that certain conditions are met and that they are used within an appropriate macro-policy framework. There is, however, a lack of clarity on which of these CFMs are part of the macroprudential policy toolkit, and the extent to which they overlap with MPPs. It is also important to bear in mind that MPPs and other CFMs can entail externalities whereby capital is shifted to other economies with similar fundamentals.

The overlap between CFMs and MPPs calls for enhanced cooperation between national authorities and international institutions. The approaches adopted by the OECD and the IMF are largely complementary. Still, the G20's IFA Working Group has called for an upgrade and for coordination of the two approaches. The review of the OECD Code of Liberalization of Capital Movements should be aimed at ensuring the consistency of the Code with the prudential framework (at both the international and the national level), and at clarifying in particular the treatment of CFMs with a macroprudential intent. In this regard, the Fund also has a central role to play in establishing common ground on CFMs, advising on country-specific conditions and global factors that need to be taken into account to assess the appropriateness of CFMs, as well as their spillover and externality effects. Continued cooperation between the IMF and the OECD will be important to inform the assessment of measures that are both MPP and CFMs.

While CFMs have a role to play in certain circumstances, MPPs are an important first line of defence and should be deployed on an ongoing basis to ensure sound domestic financial systems. To ensure the effectiveness of MPPs, reciprocity frameworks could be applied to macroprudential tools, other than the countercyclical capital buffer, where international cooperation is thought to be required (ESRB, 2015). The FSB workstream on asset managers and market liquidity risks to address structural vulnerabilities from asset management activities is an important step towards extending the regulatory perimeter beyond banking, and beyond a focus on recipient countries. Any policies aimed at reducing the risks taken by asset managers on their global business would likely affect capital flows, especially given the rapid growth in cross-border portfolio flows since the crisis.

Regarding the role of the IMF, regular surveillance is among the most important tools the institution can use to prevent crises and assist the international community in dealing with capital flows. Given the diversity of country experiences with capital flows, the Fund should provide tailored and granular advice at the bilateral level. Recent initiatives to strengthen balance sheet analysis, the surveillance of financial sector and macro-financial linkages, and the monitoring of structural issues will help improve the analysis of and advice on capital flows and related policies. Through its multilateral surveillance, the Fund has a key role to play in the analysis of cross-border spillovers arising from monetary and financial sector policies in systemic countries, and from the use of macroprudential policies and CFMs by source and destination countries. As monitoring and surveillance are essential tools in dealing with the risks of capital flows, consideration could be given to strengthening the focus of the Fund's work through appropriate wording of the ISD, without extending the Fund's jurisdiction to the financial account.

The Fund also plays a central role in the international efforts to close data gaps. Substantial progress has been made since the global financial crisis especially through the FSB/IMF data gaps initiative; however, there remain significant data gaps across a range of sectors. Closing these gaps would help also to properly assess the appropriateness of CFMs and to build up a comprehensive approach to deal with capital flows.

Finally, the Fund has a responsibility to assist members experiencing actual or potential balance of payments problems. Other elements of the GFSN provide insurance against volatile capital flows, but they are either more costly or unavailable for many vulnerable countries. The upcoming review of the Fund's lending toolkit will rightly focus on how to address the challenges posed by increasing financial globalisation, capital flows and their volatility. While regular programmes are best equipped to overcome balance of payments challenges, the review will inter alia explore how to adjust the toolkit, possibly with a short-term instrument, to better address these concerns while limiting political costs, tackling signalling issues and safeguarding Fund resources.

References

Ahmed, S., Coulibaly, B. and Zlate, A. (2015), "International Financial Spillovers to Emerging Market Economies: How Important Are Economic Fundamentals?", *International Finance Discussion Papers,* No 1135, Board of Governors of the Federal Reserve System.

Ahmed, S. and Zlate, A. (2014), "Capital Flows to Emerging Market Economies: A Brave New World?", *Journal of International Money and Finance*, Vol. 48, Part B, pp. 221-248.

Aiyar, S., Calomiris, C.W. and Wieladek, T. (2014), "Does Macro-Prudential Regulation Leak? Evidence from a UK Policy Experiment", *Journal of Money, Credit and Banking*, Vol. 46, s1, pp. 181-214.

Aizenman, J., Binici, M. and Hutchison, M. (2014), "The Transmission of Federal Reserve Tapering News to Emerging Financial Markets", *International Journal of Central Banking*, Vol. 12, No 2, pp. 317-356.

Aizenman, J. and Sun, Y. (2009), "The financial crisis and sizable international reserves depletion: From 'fear of floating' to the 'fear of losing international reserves'?", *NBER Working Paper,* No 15308, October.

Alberola, E., Erce, A. and Serena, J.M. (2016), "International Reserves and Gross Capital Flow Dynamics", *Journal of International Money and Finance*, Vol. 60, pp. 151-171.

Albuquerque, R., (2005), "World Market Integration through the Lens of Foreign Direct Investors", *Journal of International Economics*, Vol. 66, No 2, pp. 267-295.

Alonso, I. (2015), "Institutional Drivers of Capital Flows", *Bank of Spain Working Paper*, No 1531.

Baba, C. and Kokenyne, A. (2011), "Effectiveness of Capital Controls in Selected Emerging Markets in the 2000s", *IMF Working Paper*, No 11/281, December.

Baek, I., (2006), "Portfolio Investment Flows to Asia and Latin America: Pull, Push or Market Sentiment?", *Journal of Asian Economics*, Vol. 17, No 2, pp. 363-373.

Beck, R., Beirne, J., Paternò, F., Peeters, J., Ramos-Tallada, J., Rebillard, C., Reinhardt, D. and Weissenseel, L. (2015), "The side effects of national financial sector policies: framing the debate on financial protectionism", *Occasional Paper Series*, No 166, ECB, Frankfurt am Main, September.

Beirne, J. and Friedrich, C. (2014), "Capital flows and macro prudential policies: A multilateral assessment of effectiveness and externalities", *Working Paper Series*, No 1721, ECB, Frankfurt am Main, August.

Bhagwati, J. (1998), "The Capital Myth: The Difference between Trade in Widgets and Dollars", *Foreign Affairs*, May, pp. 7-12.

Biglaiser, G. and DeRouen, K. (2006), "Economic Reforms and Inflows of Foreign Direct Investment in Latin America", *Latin American Research Review*, Vol. 41, No 1, pp. 51-75.

Binici, M., Hutchison, M. and Schindler, M. (2010), "Controlling Capital? Legal Restrictions and the Asset Composition of International Financial Flows", *Journal of International Money and Finance*, Vol. 29, No 4, pp. 666-684.

BIS-IMF-FSB (2016), "Elements of Effective Macroprudential Policies: Lessons from International Experience", mimeo.

Blanchard, O., Ostry, J., Gosh, A. and Chamon, M. (2015), "Are Capital Inflows Expansionary or Contractionary? Theory, Policy Implications and some Evidence", *NBER Working Paper*, No 21619, October.

Block, B. and Forbes, K. (2004), "Capital Flows to Emerging Markets: The Myths and Realities", paper prepared for the Federal Reserve Bank of Dallas conference *Myths and Realities of Globalization*.

Bluedorn, J., Duttagupta, R., Guajordo J. and Topalova, P. (2013), "Capital Flows are Fickle: Anytime, Anywhere", *IMF Working Paper*, No 13/183, August.

Borio, C. and Shim, I. (2007), "What can (macro-)prudential policy do to support monetary policy?", *BIS Working Paper*, No 242, December.

