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Central banking in developing countries after the crisis: What has changed?

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Abstract

The aim of this paper is to give a brief account of the course of monetary policy in developing countries after the crisis with special emphasis on the pros and cons of notable policy shifts. The main arguments of the paper are as follows. The pre-crisis consensus over how monetary policy should be conducted was based on false premises. In response to the crisis, mainstream thinking has revised itself over the course of recent events. However, the resulting modified framework is far from a radical shift and the core of the previous consensus is preserved. In line with this, there is also a shift in central banking in developing countries with respect to a more complex and comprehensive monetary policy with multiple goals and multiple tools. Yet again, this shift is insufficient to trigger a major change in understanding and implementing monetary policy. In the absence of a rethinking of the international financial architecture, developing countries are still heavily exposed to external shocks, restraining independent monetary policy.

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Key Words: Central Banking, Monetary Policy, Developing Countries, International Financial Markets, Financial Crisis

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1 Introduction

The recent experiences of both advanced countries and developing countries during and after the global economic crisis have exposed the problems within mainstream macroeconomic theory. Thus, there is now a possibility of a shift in improving the macroeconomic theory and policy implementations. During the period before the crisis, there had emerged a new consensus in the making of central banking, which was supposed to be applicable in both advanced countries and developing countries. According to the neoliberal consensus, inflation targeting[3] was perceived as the optimal monetary policy regime. Under inflation targeting regimes, short term interest rates have been considered the main policy tool to reach the announced inflation targets. Since, in the new consensus, in general, stabilization of inflation and output was associated with financial stability, setting policy interest rates in line with inflation targets was considered sufficient for both price and financial stability. Yet, the consensus was to be dissolved with the advent of the crisis.

The recent crisis has revealed the invalidity of this 'divine coincidence'[4] approach. Thus, central banks have been forced to reconsider their policy regimes. Inflation targeting regimes have lost their attractions in both developing countries and advanced countries. Previous inflation targeting regimes, in turn, lost their essence in many respects and were transformed into more complex monetary policy regimes in which financial stability concerns have gained importance. As a result, many policy tools have been added to the arsenal of central banking in order to achieve multiple goals.

Before the crisis, developing countries were following the path of advanced countries in the conduct of monetary policy since the causes of inflation and the policy tools that can be used to contain it were assumed to be the same within these two groups. The 'great moderation' had contributed to the implementation of inflation targeting in developing countries by creating illusions pertaining to the robustness of developing countries' economies and the success of their monetary policy regimes. However, the success achieved during this period was to a great extent the result of propitious conditions of the international economy.

Things have changed since 2008. The crisis has taken the lid off the so called 'success' story and revealed the weaknesses of developing countries and their dependence on advanced countries on many levels. Accordingly, the policy stance of developing countries has changed with the impact of the crisis. Having realized the threat created by the inflation focused perception of the mainstream design of central banking, monetary authorities in developing countries have taken precautions in line with their counterparts in advanced countries.

The aim of this paper is to give a brief account of the course of monetary policy in developing countries after the crisis with special emphasis on the pros and cons of notable

[3] Inflation targeting can be defined as a framework by which a central bank conducts its monetary policy through the announcement of quantitative point/range targets for inflation with the explicit declaration that it will pursue price stability as its primary goal.

[4] This term refers to the assumption that price and output stability reduces the possibility of unstable asset prices, thereby ensuring financial stability.

policy shifts. The main arguments of the paper are as follows. The pre crisis consensus over how monetary policy should be conducted was based on false premises. In response to the crisis, mainstream thinking has revised itself over the course of recent events. However, the resulting modified framework is far from a radical shift and the core of the previous consensus is preserved. In line with this, there is also a shift in central banking in developing countries with respect to a more complex and comprehensive monetary policy with multiple goals and multiple tools. Yet again, this shift is insufficient to trigger a major change in understanding and implementing monetary policy. In the absence of a rethinking of the international financial architecture, developing countries are still heavily exposed to external shocks, restraining independent monetary policy.

The outline of the paper is as follows. The second part will shortly mention the essence of central banking in developing countries after 2002. This part will discuss the mainstream perception of central banking and practices of central banks in developing countries in the run up to the crisis. The third part will focus on the main trends and shifts in central banking in developing countries after the crisis along with some discussions about how the monetary policy framework has changed in mainstream perception. In this part, some individual country experiences will also be discussed. The fourth part will explore whether these policies will pass the test of time taking into account the prospects of the world economy and their impact on developing countries. In other words, we will discuss if new policies would prevent developing countries from possible external and internal shocks. The last part will conclude.

2 Central banking in developing countries before the crisis

The practice of central banking in developing countries before 2008 was largely shaped by mainstream thinking. In the run up to the 2000s, a new monetary policy framework, inflation targeting, started to disperse into many countries. Many developing countries adopted this framework hoping that inflation targeting would help them to avoid the problems that they encountered with different exchange rate regimes and to reduce inflation to low levels.

The new tendency was also favored by benign economic conditions. The course of the world economy prior to the crisis offered developing countries a fertile economic environment in which they outreached even their 'golden age' records in many respects. On the part of developing countries, this period was characterized by high growth rates, moderate levels of inflation (see Table 1) and relative financial stability in the sense that no major financial crisis occurred between 2002 and 2008[5]. However, it seems that the

[5] In this respect, it is important to make some caveats about the differences in economic performance in different regions. For instance, whereas Asian developing countries were characterized by high saving rates and current account surpluses, the case is different for African countries and Eastern Europe. Countries in these regions generally suffered from high current account deficits and external debt, and fueled their growth through capital inflows, which rendered the financial systems of these countries fragile. On the other hand, countries can also be decomposed within the same region. This is the case for Middle Eastern countries where oil exporting countries' and others' economic characteristics are significantly different. Nevertheless, it remains clear that developing countries, overall, enjoyed low levels of inflation and high GDP growth.

achievements in these aspects were tightly associated with what was happening in advanced countries through international trade and finance relations as we will argue later in this section.