Bruno, V., Shim, I. and Shin, H.S. (2015), "Comparative Assessment of Macroprudential Policies", *BIS Working Paper*, No 502, June.

Bruno, V. and Shin, H.S. (2014), "Assessing Macroprudential Policies: The Case of South Korea", *Scandinavian Journal of Economics*, Vol. 111, No 1, pp. 128-157.

Bruno, V. and Shin, H.S. (2015), "Capital Flows and the Risk-taking Channel of Monetary Policy", *Journal of Monetary Economics*, Vol. 71, pp. 119-132.

Bussière, M., Schmidt, J. and Valla, N. (2016), "International Financial Flows in the New Normal: Key Patterns (and Why We Should Care)", *CEPII Policy Brief 2016-10*, CEPII Research Center.

Bussière, M. and Fratzscher, M. (2008), "Financial Openness and Growth: Short-run Gain, Long-run Pain?", *Review of International Economics*, Vol. 16, No 1, pp. 69-95.

Calvo, G., Leiderman, L. and Reinhart, C. (1993), "Capital inflows and exchange rate appreciation in Latin America: the role of external factors", *IMF Staff Papers*, Vol. 40, No 1, pp. 108-151.

Calvo, G., Leiderman, L. and Reinhart, C. (1996), "Inflows of Capital to Developing Countries in the 1990s", *Journal of Economic Perspectives*, Vol. 10, No 2, pp. 123-139.

Cerutti, E., Claessens, S. and Puy, D. (2015), “Push Factors and Capital Flows to Emerging Markets: Why Knowing Your Lender Matters More Than Fundamentals”, *IMF Working Paper*, No 15/127, June.

Cerutti, E., Claessens, S. and Ratnovski, L. (2014), “Global Liquidity and the Drivers of Cross-border Bank Flows”, *IMF Working Paper*, No 14/69, April.

Chamon, M. and Garcia, M. (2013), “Capital controls in Brazil: Effective?”, *Discussion Papers*, No 606, Department of Economics PUC-Rio, Rio de Janeiro.

Chuhan, P., Cleassens, S. and Mamingi, N. (1998), “Equity and bond flows to Latin America and Asia: the role of global and country factors”, *Journal of Development Economics*, Vol. 55, pp. 439-463.

Cizel, J., Frost, J., Houben, A. and Wierts, P. (2016), “Effective Macroprudential Policy: Cross-Sector Substitution of Price and Quantity Measures”, *IMF Working Paper*, No 16/94, April.

Claessens, S., Ghosh, A. and Mihet, R. (2014), “Macro-prudential policies to mitigate financial system vulnerabilities”, *IMF Working Paper*, No 14/155, August.

Committee on the Global Financial System (CGFS) (2009), “Capital Flows and Emerging Market Economies”, *CGFS Papers*, No 33.

Dahlhaus, T. and Vasishtha, G. (2014), “The Impact of U.S. Monetary Policy Normalization on Capital Flows to Emerging-Market Economies", *Staff Working Papers*, No 14-53, Bank of Canada.

De Crescenzio, A., Golin, M. and Ott, A. (2015), “Currency-based measures targeting banks – Balancing national regulation of risk and financial openness”, *OECD Working Papers on International Investment*, No 2015/03, December.

De Roure, C., Furniagiev, S. and Reitz, S. (2013), “The Microstructure of Exchange Rate Management: FX Intervention and Capital Controls in Brazil”, *Kiel Working Papers*, No 1865.

Dedola, L., Rivolta, G. and Stracca, L. (2015), “If the Fed sneezes, who catches a cold?”, mimeo.

DeLong, B. (2004), “Should We Still Support Untrammelled International Capital Mobility? Or are Capital Controls Less Evil than We Once Believed?”, *The Economists’ Voice*, Vol. 1, Issue 1, pp. 1-7.

Dell’Erba, S. and Reinhardt, D. (2015), “FDI, debt and capital controls”, *Journal of International Money and Finance*, Vol. 58, Issue C, pp. 29-50.

Denbee, E., Jung, C. and Paterno, F. (2016), “Stitching together the global financial safety net”, *Bank of England Financial Stability Paper*, No 36, February.

Eichengreen, B. and Gupta, P. (2014), "Tapering Talk: The Impact of Expectations of Reduced Federal Reserve Security Purchases on Emerging Markets", *Policy Research Working Paper Series*, No 6754, The World Bank, January.

Eller, M., Hubert, F. and Schuberth, H. (2016), "Understanding the drivers of capital flows into the CESEE countries", *OeNB quarterly FEEI 2/2016*.

European Central Bank (2016), "*Financial Integration in Europe"*, Frankfurt am Main, April.

European Systemic Risk Board (2015), "Recommendation on the assessment of cross-border effects of and voluntary reciprocity for macroprudential policy measures", *Recommendation ESRB/2015/2*, Frankfurt am Main.

Federico, P.M. (2011), "Systemic Liquidity Risk-Taking in Emerging Markets", mimeo.

Fernández, A., Klein, M., Rebucci, A., Schindler, A. and Uribe, M. (2015), "Capital Control Measures: A New Dataset", *NBER Working Paper*, No 20970, April.

Fernandez-Arias, E. (1996), "The new wave of private capital inflows: push or pull?" *Journal of Development Economics*, Vol. 48, 389-418.

Fischer, S. (2006): "Financial Market Liberalization", in Financial Globalisation, 5th BIS Annual Research Conference, *BIS Papers*, No 32, S4-S11.

Forbes, K., Fratzscher, M., Kostka, T. and Straub, R. (2016a), "Bubble thy neighboor: Portfolio effects and externalities from capital controls", *Journal of International Economics*, Vol. 99, pp. 85-104.

Forbes, K., Reinhardt, D. and T. Wieladek (2016b). "The spillovers, interactions, and (un)intended consequences of monetary and regulatory policies", *Discussion Papers*, No 44, Monetary Policy Committee Unit, Bank of England.

Forbes, K., Fratzscher, M. and Straub, R. (2015), "Capital-flow management measures: What are they good for?", *Journal of International Economics,* Vol. 96, S76-S97.

Forbes, K. and Warnock, F. (2012), "Capital flow waves: Surges, stops, flight, and retrenchment", *Journal of International Economics*, Vol. 88, No 2, pp. 235-251.

Fratzscher, M. (2012), "Capital flows, push versus pull factors and the global financial crisis", *Journal of International Economics*, Vol. 88, No 2, pp. 341-356.

Fratzscher, M., Lo Duca, M. and Straub, R. (2013), "On the International Spillovers of US Quantitative Easing", *DIW Berlin Discussion Paper*, German Institute for Economic Research.

Furceri, D. and Loungani, P. (2015), "Capital Account Liberalization and Inequality", *IMF Working Paper*, No 15/243, November.

Gallagher, K. and Tian, Y. (2014), “Regulating Capital Flows in Emerging Markets: The IMF and the Global Financial Crisis”, *GEGI Working Paper*, No 5.

Garcia, M. (2015), “Capital Controls and Implications for Surveillance and Coordination: Brazil and Latin America”, *Textos para discussão*, No 631, Department of Economics PUC-Rio, Rio de Janeiro.

Garrido, I., Moreno, P. and Serra, X. (2016), “El nuevo mapa de las Instituciones Financieras Internacionales”, *Boletin Economico*, Banco de España, January.

Ghosh, A., Ostry, J. and Tsangarides, C. (2012), “Shifting Motives: Explaining the Buildup in Official Reserves in Emerging Markets since the 1980s”, *IMF Working Paper*, No 12/34, January.