	1980-2001		2002-2008	
Countries	GDP Growth	Inflation	GDP Growth	Inflation
Brazil	2.38	522.64(125.91*)	3.98	6.95
Chile	5.25	14.76	4.37	3.92
Colombia	3.12	21.07	4.8	5.95
Czech. Rep	2.29**	6.01	4.54	2.49
Hungary	1.96**	19.42	3.24	5.24
India	5.6	8.59	7.4	5.60
Indonesia	5.49	11.9	5.41	8.89
Korea	7.56	6.35	4.67	3.23
Malaysia	6.39	3.51	5.72	2.58
Mexico	2.9	41.99	2.63	4.65
Peru	1.79	654.25(55.17*)	6.58	2.96
Philippines	2.5	11.1	5.16	4.73
Poland	3.62	44.04	4.43	2.33
South Africa	1.96	11.24	4.46	6.37
Thailand	6.03	3.77	5.15	2.75
Turkey	3.72	68.87	5.92	13.33

Table 1: Average GDP growth and end of period inflation in consumer prices of major developing countries[6]
Source: World Bank (World Development Indicators) & IMF (World Economic Outlook Database, October 2014).
* Hyperinflation episodes are excluded.
** Data starts from 1992.

In what follows, we present the main pillars of this framework in order to better comprehend the analytical underpinnings of monetary policy implementations in developing countries. Moreover, doing this will also allow us to underline the main differences between the old and currently existing policy regimes.

2.1 Main pillars of the orthodox view of monetary policy prior to the crisis

We count four major principles of the new consensus in monetary policy that emerged throughout the last two decades. These are 1) the divine coincidence approach, 2)

[6] In this paper we focus mostly on this set of countries. In the selection process we tried to include the most important developing countries in terms of their share in the world economy. Hence, we listed developing countries according to their GDP and excluded oil dependent economies (such as Saudi Arabia and the United Arab Emirates) whose macroeconomic conditions depended heavily, and much more explicitly compared to our sample, upon external shocks. We also excluded countries that implemented more heterodox policies in the recent past (e.g., China and Argentina) in order to focus on the shift from a mainstream design. These country cases are subject to other research and need to be carefully investigated for a heterodox policy agenda. The resulting sample leaves us with a relatively homogenous set of countries both in terms of the characteristics of their economies and their monetary policy stances.

adoption of short term interest rate as the sole instrument, 3) overemphasis on low inflation and 4) adoption of flexible exchange rates.

The divine coincidence approach was that by which targeting inflation was considered sufficient to achieve stability in financial markets[7]. According to this approach, first, the central bank was assumed to have no informational advantage compared to economic agents involved in financial transactions. In case a bubble forms, 'rational' economic agents would act accordingly and the bubble would burst (Hahm et al, 2012). It was assumed that the macroeconomic outcomes of a financial distress would be limited. It was believed that monetary authorities had the necessary tools to put financial markets in order in case of a downturn. The justification for inaction to financial market developments has been fed by the argument that intervening in financial markets may make the situation worse given that it is not easy to distinguish between what is a change in fundamentals from what is not. Moreover, a proactive stance would blur the public perception of the intentions of the central bank and thereby erode its credibility.

Thus, mainstream macroeconomic thinking adopted a 'benign neglect' approach in order to deal with fluctuations in financial markets, meaning that monetary authority should not react to developments in the financial sector unless they eventually led to a bust. In other words, it should 'clean up afterwards'. A natural repercussion of this approach was delegation of microprudential measures for financial stability issues. Hence, monetary policy was expected to focus solely on price stability and institution level measures would do the job in the financial sphere.

The second tenet of the mainstream thinking was largely related to the first one. It was the adoption of one instrument for monetary policy: short term policy interest rates. Using only short term interest rates was considered sufficient to attain price and output stability (Woodford, 2002). It was assumed that, through its influence on the prices and quantities of financial assets, and with short term interest rates and their influence on expectations of financial market players, the central bank would affect aggregate demand and, thereby, output and inflation. In this line of implication, there is a fundamental presumption about the monetary transmission mechanism. It was assumed that, through its control on official interest rate and shaping expectations, the Central Bank could affect other market interest rates (including long term interest rates) and, in relation to this, the volume of credits in the economy in a way that is consistent with the desired economic outcomes[8].

The new consensus strictly highlighted very low inflation in the pursuit of high and stable economic growth. It was generally assumed that, beyond a level (generally 2-3 per cent) that may not be taken into account when economic agents make their decisions, inflation deteriorates growth by creating an unstable and unpredictable environment.

The last principle was related to the appropriate exchange rate policy. Exchange rates should not have been used for policy purposes but, instead, should have floated freely. The underlying argument behind the popularity of flexible exchange rates was the notorious

[7] In one of the pioneer studies, Bernanke and Gertler (2001) use a simulation method to show that there is no significant gain from responding to asset prices beyond the level required by the inflation targeting rule.

[8] Interest rate smoothing was accepted to be optimal in order to decrease uncertainty about monetary policy (Woodford, 2003).

trilemma, namely that in the presence of free capital mobility, fixed exchange rates preclude an independent monetary policy. Moreover, since one of the main principles of inflation targeting was based on transparency, a hands off approach with respect to exchange rates was deemed indispensable in order not to confuse public's perceptions of the central bank's intentions. The case for flexible exchange rates was also promoted by currency crises that occurred before the 2000s in developing countries.

All these principals have underpinned the case for inflation targeting. However, the crisis uncovered the fallacy behind mainstream reasoning and exposed the existing framework to harsh criticism. In the third section we will explore the problems with the theoretical underpinnings of a dominant monetary policy framework and where the monetary policy implementation has changed its direction in the aftermath of the crisis. Before doing this, however, we will briefly mention the experience of central banking in developing countries to understand its relevance with the summarized mainstream approach.

2.2 The practice of central banking in developing countries in the pre crisis period

Many developing countries took for granted most of the components of the new framework suggested by the mainstream approach. In this sense, inflation targeting has marked the last two decades in developing countries. Many developing countries gave up their existing policy regimes, let their exchange rates float (at least officially) and adopted inflation targeting. When the crisis erupted, there were 20 developing countries implementing inflation targeting[9].

In line with the orthodox view, monetary authorities in inflation targeting developing countries considered low levels of inflation above all. Doing this through only short term interest rates, however, would mean neglecting the differences in sources of inflation between advanced countries and developing countries. Developing countries, traditionally, are more subject to external shocks through their impact on exchange rates, commodity prices, volume of trade and external finance. In fact, in many developing countries, commodity prices and exchange rates explain much of the variance in inflation[10]. Hence, controlling inflation through affecting aggregate demand seems irrelevant in the case of developing countries. Moreover, the relation between interest rates and aggregate demand is a much more controversial one in the case of developing countries given a much weaker monetary transmission mechanism[11].

Monetary authorities in developing countries, however, were well aware of the importance of external shocks. Indeed, most of the time, they used movements in the exchange rate to their best interest although they officially declared that they had a flexible exchange rate regime. They tolerated appreciation of their currency thereby easing

[9] These include Armenia (2006), Brazil (1999), Chile (1999), Colombia (1999), the Czech Republic (1997), Ghana (2002), Guatemala (2005), Hungary (2001), Indonesia (2005), Israel (1997), Mexico (2001), Peru (2002), the Philippines (2002), Poland (1998), Romania (2005), Serbia (2006), Slovakia (2005), South Africa (2000), Thailand (2000) and Turkey (2002).

[10] See, among others, Mohanty and Klau (2000), and Benlialper and Cömert (2013).

[11] For an analysis of transmission mechanisms in low income countries, see Mishra and Montiel (2012).

inflationary pressures coming from elsewhere and fought against depreciation pressures[12]. The availability of international liquidity in this period helped appreciation of domestic currencies. In most cases, monetary authorities welcomed this trend and made interventions only with the aim of accumulating reserves rather than containing appreciation. In a way, they were obliged to use the exchange rate to hit their targets given the bottlenecks in their monetary transmission mechanism, sticky prices in non tradable goods and adverse impact of rising commodity prices. An intensive focus on inflation rendered such a policy stance imperative on the part of central banks in inflation targeting developing countries[13].

On the financial front, the comments over the robustness of financial sectors in developing countries remained largely open to speculation given the persistence of capital inflows. The beneficial international environment, characterized by abundant liquidity and historically low interest rates, ensured that financial markets were in order. Accordingly, before the crisis, policymakers of developing countries, in general, adopted a similar approach with those of advanced countries in the sense that interventions regarding the financial sector remained mainly on the micro level.

Overall, the monetary policy experience of developing countries prior to the crisis was praised on the basis of reduction in inflation levels, relatively stable output and inflation, high levels of economic growth and the absence of significant financial turmoil. Nevertheless, they, in many ways, were all tied to a favorable trend in the world economy in addition to the improvements in domestic policy.

Exceptional growth performance was strongly related to increasing world trade and foreign capital inflows. The expanding demand of advanced countries for the goods produced in developing countries, combined with the emergence of China as an important source of demand for primary goods and intermediate goods, resulted in a surge in exports. The impact of expanding international trade on growth opportunities in developing countries was also apparent in the rise of commodity prices by which the terms of trade of many developing countries were ameliorated[14]. Moreover, this period also witnessed a growing opportunity for external finance, which contributed to increasing investment and consumption in developing countries beyond the levels that can be attained without high levels of available international liquidity.

The fact that a drastic financial collapse did not occur was associated with the aforementioned pro growth nature of international demand and the persistence of capital flows into developing countries. During this period, even though the current account deficit of some developing countries (except Asian developing countries and oil exporting

[12] For such argument, see Benlialper and Cömert (2013), Barbosa-Filho (2006), and Galindo and Ros (2008).

[13] With regards to the asymmetric response to exchange rate movements, we should make a distinction between inflation targeting developing countries and other developing countries. Whereas an asymmetric stance appears to be the case for inflation targeting developing countries, some other developing countries adopted a competitive exchange rate policy. Among them are Argentina and some Asian countries, which intervened to absorb abundant liquidity in the foreign exchange market. See, for instance, Frenkel and Rapetti (2008), Akyüz (2010), Pontines and Siregar (2012) and Rajan (2011).

[14] However, at this juncture we must make a distinction between countries on the basis of export products. Countries producing minerals and related energy products benefited most as energy prices increased. Exporters of agricultural goods did not witness a profound change in their terms of trade and exporters of manufactured goods even suffered from increasing commodity prices (Griffith-Jones and Ocampo, 2009).

countries) had an upward trend and most currencies appreciated, availability of international liquidity hindered a possible financial turmoil in these economies. In fact, even though the current account deficit increased in many countries, they were able to increase foreign exchange reserves to be used in case of a sudden reversal of the trend thanks to the robust capital inflows.