Ghosh, A., Ostry, J. and Qureshi, M. (2016), “When Do Capital Inflow Surges End in Tears?”, *American Economic Review*, Vol. 106, No 5, pp. 581-585.

Ghosh, A., Qureshi, M., Kim, J. and Zalduendo, J. (2014), “Surges”, *Journal of International Economics*, Vol. 92, No 2, pp. 266–285.

Ghosh, A., Qureshi, M. and Sugawara, N. (2014), “Regulating Capital Flows at Both Ends: Does it Work?”, *IMF Working Paper,* No 14/188, October.

Giordani, P., Ruta, M., Weisfeld, H. and Zhu, L. (2014), “Capital Flow Deflection”, *IMF Working Paper*, No 14/145, August.

Gochoco-Bautista, M.S., Jongwanich, J. and Lee, J.W. (2012), “How Effective are Capital Controls in Asia?”, *Asian Economic Papers,* Vol. 11, No 2, pp. 122-143.

Gourinchas, P. and Jeanne, O. (2013), “Capital Flows to Developing Countries: The Allocation Puzzle”, *Review of Economic Studies,* Vol. 80, pp. 1484-1515.

Habermeier, K., Kokenyne, A. and Baba, C. (2011), “The Effectiveness of Capital Controls and Prudential Policies in Managing Large Inflows", *IMF Staff Discussion Note*, No 11/14, August.

Hatzvi, E., Meredith, J. and Nixon, W. (2015), “Chinese Capital Flows and Capital Account Liberalisation”, *Reserve Bank of Australia Bulletin*, December Quarter 2015, Sydney.

Henry, P.B. (2007): “Capital Account Liberalization: Theory, Evidence, and Speculation”, *Journal of Economic Literature*, Vol. XLV, pp. 887-935.

Independent Evaluation Office (2015), “*The IMF’s Approach to Capital Account Liberalization: Revisiting the 2005 IEO Evaluation Report*”, Washington, D.C.

International Monetary Fund (2011), “Republic of Korea: 2011 Article IV Consultation: Staff Report and Public Information Notice on the Executive Board Discussion”, *Country Report*, No 11/246, Washington, D.C.

International Monetary Fund (2012), *The Liberalization and Management of Capital Flows: An Institutional View*, Washington, D.C.

International Monetary Fund (2013), *Guidance Note for the Liberalization and Management of Capital Flows*, Washington, D.C.

International Monetary Fund (2014a), *Review of the Flexible Credit Line, the Precautionary and Liquidity Line and the Rapid Financing Instrument*, Washington, D.C.

International Monetary Fund (2014b), "How do changes in investor base and financial deepening affect emerging market economies?", *Global Financial Stability Report*, Chapter 2, Washington, D.C.

International Monetary Fund (2015a), *Managing Capital Outflows – Further Operational Considerations*, Washington, D.C.

International Monetary Fund (2015b), *Structural reforms and macroeconomic performance: initial considerations for the Fund*, Washington, D.C.

International Monetary Fund (2016a), *Review of the Adequacy of the Global Financial Safety Net*, Washington, D.C.

International Monetary Fund (2016b), *Recent Experiences in Managing Capital Flows*, mimeo, Washington, D.C.

IRC Task Force on IMF Issues (2010): *Surveillance and financial safety nets: a note on the IMF's mandate*, International Relations Committee of the ESCB, Frankfurt am Main.

Jinjarak, Y., Noy, I. and Zheng, H. (2013), "Capital controls in Brazil – Stemming a tide with a signal?", *Journal of Banking and Finance*, Vol. 37, pp. 2938–2952.

Koepke, R. (2014), "Fed Policy Expectations and Portfolio Flows to Emerging Markets", *IIF Working Paper*, May.

Koepke, R. (2015), "What drives capital flows to emerging markets? A survey of the empirical literature", *IIF Working Paper*, April.

Korinek, A. (2010), *Regulating Capital Flows to Emerging Markets: An Externality View*, mimeo.

Kose, A., Prasad, E., Rogoff, K. and Wei, S. (2009): "Financial Globalization: A Reappraisal", *IMF Staff Papers*, Vol. 56, No 1, pp. 8-62, April.

Kose, A., Prasad, E. and Taylor, A. (2011), "Thresholds in the process of international financial integration", *Journal of International Money and Finance,* Vol. 30, No 1, pp. 147-179.

Lipsey, R. and Lancaster, K. (1956), "The General Theory of Second Best", *The Review of Economic Studies*, Vol. 24, No 1, pp. 11-32.

Lane, P. (2013), "Capital Flows in the Euro Area", *European Economy Economic Paper*, No 497, European Commission, April.

Lane, P. and McQuade, P. (2014), “Domestic Credit Growth and International Capital Flows”, *Scandinavian Journal of Economics*, Vol. 116, No 1, pp. 218-252.

Lim, C., Columba, F., Costa, A., Kongsamut, P., Otani, A., Saiyid, M., Wezel, T. and Wu, X. (2011), “Macroprudential Policy: What Instruments and How to Use Them, Lessons from Country Experiences”, *IMF Working Paper*, No 11/238, October.

Lim, J.J., Mohapatra, S., and Stocker, M. (2014), “Tinker, Taper, QE, Bye? The Effect of Quantitative Easing on Financial Flows to Developing Countries”, *Background Paper for Global Economic Prospects 2014*, The World Bank.

Lo Duca, M. (2012). “Modelling the time varying determinants of portfolio flows to emerging markets”, Working Paper Series, No 1468, ECB, Frankfurt am Main, September.

Lorenzoni, G. (2008), “Inefficient Credit Booms”, *Review of Economic Studies*, Vol. 75, No 3, pp. 809-833.

Lucas, R. (1990), “Why Doesn’t Capital Flow from Rich to Poor Countries?”, *American Economic Review*, Vol. 80, pp. 92-96.

Magud, N., Reinhart, C. and Rogoff, K. (2011), “Capital Controls: Myth and Reality: A Portfolio Balance Approach”, *NBER Working Paper*, No 16805, February.

Milesi-Ferretti, G. and Tille, C. (2011), “The great retrenchment: international capital flows during the global financial crisis”, *Economic Policy,* Vol. 26, No 66, pp. 289-346.

Miranda-Agrippino, S. and Rey, H. (2015), “World Asset Markets and the Global Financial Cycle”, *NBER Working Paper*, No 21722, November.

Mishkin, F. (2007), “Globalization and Financial Development”, *Speech to the New Perspectives on Financial Globalization Conference*, Washington, D.C.

Mishra, P., Moriyama, K., N'Diaye, P. and Nguyen, L. (2014), “Impact of Fed Tapering Announcements on Emerging Markets”, *IMF Working Paper*, No 14/109, June.

Obstfeld, M. (1994), “The Logic of Currency Crises”, *Cahiers Economiques et Monétaires,* No 43, pp. 189-213, Banque de France.

Obstfeld, M. (2005), *Reflections upon rereading ‘The Capital Myth’*, mimeo.

Obstfeld, M. (2012), “Financial flows, financial crises and global imbalances”, *Journal of International Money and Finance*. Vol. 31, pp. 469-480

Obstfeld, M. (2014), *Trilemmas and Tradeoffs: Living with Financial Globalization*, mimeo.

Obstfeld, M. and Rogoff, K. (1996), *Foundations of International Macroeconomics*, MIT Press, Cambridge.

Ostry, J., Ghosh, A., Habermeier, K., Laeven, L., Chamon, M., Qureshi, M.S. and Kokenyne, A. (2011), "Managing Capital Inflows: What Tools to Use?", *IMF Staff Discussion Notes*, No 11/06, April.

Pasricha, G., Falagiarda, M., Bijsterbosch, M. and Aizenman, J. (2015), "Domestic and Multilateral Effects of Capital Controls in Emerging Markets", *NBER Working Paper*, No 20822, January.

Prasad, E., Rajan, R. and Subramaian, A. (2007), "Foreign Capital and Economic Growth", *Brooking Papers on Economic Activity*, Vol. 38, No 1, 153-230.

Qureshi, M.S., Ostry, J.D., Ghosh, A.R. and Chamon, M. (2012), "Tools for managing financial-stability risks from capital inflows", *Journal of International Economics*, Vol. 88, Issue 2, pp. 407-421.

Reinhardt, D. and Sowerbutts, R. (2015), "Regulatory arbitrage in action: evidence from banking flows and macro prudential policy", *Bank of England Working Paper*, No 546, September.

Reinhart, C. and Reinhart, V. (2008), "Capital flow bonanzas: an encompassing view of the past and present", in: J. Frankel and F. Giavazzi (eds), *NBER International Seminar in Macroeconomics 2008*, Chicago University Press, Chicago.

Rey, H. (2013), "Dilemma not Trilemma: The global financial cycle and monetary policy independence", in: Proceedings of the Federal Reserve Bank of Kansas City Economic Symposium, Jackson Hole.

Rey, H. (2015), "Dilemma not Trilemma: The global Financial Cycle and Monetary Policy Independence", *NBER Working Paper*, No 21162, May.

Rodrik, D. (2006), "The Social Cost of Foreign Exchange Reserves", *NBER Working Paper*, No 11952, January.

Rodrik, D. (2007), "How to Save Globalization From Its Cheerleaders", *The Journal of International Trade and Diplomacy*, Vol. 1, No 2, pp. 1-33.

Rodrik, D. and Subramanian, A. (2009), "Why did Financial Globalization Disappoint?", *IMF Staff Papers*, Vol. 56, No 1, pp. 112-138.

Sarno, L., Tsiakas, I. and B. Ulloa (2016), "What Drives International Portfolio Flows?", *Journal of International Money and Finance*, Vol. 60, Issue C, pp. 53-72.

Scheubel, B. and Stracca, L. (2016), "What do we know about the global financial safety net? Rationale, data and possible evolution", *Occasional Paper Series*, No 177, ECB, Frankfurt am Main, August.

Stiglitz, J. (2000), "Capital Market Liberalization, Economic Growth, and Instability", *World Development*, Vol. 28, No 6, pp. 1075-1086.

Stiglitz, J. (2005), "The Overselling of Globalization", in: M. Weinstein (ed.), *Globalization: What's New*, Columbia University Press, New York.

Stiglitz, J. (2010), “Risk and Global Economic Architecture: Why Full Financial Integration may be Undesirable”, *NBER Working Paper*, No 15718, February.

Taylor, M. and Sarno, L. (1997), “Capital flows to developing countries: long- and short-term determinants”, *The World Bank Economic Review*, Vol. 11, No 3, pp. 451-470.

Tillmann, P. (2016), “Unconventional monetary policy and the spillovers to emerging markets”, *Journal of Internal Money and Finance*, Vol. 66, pp. 136-156.

Turner, A. (2010), “After the crisis: Assessing the Costs and Benefits of Financial Liberalization”, *14th Chintaman Deskmukh Memorial Lecture*, Reserve Bank of India.

Wei, S. (2000a), “Local corruption and global capital flows”, *Brookings Papers on Economic Activity*, No 2, pp. 303-354.

Wei, S. (2000b), “How taxing is corruption on international investors”, *Review of Economics and Statistics*, Vol. 82, No 1, pp. 1-11.

Wei, S. (2006), “Connecting two views of financial globalization: can we make further progress?”, *Journal of the Japanese and International Economies*, Vol. 20, pp. 459-481.

World Bank (1997), “Private Capital Flows to Developing Countries: the Road to Financial Integration”, *World Bank Policy Research Report*, Washington, D.C.

Zettelmeyer, J., Nagy, P.M. and Jeffrey, S. (2010), “Addressing private sector currency mismatches in emerging Europe”, *EBRD Working Papers*, No 115, June.

Annexes

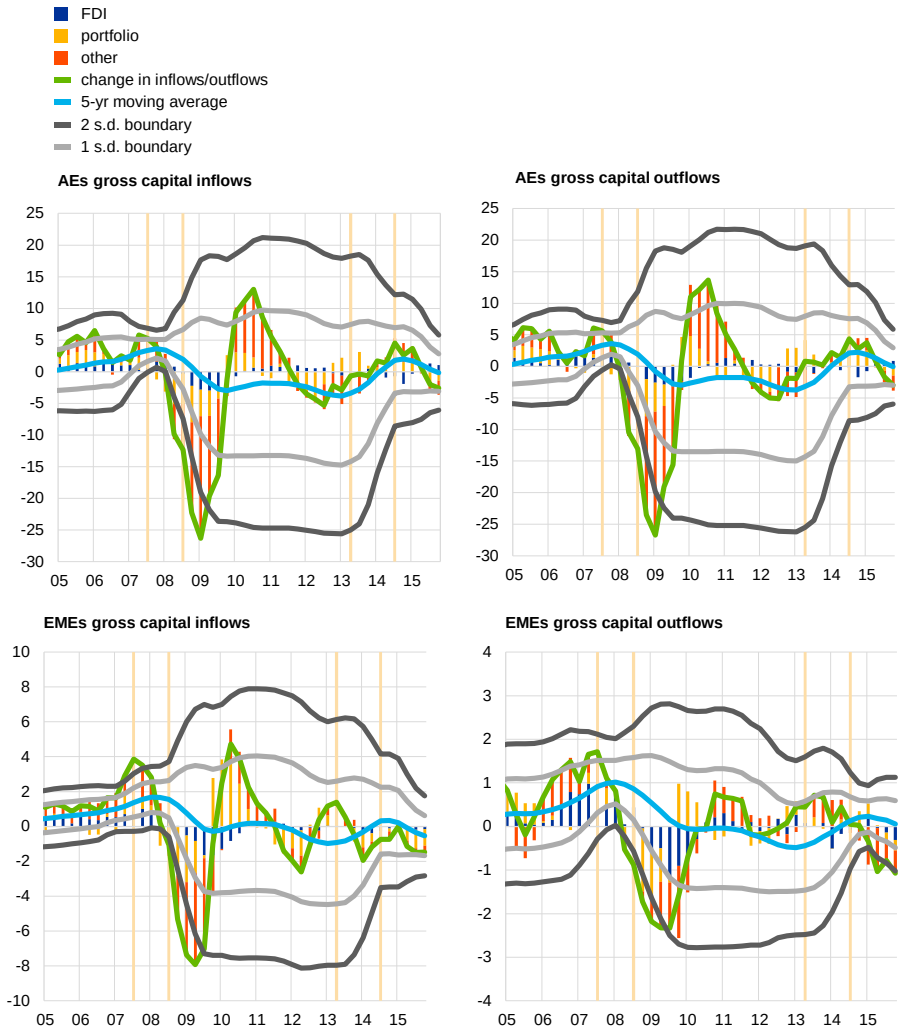
Identification of episodes of extreme capital flows

Following the methodology of Forbes and Warnock (2012), this annex identifies episodes of extreme capital flow movements in advanced and emerging market economies from 2005 to 2015. In particular, a sudden stop is identified as a period in which the annual change in gross inflows falls two standard deviations below its mean. Retrenchment episodes are similarly defined as periods in which the change in gross outflows falls two standard deviations below the average.