Moderate levels of inflation ensued largely from the disinflationary impact of the integration of some developing countries into world markets (most notably China) and the appreciation of domestic currencies (Figure 1) fed by ever increasing levels of capital inflows, a trend that eased inflationary pressures coming from the domestic economy[15]. Given the relatively high growth and appreciation of domestic currencies, many developing countries experienced improvements in their total debt to GDP ratio as well.

Thus, it is more likely that the 'great moderation' was related more to the developments in the course of international trade and finance than to improvements in policy design. Although the impact of policy changes has contributed to the success, its role is most likely overemphasized in the relevant literature. This argument was validated by the events following the crisis. When all that characterized the pre crisis boom in developing countries had reversed, developing countries were confronted with major deficiencies of their economies, which did not surface in good times. Financial stability concerns came to the forefront as international liquidity dried up and exchange rates depreciated. Most of the economies witnessed economic contractions due to the reversal in international trade and finance[16].

In the years following the crisis, mainstream thinking revised itself, and both advanced countries and developing countries introduced more complex monetary policy regimes in which financial concerns came to the forefront. In the following section we explore what has changed in both a theoretical and a practical sense in the conduct of monetary policy in the post crisis period.

3 The policy shift in central banking after the crisis

3.1 Changes in the orthodox view of monetary policy

[15] As a case study, Benlialper and Cömert (2013) analyze the determinants of inflation in Turkey during the period under consideration. Since the exchange rate appears as one of the most important determinants of inflation in Turkey, it is apparent that Turkish monetary authorities benefited from appreciation of their currency to fight with inflation. Although other econometric researches are needed, it is very likely that a generalization can be applied to other developing countries, the economic structures of which have much in common with Turkey.

[16] On the other hand, it is true that after 2009 developing countries resumed their growth and output reached the performance of advanced countries, reviving 'decoupling' arguments. This was mostly related to the fact that the impact of the recent crisis on the economies of developing countries did not last long and remained relatively small in magnitude compared to previous crises. Cömert and Çolak (2014) claim that this is due to the extraordinary nature of the recent crisis in that advanced countries did not fully fulfill their safe haven roles. In this sense, the resilience of the economies of developing countries is not yet tested. However, even with that in mind, one can observe that their performance has fallen behind that which was achieved before the crisis and now it is widely accepted that they cannot return to their pre crisis performance in the near future due to unfavorable global conditions. We will discuss these issues in more detail in the fourth section.

The main precepts of the pre crisis framework of monetary policy have been described above. In the aftermath of the crisis, the first three principles of the mainstream approach mentioned above came under criticism [17]. Regarding the first tenet, it was most unlikely that the validity of the divine coincidence approach would be advocated on any ground in the coexistence of price stability and financial collapse. In line with this, the pioneers of mainstream thinking and advocates of inflation targeting admitted that stable inflation does not necessarily stabilize asset prices and financial markets[18]. This was also supported by other arguments regarding the importance of a watchful eye on financial markets. First, the idea that the macroeconomic outcomes of financial stability would be limited was no longer tenable given the severity of the crisis. Second, the costs of 'cleaning up afterwards' is recognized as quite high, as the impact of the unprecedentedly aggressive interest rate policy response on economic activity remained limited[19]. Third, it is ever increasingly voiced that central banks should 'lean against the wind' regardless of whether it is possible to identify a bubble or not. Trichet (2009) claims that central banks can use information about monetary and credit conditions as early warning indicators. These indicators are not perfect and may be misleading in some cases, but informational problems are always at the heart of policy decisions. The case with the asset prices is no exception in that regard (Trichet, 2009). On the other hand, some other authors distinguish between credit driven bubbles and equity type or 'irrational exuberance bubbles' (Hahm et al, 2012; Blinder, 2010; Mishkin, 2013). These authors suggest that monetary authorities should lean against the wind in case of credit driven bubbles, which can be easily detected by analyzing credit conditions, whereas they should clean up afterwards in case of an equity type bubble.
The acceptance of the invalidity of the previous approach paved the way for a more careful stance with respect to financial markets. Early on, the orthodox framework neglected the possibility of system wide risk arising from swelling balance sheets. Yet the crisis revealed the threats created by the procyclical nature of the financial system, in the sense that the relationship between credit growth, asset prices and low risk premia is quite intricate, and they support each other in economic booms. Hence, in good times, the level of risk appears to be low and individual financial institutions seem robust. However, as Borio and Shin (2007) point out, it is more plausible to consider that risk increases in booms and creates imbalances. At some point in the cycle risks materialize, reversing financial agents' risk taking behavior, triggering deleveraging and, consequently, financial turmoil in the form of huge stocks of accumulated debt. Beyond the cyclical component of instability, the financial system is also exposed to cross sectional risks if financial institutions are highly interconnected and exposed to the same shocks. Hence, in light of the crisis, it was understood that institution level prudential measures are inadequate to ensure an orderly financial market given the procyclicality and interdependence inherent in the financial system.

[17] We will analyze the relevance of the trilemma argument for developing countries in the next section.
[18] Among others, see Blanchard et al (2010), Mishkin (2013), Svensson (2009), and Hahm et al (2012).
[19] Costs other than loss in output are mentioned in Hahm et al (2012). These include very slow growth (typical in the aftermath of financial crises), deterioration of government budget balance and erosion of the central bank's ability to manage the economy.

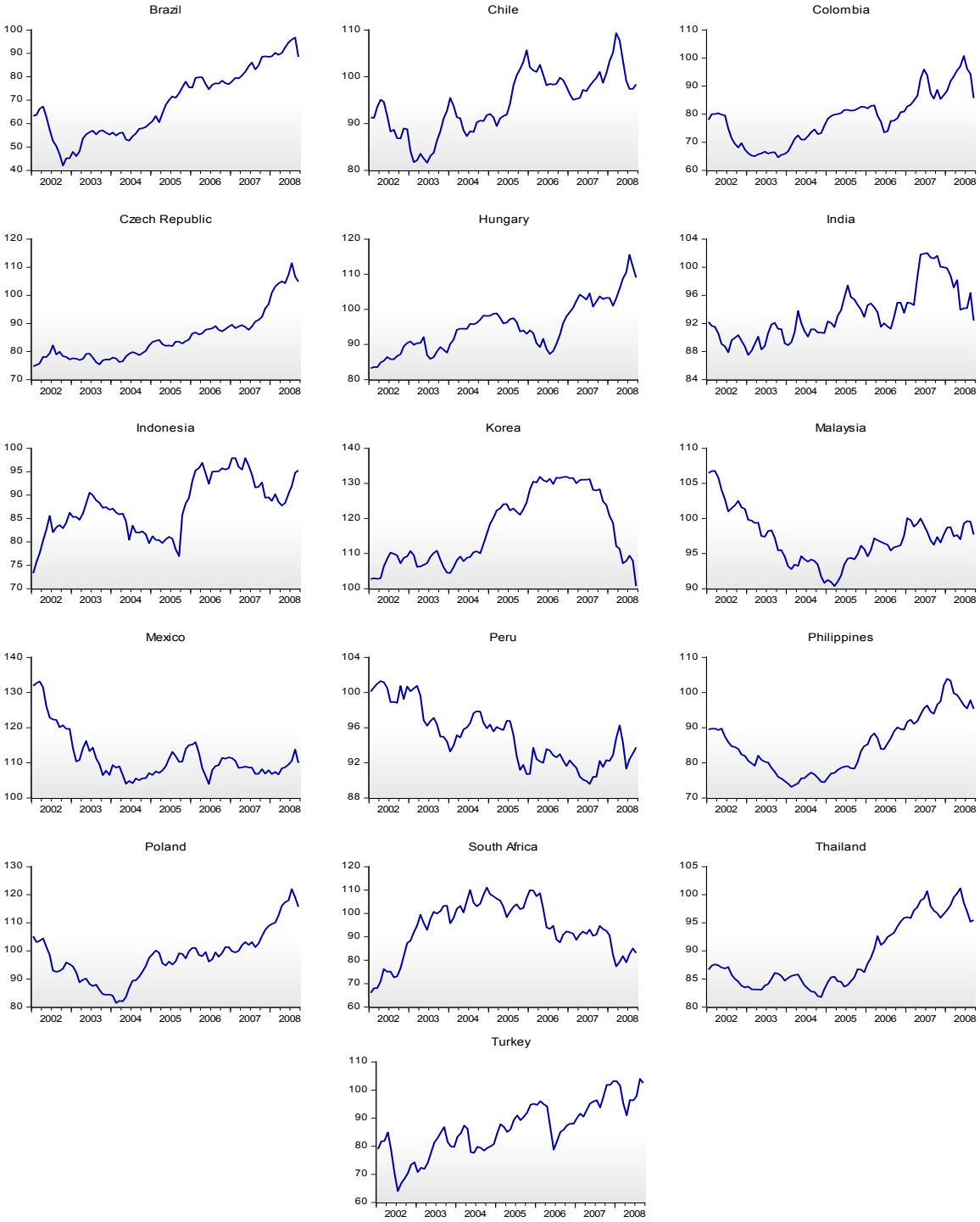

Figure 1: Real effective exchange rates of selected countries, 2010=100[20].
Source: Bank for International Settlements (BIS).

[20] The reason we use real exchange rate data is that even depreciation in nominal exchange rates to lower than the inflation level may decrease the inflation level. Real exchange rate appreciation, on the other hand, puts a downward pressure on inflation.

Given the vital role that financial stability plays in the health of the whole economy, central banks emerge as the natural candidates to take part in ensuring a robust financial system. The new role attached to central banks is at odds with the past experience in which central banks were operating in a narrow area. However, with the impact of the crisis, it is now widely recognized (remembered) that central banks (along with other regulatory agencies) should also be in charge of providing a smooth functioning of financial markets[21], although the controversy over how this can be arranged is ongoing.

The arguments against attaching supervisory duties to central banks focus on the policy dilemmas that can arise due to possible conflicting priorities of bank supervision and monetary policy. They may require policy stances in reverse directions. Moreover, it is argued that central banks may lose their transparency and thereby credibility if they engage in supervisory functions. On the other hand, proponents of inclusion of central banks in financial supervision contend that central banks can balance these two competing objectives better than any other agent (Blinder, 2010). Another advantage of central banks is that they have a vast information network regarding financial institutions. Moreover, delegation of the task to central banks can also ease the coordination of policies regarding financial stability and price stability. It is now widely recognized that interest rate policy affects financial stability and measures to promote the soundness of the financial system affect macroeconomic conditions (through affecting credit growth, for instance), which may necessitate a change in policy interest rates in order to have the desired macroeconomic outcomes[22]. In this sense, it is plausible to leave this problem to central banks, which then can find an optimum policy solution by taking into account the related interactions (Eichengreen et al, 2011).