Chart A1

Annual change in the gross capital flows of AEs and EMEs

(percent of gdp, changes in annual sum of flows)



Methodology builds on Forbes and Warnock (2012). Data are in quarterly frequency for a sample of 24 AEs and 43 EMEs from the IMF Balance of Payments Statistics. China is excluded because of limited data availability. AEs and EMEs follow the IMF definition used in the WEO. Vertical bars represent interbank liquidity squeeze (2007), fall of Lehman (2008), taper tantrum (2013) and start of oil price decline/start of US dollar appreciation (2014) respectively.

Chart A1 shows that both AEs and EMEs experienced a sudden stop and a strong retrenchment following the collapse of Lehman Brothers. More recently, the gross inflows and outflows of EMEs have shown a marked decline, starting in mid-2014. Still, only the change in outflows passed two standard deviations, which qualifies the episode as a capital retrenchment.

Composition and dynamics of Chinese capital flows

Net capital flows to emerging markets have slowed since 2010, affecting all regions. According to the IMF, this slowdown has been similar in size and breadth to previous crisis episodes in the 1980s and 1990s.[63] China accounts for a large proportion of these flows and also for a large part of their reversal. Within the context of China's financial account liberalisation policy, this annex reviews the structure and recent dynamics of the country's capital in- and outflows.

China's policy of financial account liberalisation has been gradual and strategic. With the country's accession to the World Trade Organization in 2001, FDI regulations were relaxed significantly to encourage large multinational firms to transfer production and know-how to China. In contrast, the removal of restrictions on banking and portfolio flows came later and has been more partial. For example, it was only in 2007 that constraints on Chinese enterprises' use of FX deposits were eased. Finally, to date, restrictions on residents converting Renminbi into foreign exchange remain in place for all non-trade-related transactions, while portfolio investment continues to be highly regulated, remaining subject to various quota schemes.[64] In aggregate, China's financial account is still relatively closed.[65]

Mirroring this path of liberalisation, capital inflows have been dominated by FDI and outflows by public sector reserve accumulation, while banking-related flows in both directions have gained prominence over time. Given efforts to manage the exchange rate, large current account surpluses have been mirrored by significant public sector purchases of foreign assets of the order of 5-12% of GDP per year since 2007. In turn, FDI inflows have amounted to close to 5% of GDP over the past decade, in contrast to portfolio flows, which have represented only roughly one-fourth of this. Banking-related flows, as proxied by "Other Investment", have also become sizeable, with Chinese banks and their foreign subsidiaries playing an increasing role in facilitating cross-border lending and trade. Compared to other large EMEs, China's composition of capital flows stands somewhere between India, where the bulk of flows are FDI, and Russia, where banking-related flows dominate (see **Chart A2**, panel A).

---

63 Chapter 2 of the IMF's World Economic Outlook, April 2016, "Understanding the slowdown in capital flows to emerging markets".

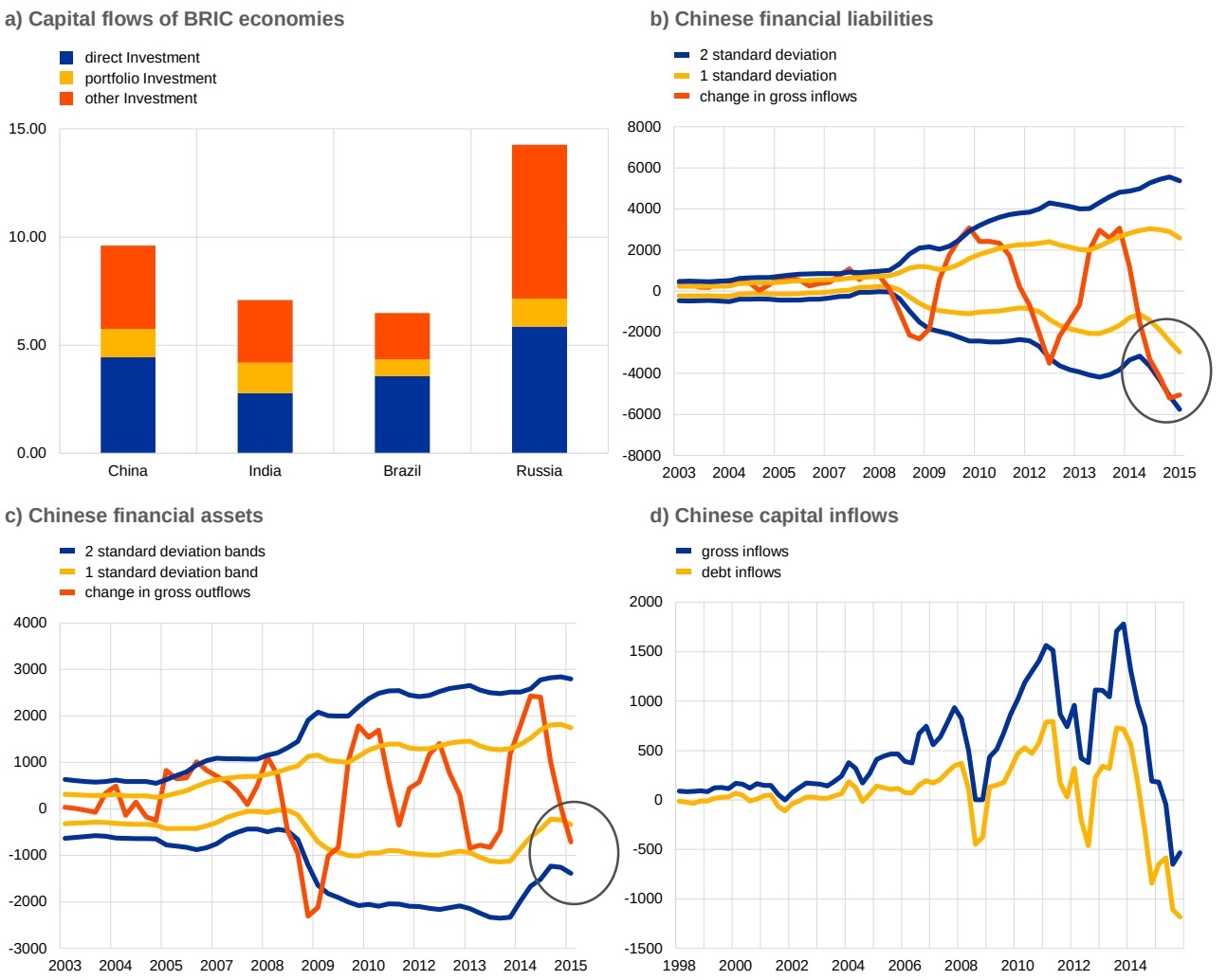
64 For an overview of China's liberalisation policy, see Hatzvi et al. (2015).

65 See Fernández et al. (2015).

Chart A2

Capital flows and financial liabilities in China and other BRICs countries

(sum of gross flows, per cent of GDP, average since 2005 for panel A; US $ hundreds of millions for panel B, C, D)



Sources and notes:
a) Thomson Retuers, Datastream, IMF, and author's calculations
b) Chinese State Administration on Foreign Exchange (SAFE)
c) Chinese State Administration on Foreign Exchange (SAFE)
d) State Administaration on Foreign Exchange (SAFE) and Thomson Reuters, 2-quarter moving averages

In recent years, net capital inflows have moderated, with outflows accelerating in 2014-15. Following the methodology of Forbes and Warnock (2012), a closer look at private financial assets and liabilities suggests a sudden stop in capital inflows, but not (yet) a sudden capital flight episode.[66, 67] The annual change in capital inflows fell

[66] For comparison, and in order to focus on private financial assets and liabilities, the measure of private financial assets and liabilities is reached by summing together Direct Investment, Portfolio Investment, Other Investment, and Financial Derivatives. The series on Chinese Financial Assets does not include Reserve Assets, although, when it is added, the movement in gross flows is very similar to the pattern displayed in **Chart 3**.