The second tenet of the previous framework was related to the appropriate policy instruments of central banks. Central banks are now considered to play a role in ensuring the stability of the financial system, which requires new policy tools. On this front, new research about the alternative tools needed to stabilize financial markets and combine monetary policy with financial concerns is underway[23]. The suggestions are generally classified as 'macroprudential', implying that they target systemic risk and are implemented throughout the financial system rather than individual institutions (FSB, IMF and BIS, 2011). We will analyze these measures in detail in the next subsection[24].

Regarding what instruments central banks should use to respond to financial systems, the debate continues, although a new consensus is now about to emerge

[21] See Eichengreen et al (2011), Blanchard et al (2010) and Blinder (2010) for a role attached to central banks.
[22] The interaction of interest rate policy and policy measures for financial stability is analyzed in detail in IMF (2012a) and IMF (2013b).
[23] In fact, advanced countries used a wide range of unconventional policies as response to crisis. However, since we focus on developing countries in this paper, we analyze the policies that developing countries implemented in the recent period.
[24] Here, we should note that, in contrast with the bulk of the literature, we are using the term 'monetary policy' in such a way that both 'interest rate policy' and some parts of 'macroprudential policy', parts that are implemented by central bank, are subsumed. The literature takes monetary policy synonymous with interest rate policy by virtue of the simple framework of the 'new consensus' in which the only policy tool of the central bank is short term policy rates. However, we believe that all policy tools of the central bank that effect monetary conditions should be regarded as part of the monetary policy toolkit.

emphasizing the need for the coordination of interest rate policy and macroprudential policy to achieve both price and financial stability. Those who are against the use of interest rate policy for financial concerns claim that policy interest rates are too blunt to deal with bubbles forming in specific sectors (Blanchard et al, 2010). A contractionary policy in response to developments in a specific sector would mean throwing out the baby with the bathwater. In this sense, more targeted policy tools emerge as the most suitable instruments. There are arguments about the effectiveness of interest rate policy in dealing with financial imbalances. After all, in order to impede further increases in asset prices, very sharp movements of interest rates are needed, since these assets promise very high rates of return (Hahm et al, 2012). Furthermore, an active use of interest rates to correct financial imbalances may risk price stability given that one instrument is used for more than one policy objective and, thereby, erodes the credibility of an inflation targeting central bank.

With respect to the bluntness of interest rate policy, Agenor and Da Silva (2013) suggest that the bluntness of interest rate policy may even be advantageous given that it is more difficult to circumvent increasing borrowing costs emanating from an increase in interest rates. On the other hand, the impact of macroprudential policy can more easily be circumvented through various mechanisms. Moreover, some authors claim that macroprudential policy is more subject to political pressure than interest rate policy due to the fact that it affects financial institutions more directly (Hahm et al, 2012, Agenor and Da Silva, 2013). Regarding the effectiveness of interest rate policy, some claim that even small changes in interest rates may affect leverage decisions of some segments of financial institutions and moderate asset price increases (Trichet, 2009). Finally, there is now an emerging consensus over the coordinated implementation of both interest rate policy and macroprudential policy in pursuit of both price and financial stability (Eichengreen et al, 2011, IMF, 2013b). However, the debate still continues as to the role of interest rate policy in responding to financial developments. Although it is now recognized that interest rate policy may be used where macroprudential tools remain insufficient[25] or when there are side effects of macroprudential policy, the main tendency is to leave, in general, financial concerns to macroprudential policy.

The third tenet, obsession with a very low level of inflation, also came under criticism thanks to the events following the crisis. A very low inflation target (around 2 per cent) is challenged on the grounds that this may restrict the capability of monetary policy in bad times given the 'zero-lower-bound problem' in nominal interest rates. If inflation is allowed to take higher values, then real interest rates could decline significantly, leaving a greater scope for the monetary policy in order to achieve recovery.

Until now in this section we have mostly concentrated on developments in the mainstream thinking. This seems indispensable given the prevalence of mainstream theory in developing countries as well. The monetary policy design in developing countries was

[25] IMF (2012a) makes the case for using interest rate policy for financial developments in certain conditions: '… in models where macroprudential policy is absent or time invariant, but in the presence of financial sector distortions, it is optimal for monetary policy to consider financial shocks. In such contexts, optimal monetary policy responds to the growth in credit (in addition to the output gap and deviations of inflation from target). By extension, when macroprudential policy is imperfectly targeted, it can be desirable for monetary policy to respond to financial conditions.' IMF (2012a: 5).

influenced by the new mainstream approach to a great extent. In this respect, the crisis has not altered the unilateral approach toward the economic analysis. In other words, mainstream thinking still lacks a different framework for the economies of developing countries which were characterized quite differently than those of advanced countries. Hence, the practice in developing countries has followed, although with a lag, mostly what is happening in advanced countries. Most of the time, monetary authorities in developing countries have fallen short of conducting a genuine monetary policy incorporating developmental goals, rather sticking to the old perception about the ineffectiveness of monetary policy in the long run. The new development was the inclusion of financial concerns in designing monetary policy. And here lies the distinction between the mainstream design of monetary policy and its implementation in developing countries. With few exceptions, the new mainstream design, which is mainly created for advanced countries, does not emphasize the importance of cross border flows on financial stability. Nevertheless, these flows are at the heart of financial stability concerns in developing countries. Monetary authorities of developing countries are well aware of that fact. Thus, they have taken measures preemptively in order to safeguard their economy against the potential detrimental spillovers of what is happening in the international economy. To shed more light on this issue we will present a brief discussion about the stance of monetary policy in developing countries in the aftermath of the crisis.

3.2 The shift in central banking in developing countries

The immediate response of monetary authorities in developing countries to the crisis lagged behind advanced countries. Many developing countries hesitated to decrease policy interest rates until the beginning of 2009, as can be seen from Figure 2. For instance, the central bank of Brazil kept the SELIC (policy interest rate) at 13.75 until the end of January 2009. The reluctance in decreasing policy interest rates was directly related to excessive focus on inflation in an inflation targeting framework. On the eve of the crisis, central banks in developing countries were trying to avoid overheating their economy and overcome inflationary pressures ensuing from hikes in commodity prices. Moreover, with the advent of the crisis, currencies of developing countries experienced depreciations, further exacerbating inflationary outlook. In an extreme case, the central bank of Uruguay raised interest rates consecutively until the beginning of 2009, arguing that this was needed to ensure the compatibility of inflation with the target (Cespedes et al, 2012).

In the aftermath of the crisis, some of the recent trends have reversed due to the expansionary monetary policy followed by central banks in advanced countries. The abundance of international liquidity in a low interest rate environment increased external financing opportunities for domestic banks and firms, leading to credit expansion and appreciation of currencies in developing countries (especially in 2010 and 2011). The increase in domestic demand, however, was not matched with an expansion of exports to advanced countries, deteriorating current accounts in many developing countries[26].

[26] We should again distinguish Asian countries that still have current account surpluses and others. However, as Table.2 shows, the surpluses of Asian countries diminished in 2010 and 2011 as well.

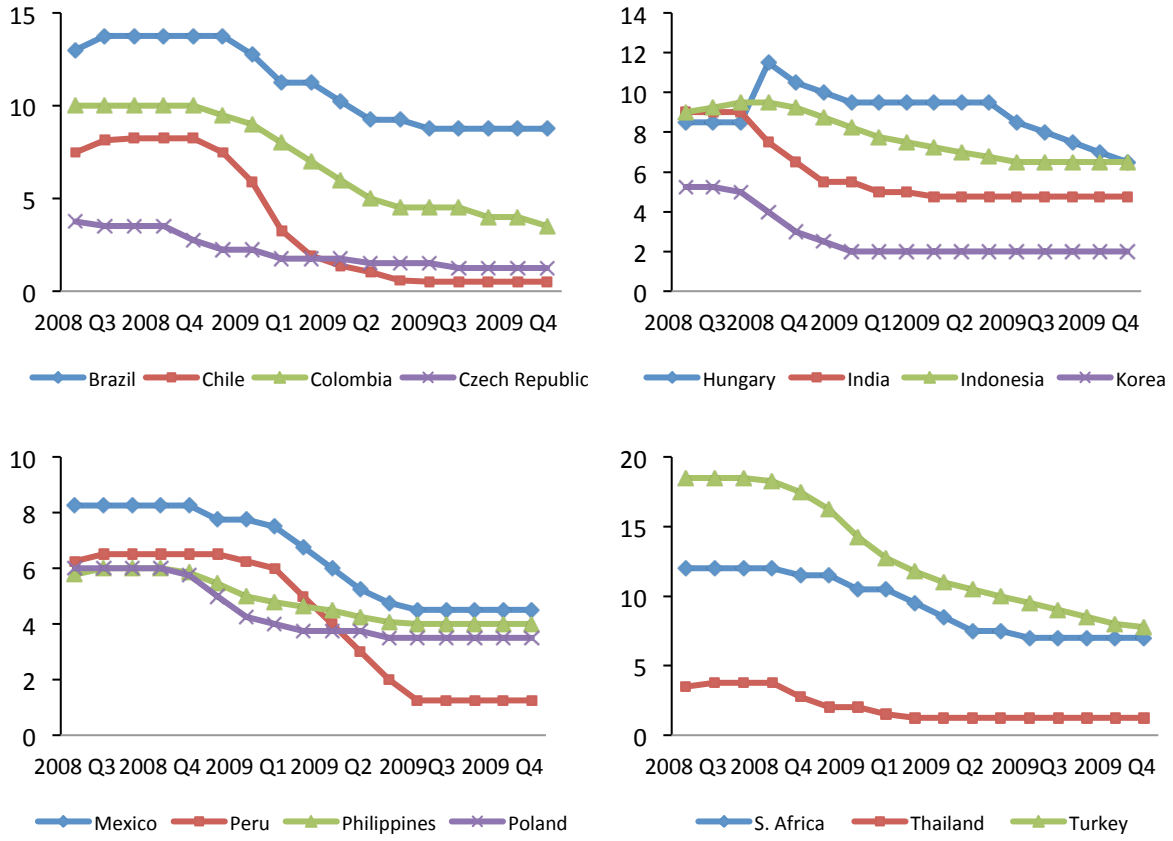

Figure 2: Policy interest rates of selected countries between August 2008 and December 2009
Source: Websites of central banks

Having experienced the detrimental impact of the global economic crisis through drying of international liquidity and contracting export markets, the developing world realized the crucial importance of strengthening their financial systems in a world economy characterized by huge uncertainties regarding the future path of international finance. Accordingly, developing countries, in general, have given weight to prudential policies as to financial markets in contrast with the practice before crisis in which concerns over inflation were dominant. To that end, a common feature of central banking in developing countries has become a cautious stance with respect to credit growth that could give rise to the formation of bubbles in certain types of assets. In line with this, when capital inflows have soared, putting pressure on exchange rates and expanding available liquidity to be used as loans, central banks have used many policy tools to monitor financial markets, leaving one instrument approach.