[67] A sudden stop is defined as a period when gross inflows (financial liabilities) fall one standard deviation below the mean, provided they reach two standard deviations below at some point. A capital flight episode has a similar definition, although it looks at gross private outflows (financial assets). For more, see Forbes and Warnock (2012).

below one standard deviation in mid-2014 and has since remained at a two standard deviation distance. Capital outflows, despite the sharp decline, have yet to reach the two standard deviation marker (panel B and C). In line with the vast majority of episodes of extreme capital flows, the sudden stop in capital inflows has also been debt rather than equity-led (panel D).

Historical and cross-country evidence would suggest that capital controls have mitigated the magnitude of capital account reversal, partly offsetting the effects of weaker Chinese growth and limited exchange rate flexibility. Growth in China slowed from over 10% in 2010 to below 7% in early 2016, thus probably explaining a large part of the slowdown in capital flows, in line with the economic literature. In addition, recent IMF research suggests that efforts to control the exchange rate over many years may have further contributed to recent adverse movements in capital flows. Counterbalancing this, however, there is evidence that the presence of capital controls and their particular composition has offered protection. In China's case, the fact that portfolio flows are consequently small and FDI sizeable has limited the magnitude of outflows, since, following the Forbes and Warnock analysis, the former have dropped well below the two standard deviation line, while the latter remains within the one standard deviation bands. The IMF also finds that, all else being equal, economies that were more open to inflows lost 4 percentage points of GDP in capital inflows over the period 2010-15, while those with below average FX flexibility lost 4.5 percentage points of GDP.[68] For China, there is evidence that, in the context of the step-wise Renminbi repegging in late 2015, Chinese corporations held on to US dollars earned abroad, while at the same time accelerating repayments of US dollar debt in the light of expectations of a future currency depreciation.[69]

In conclusion, while the gradual and strategic approach towards financial liberalisation tilted towards FDI may have protected China to some degree, the country has not been immune to shifting investor sentiment in the context of slowing domestic activity and a managed exchange rate. Going forward, it remains an important policy challenge to determine how to open up further, while avoiding disruptive capital movements.

Recent developments in capital flows in the euro area

Despite the sovereign debt crisis, the euro area remains highly integrated globally – more so than other large developed economies (see **Chart A3**, panel A). Although providing diversification benefits, such integration implies significant exposure to global financial shocks and an increased likelihood of currency, maturity or liquidity mismatches exacerbating crises when changes in investor sentiment occur.[70]

---

68 IMF's World Economic Outlook, April 2016.

69 Goldman Sachs Economics Research, "Sources and sizes of China's capital outflows", 26 January 2016.

70 Obstfeld (2012).

During the sovereign debt crisis, the euro area experienced a sudden stop in capital flows, which was exacerbated by the composition of flows, tilted towards procyclical bank and debt-related transactions. These had contributed to unsustainable credit dynamics and the build-up of debt-related vulnerabilities.[71] In some cases, this led to capital control measures. While the EU Treaty prohibits restrictions to capital movements, there can be exceptions. Article 65, for example, allows for flexibility for national financial stability measures.

This annex examines recent developments in capital flows (in aggregate and in terms of their composition) and draws some tentative conclusions. Since the sovereign debt crisis, capital flows into and out of the euro area have recovered, but remain well below pre-crisis levels (see **Chart A3**, panel B). Outflows (financial assets) have recovered more than inflows (financial liabilities) and mirror the rising euro area current account surplus. The magnitude of current flows, while remaining well below pre-crisis levels, roughly matches the post-crisis global average of below 5% of GDP.[72]

Table A1

Debt-equity ratio of capital flows

	1999-2007	2008-2012	2013-2014
Assets	1.5	0.2	1.1
Liabilities	1.9	-1.8	0.0

Source: based on and updated from Lane (2013)

Within the euro area, cross-border capital flows have also recovered, thus partly reversing the disintegration observed during the financial crisis. The ECB quantity measures of financial integration, FINTEC, for example, are back to levels seen in 2011 and earlier in 2005.[73] Whether the partial recovery of euro area capital flows has gone hand in hand with a more resilient composition of flows remains an open question. While the debt-equity mix seems less tilted towards debt compared with before the crisis (see **Table A1**), in absolute terms, while remaining volatile, debt flows have also picked up. Moreover, while there is evidence that the integration of equity markets within the euro area is gaining ground, intra-euro area cross-border equity holdings remain underdeveloped in comparison with debt markets' holdings (panel C and ECB (2016)). At the same time, there is evidence of a lengthening of debt maturity: long-term external debt has increased since 2008, in both absolute and relative terms, representing close to 63% of total external debt of intra-euro area asset holdings (up from under 60%). Furthermore, the pre-crisis link between net foreign borrowing and domestic credit seems to have broken down (panel D).[74] This is consistent with the observation that other sources, including more stable customer deposits, will likely drive domestic credit going forward, possibly dampening the future cyclicality of credit developments and mitigating the risk related to capital flow volatility.

71 Lane (2013).

72 Bussière et al. (2016).

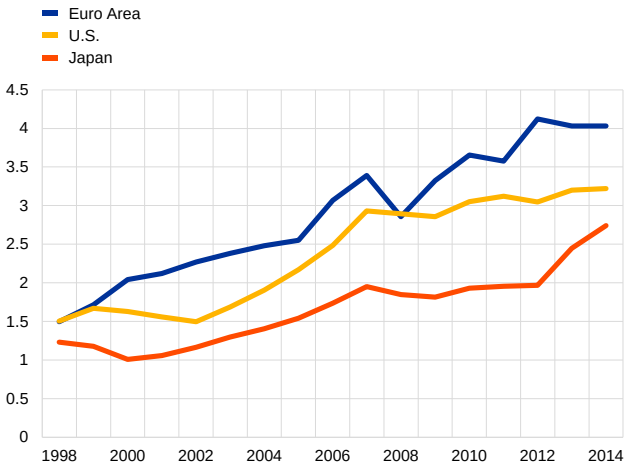
73 ECB (2016).

74 For the link between financial flows and credit booms, see also Lane and McQuade (2014).

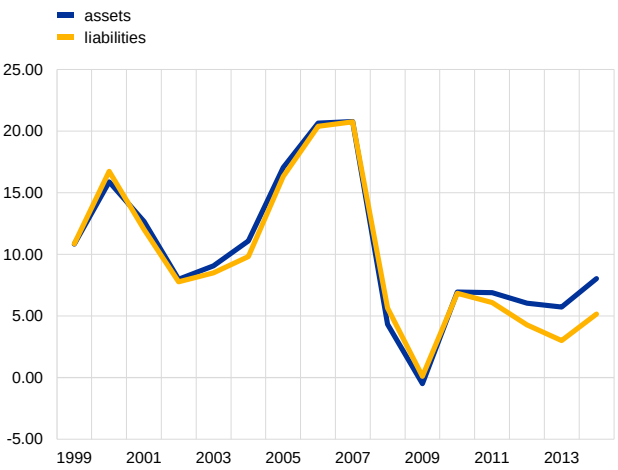
Chart A3

Developments in gross capital flows for the euro area

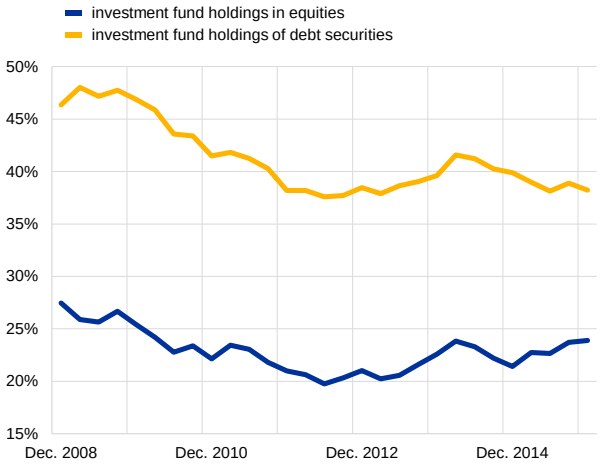
a) International financial integration ratios



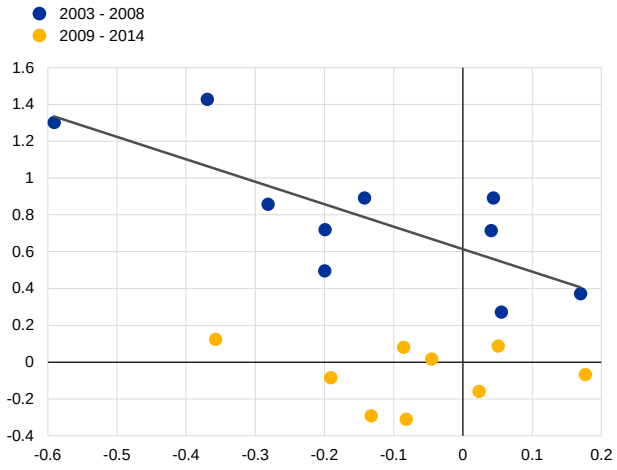
b) Euro area capital flows in percent of GDP



c) Investment funds' holdings issued in other euro area countries as a share of total



d) Growth of foreign borrowing and domestic credit in the euro area



Sources and notes:
a) updated version of Lane (2013); ratio of foreign assets plus foreign liabilities of GDP
b) IMF BOP database
c) ECB
d) updated and based on Lane (2013)

In conclusion, despite the sovereign debt crisis, the euro area remains highly integrated financially with the rest of the world. Against a backdrop of free capital movement, this puts a premium on a resilient balance sheet, involving relatively stable types of capital flows. While, in aggregate, capital flows have recovered somewhat both within the euro area and with the rest of the world, it is too early to judge to what extent there have been sustainable improvements in the quality of these flows. Initiatives designed to bolster state-contingent finance, such as the Capital Market Union, should help in this endeavour.

Capital inflow control measures in Brazil

The array of CFMs implemented between 2009 and 2012 by Brazil provides an interesting case study of the effect of these types of measures on large capital inflows to EMEs. No other country with a similar level of integration in the global financial markets has ever experimented so actively with market-based capital controls (Chamon & Garcia, 2014). Brazil has arguably the most sophisticated capital market among emerging economies, with deep and liquid financial markets.

Overview of Brazilian capital inflow management measures 2009-12

In the context of the very accommodative monetary policies pursued by the major central banks following the global financial crisis, Brazil and other EMEs experienced substantial short-term capital inflows, as investors reshuffled their portfolios in search of higher yields. These large inflows resulted in substantial upward pressure on the exchange rate – the Brazilian real appreciated by 25% relative to the US dollar in 2009 – sparking a debate about "global currency wars". Apart from the "more traditional" FX interventions by the Central Bank of Brazil (BCB), the Brazilian authorities also introduced a number of CFM tools in an attempt to stem capital inflows. In October 2009, Brazil introduced a 2% tax on all portfolio equity and fixed income inflows. In the past, equity flows had often been excluded from such taxes, because they were typically perceived as less destabilising than volatile carry-trade. Nevertheless, Brazilian equity markets attracted so much capital that the government decided to include them in the tax as well (Chamon and Garcia, 2014). This *Imposto sobre Operações Financeiras* (IOF) was raised to 4% and then to as high as 6% in October 2010 (Forbes et al., 2016a), albeit only for fixed income. In addition, in order to close a loophole which allowed investors to bypass the IOF, a 1.5% tax on the conversion of Depositary Receipts (DRs) was implemented.

From the second quarter of 2011 onwards, additional CFMs were introduced. Brazilian firms' borrowing from abroad became subject to a 6% IOF tax on foreign flows with a maturity of less than one year. This tax was then gradually extended to loans with maturities below two, three and five years. In addition, the BCB imposed an unremunerated reserve requirement of 60% on banks' FX short positions beyond USD 3 billion (which was later narrowed to FX positions larger than USD 1 billion). Finally, a 1% tax on currency derivatives was introduced. The tax was levied whenever a derivative that shorted foreign currencies was traded or expired. By the end of 2012, due to changing market conditions, a withdrawal of some of the CFMs had begun, aimed at increasing capital inflows again.

Effectiveness of the Brazilian capital inflow management measures

The effectiveness of the various CFMs is difficult to assess, because their implementation coincided with that of more conventional monetary and fiscal policy measures. When assessing CFM effectiveness, it is necessary to pinpoint the policy

goals pursued. In broad terms, the aim of capital controls on inflows is threefold (Jinjarak et al., 2013): (i) to reduce the volume of capital inflows; (ii) to change the composition of inflows; and (iii) to influence the real exchange rate in order to prevent excessive currency appreciation. The economic literature is somewhat inconclusive regarding the effectiveness of Brazilian CFMs in achieving the first and second aim. Chamon and Garcia (2014) find that the controls were effective in raising the price of domestic assets, partially segmenting the Brazilian financial market from the international market and thus, to a certain degree, stemming inflows and altering their composition. Assessing the impact of the Brazilian CFMs on international portfolio allocation, Forbes et al. (2016a) point out that they significantly reduced the share of investors' portfolios allocated to Brazil in emerging market equity and bond funds. They also find evidence of negative externalities to other countries. More specifically, increases in the IOF caused investors to increase their portfolio allocations to countries seen as similar to Brazil in terms of the structure of their economy. At the same time, investors decreased their portfolio allocations to countries perceived to be at risk of implementing similar controls (Forbes et al., 2016a). Jinjarak et al. (2013), however, do not find evidence that the tightening of controls was effective in reducing capital inflows. Regarding the impact of CFMs on the exchange rate, there is broader agreement that they were not the most effective instrument with which to contain real exchange rate appreciation (Chamon and Garcia, 2014; Garcia, 2015). Furthermore, certain CFMs may even have increased exchange rate volatility (de Roure et al., 2013). Overall, the conclusion regarding the recent Brazilian CFMs is that they have been effective to a limited extent. Therefore, it is important to stress that even the very comprehensive Brazilian CFMs should not be considered a substitute for more conventional monetary and fiscal policy action.

Earlier attempts to reform financial account oversight[75]

Under the current Articles of Agreement, both the Fund's authority and members' obligations with respect to the "financial account" are rather limited. While members are prohibited from imposing restrictions on payments and transfers for current international transactions without Fund approval, they are generally free to control international capital movements. This freedom is specifically recognised in Article VI, Section 3, which has remained unchanged since the Articles were adopted in 1945.[76]

In addition, to protect the Fund's general resources used by members, Article VI, Section 1(a) expressly provides that the Fund may request a member to introduce controls on its capital outflows in the case of "a large or sustained outflow of

[75] Source: IRC Taskforce on IMF Issues (2010).

[76] In particular, "[members] may exercise such controls as are necessary to regulate international capital movements, but no member may exercise these controls in a manner which will restrict payments for current transactions or which unduly delay transfers of funds in settlement of commitments, except as provided in Article VII, Section 3(b) and in Article XIV, Section 2". In essence, the Fund's founding fathers believed that members should have complete discretion to restrict both inward and outward capital movements, reflecting the view that the speculative flows that destabilised the pre-war system had to be countered if necessary.

capital".[77] Furthermore, this provision has also been understood to permit the IMF to require members, as a condition of access to Fund resources, to impose restrictions on capital inflows (e.g. through limits on public sector external borrowing). As regards the meaning of "such controls as are necessary", the IMF has tended to rely on members' judgement to determine whether their controls were in fact necessary. However, the absence of a formal mandate to foster financial account liberalisation has not prevented the IMF from playing an important role in encouraging and supporting members' efforts towards liberalisation and in monitoring international capital markets.

Over the years, there have been repeated attempts to amend the Articles and give more substance to the Fund's involvement in (if not jurisdiction over) the financial account.

- In February 1997, a few months before the eruption of the Asian crises, the international community came very close to implementing an incisive reform of the Fund's oversight of the financial account, including an amendment to the Articles to consider the liberalisation of capital movements in the IMF's mandate. In particular, the following broad principles were agreed: (a) to make the promotion of orderly and sustainable financial account liberalisation a specific purpose of the Fund in Article 1; (b) to give the Fund more extended jurisdiction over capital movements, while allowing for sufficient flexibility through transitional provisions and approval policies; (c) the Fund should play a central role in determining when macroeconomic and balance of payments considerations supported adherence to – or permitted exemptions from – obligations relating to financial account liberalisation; (d) to go beyond payments and transfers to include at least certain underlying transactions in both inward and outward directions. The debate was soon stopped by the Asian crises (the October 2008 Communiqué of the Interim Committee contains no mention of financial account liberalisation), in recognition of the risks associated with financial liberalisation.

- The issue resurfaced at a Board seminar held in 2001, when IMF staff presented ten broad principles for sequencing and coordinating financial account liberalisation with other macroeconomic policies and financial sector reform. While there was general agreement that macroeconomic stability, a sound and efficient domestic financial sector, and strong prudential regulation and supervision were essential ingredients for the efficient operation of the financial system, IMF Directors were reluctant to subscribe to the proposed framework and underscored the need to maintain a flexible case-by-case approach. Capital controls were discussed again (to no avail) in 2001 and 2003, in the context of new proposals to deal with the management and resolution of sovereign debt, which entailed reinforced IMF jurisdiction over the financial account.

[77] Although the failure to impose such controls would not constitute a breach of obligation by a member, it would lead to a declaration of ineligibility to use Fund resources (which is equivalent to some form of IMF conditionality).

In 2005, the Independent Evaluation Office (IEO) of the Fund released a report on the IMF's approach to capital account liberalisation. While noting the difficulty of developing common guidelines that adequately took into account country-specific circumstances, and the lack of firm theoretical and empirical conclusions, the IEO made two recommendations, which were not, however, fully endorsed by the Executive Board, namely: (a) the need for greater clarity on the IMF's approach to financial account issues in its surveillance and advisory activities – though this would not necessarily imply giving the Fund jurisdiction over capital movements; and (b) the need for the Fund's analysis and surveillance to pay more attention to the supply-side aspects of international capital flows and to what can be done to minimise the volatility of capital movements.

However, the Directors cautioned that these efforts should not entail Fund involvement in the regulation of the sources of capital, noting that the Fund should instead coordinate with the FSF (now the FSB) and other bodies with the necessary expertise and specific mandate in the setting of standards.

Abbreviations

AE	Advanced economy
CBM	Currency-based measure
CC	G20 Coherent Conclusions
CCyB	Countercyclical capital buffer
CFM	Capital flow management measure
ECB	European Central Bank
EME	Emerging market economy
ESCB	European System of Central Banks
ESR	External Sector Report
ESRB	European Systemic Risk Board
FCL	Flexible Credit Line
FDI	Foreign direct investment
FSAP	Financial Sector Assessment Program
FSB	Financial Stability Board
FX	Foreign exchange
GFSN	Global financial safety net
GFSR	Global Financial Stability Report
IFA WG	International Financial Architecture Working Group of the G20
IMF	International Monetary Fund
IEO	Independent Evaluation Office
IRC	International Relations Committee
ISD	Integrated Surveillance Decision
MPP	Macroprudential policy
NIIP	Net international investment position
OECD	Organisation for Economic Cooperation and Development
PLL	Precautionary and Liquidity Line
QE	Quantitative easing
RFA	Regional financial arrangement
RFI	Rapid Financing Instrument
TFEU	Treaty on the Functioning of the European Union
WEO	World Economic Outlook

Acknowledgements
The authors would like to thank the members of the International Relations Committee of the ESCB for their constructive discussion and helpful comments.

The following members of the Task Force on IMF issues of the International Relations Committee (IRC) of the ESCB have contributed to this report:

Pilar L´Hotellerie-Fallois (chair of the Task Force)
Banco de España; email: plhotellerie@bde.es

Pablo Moreno (secretary of the Task Force)
Banco de España; email: pmoreno@bde.es

Irina Balteanu
Banco de España and European Central Bank;
email: irina.balteanu@ecb.int

John Beirne
European Central Bank; email: john.beirne@ecb.int

Menno Broos
European Central Bank; email: menno.broos@ecb.int

Axel Brüggemann
Deutsche Bundesbank; email: axel.brueggemann@bundesbank.de

Matthieu Bussière
Banque de France; email: matthieu.bussiere@banque-france.fr

Ángel Estrada
Banco de España; email: aestrada@bde.es

Jon Frost
De Nederlandsche Bank; email: j.j.frost@dnb.nl

Michalis Ghalanos
Central Bank of Cyprus;
email: michalisghalanos@centralbank.gov.cy

Valerie Herzberg
Central Bank of Ireland; email: valerie.herzberg@centralbank.ie

Bernard Kennedy
Central Bank of Ireland; email: bernard.kennedy@centralbank.ie

Alexander Landbeck
Deutsche Bundesbank;
email: alexander.landbeck@bundesbank.de

Christina Lerner
Oesterreichische Nationalbank; email: christina.lerner@oenb.at

Paul Metzemakers
De Nederlandsche Bank; email: p.a.j.metzemakers@dnb.nl

Dennis Reinhardt
Bank of England;
email: dennis.reinhardt@bankofengland.gsi.gov.uk

Paula Sánchez
Banco de España; email: psanchez@bde.es

Alessandro Schiavone
Banca d'Italia; email: alessandro.schiavone@bancaditalia.it

Thomas Tilley
National Bank of Belgium; email: thomas.tilley@nbb.be

Francesca Viani
Banco de España; email: francesca.viani@bde.es

Benjamin Vonessen
European Central Bank; email: benjamin.vonessen@ecb.int

Postal address	60640 Frankfurt am Main, Germany
Telephone	+49 69 1344 0
Website	www.ecb.europa.eu

ISSN	1725-6534 (pdf)	DOI	10.2866/017330 (pdf)
ISBN	978-92-899-2485-6 (pdf)	EU catalogue No	QB-AQ-16-013-EN-N (pdf)