The use of multiple tools was necessary, because in the presence of strong capital inflows, increasing interest rates in order to curb excessive credit growth could exacerbate the situation by attracting more capital and paving the way for further appreciation. Hence,

central banks in developing countries resorted to other measures. These measures did not only aim to contain the impact of inflows but also to ensure a more stable financial system in many respects. In this vein, developing countries benefited from the course of the international economy in which a more watchful eye on cross border flows was now tolerated by the international community[27]. In this sense, we can say that the pressure on developing countries to follow the neoliberal agenda has been partly weakened by the events following the crisis. Hence, in the new international environment, the unconventional policies followed by developing countries are legitimized and developing countries used this new policy space to shield their economies from inherently unstable capital flows. Accordingly, the monetary policy framework of central banks has widened, which signifies a departure from the classical inflation targeting regimes[28].

Countries	2008	2009	2010	2011	2012
Brazil	-1.7	-1.5	-2.21	-2.12	-2.41
Chile	-1.84	2.05	1.48	-1.31	-3.52
Colombia	-2.81	-2.17	-3.11	-2.92	-3.29
Czech Rep.	-2.12	-2.46	-3.83	-2.83	-2.41
Hungary	-7.21	-0.15	1.1	0.88	1.68
India	-2.53	-1.92	-3.19	-3.34	-4.97
Indonesia	0.02	1.97	0.73	0.2	-2.74
Korea	0.34	3.93	2.9	2.34	3.84
Malaysia	16.85	15.72	10.91	11.58	6.11
Mexico	-1.78	-0.86	-0.31	-1.02	-1.2
Peru	-4.11	-0.56	-2.4	-1.85	-3.5
Philippines	2.09	5.56	4.47	3.11	2.85
Poland	-6.6	-3.98	-5.12	-5	-3.73
South Africa	-7.36	-4	-2.79	-3.41	-6.26
Thailand	0.81	8.3	3.12	1.2	-0.39
Turkey	-5.54	-1.98	-6.22	-9.69	-6.05

Table 2: Current account balance as a percent of GDP in selected countries
Source: World Bank (World Development Indicators)

[27] See IMF (2012b) for instance.

[28] Some authors interpret the new framework as enhanced and enriched versions of inflation targeting (Cespedes et al, 2012). However, especially in developing countries, we think that inflation targeting regimes lost their core (one target, one instrument, transparency, simplicity, etc.). Independent of what we call the new framework, it is evident that there is a substantial change in how central bankers approach to monetary policy. In the case of Indonesia, for instance, Perry Warjiyo (the deputy governor of the Indonesian central bank) states that: 'a mix of monetary and macroprudential policy measures is required to deal with the multiple challenges of "the impossible trinity" and the preservation of monetary and financial system stability. Even though interest rate policy is still the primary instrument, monetary policy needs to work through all available transmission channels, including interest rates, exchange rates, money and credit, and expectations. These considerations form the basis for the monetary policy framework adopted in Indonesia since mid-2010. Starting from the inflation targeting framework, we have added macroprudential measures to manage capital flows and safeguard financial system stability. We call this an enhanced inflation targeting framework based on a monetary and macroprudential policy mix' (Warjiyo, 2013: 156).

We classify the policy measures used by central banks in the new era in the following way[29]. First, central banks used various instruments in order to control capital flows. A more cautious stance with respect to capital flows seemed essential in the new era since it was seen that the reversal of these inflows may trigger a financial turmoil. While arguing for capital flow management, central banks generally refer to problems associated with appreciation pressures, currency mismatches, and co movement of credit growth and capital inflows. Moreover, they claim that in the new era capital flows are driven by global conditions, which, when they deteriorate, could lead to a reversal and bring associated dangers with it[30]. The measures generally aimed at discouraging short term speculative investment thereby lengthening the maturity of capital inflows and curbing appreciation of domestic currencies.

Second, authorities strived to contain foreign exchange exposures of financial institutions, which can culminate in a fully fledged financial crisis in the case of a sudden reversal. Third, in the new era there is an emphasis over the potential threats created by excessive credit growth. Hence, central banks (along with regulatory agencies in many cases) imposed some measures in order to affect credit growth and improve credit quality. Last, measures to strengthen banks' capital base were widely implemented to provide buffers to be used in downturns, thereby avoiding a massive financial collapse.

In what follows in this section we briefly summarize some prominent examples of these new policies[31]. The classification is summarized in Table 3. With regards to capital flow management (CFM)[32] some countries imposed tax on foreign investment. For instance, Thailand imposed a withholding tax of 15 per cent on interest and capital gains of non residents in the bond market in 2010. Korea, on the other hand, revived the tax on bond investments (14 per cent for interest earnings and 20 per cent for trade earnings) in January

[29] Lim et al (2011) and Moreno (2011) are examples of similar classifications. A detailed literature about macroprudential measures can be found in Galati and Moessner (2011). Here, in this part we will not try to explore how these measures work practically. Nor will we present arguments about how policy tools can be enhanced or be coordinated. For these issues, readers are referred to FSB et al (2011), IMF(2013b), and Galati and Moessner (2011).

[30] Some statements from central bankers about this issue are as follows. 'Nevertheless, the sudden and prolonged surges in foreign exchange flows can threaten the conduct of monetary policy. Moreover, if these capital flows are not managed appropriately, they can have negative implications, such as real exchange rate misalignments, credit and asset price booms, inflationary pressures, overheating, and financial imbalances that can culminate into a full-blown financial crisis.' (Bangko Sentral NG Pilipinas, 2011: 17). 'The diagnosis was that domestic banks could take advantage of the ample liquidity in global markets to significantly increase their funding abroad, and then invest those resources in BRL-denominated domestic assets, including loans, thus capturing the interest rate differential. There were concerns that such behavior could leave banks overexposed to currency mismatch and overly dependent on foreign liquidity, and hence vulnerable in the event of a large shock to the exchange rate or a rapid reversal of inflows.' (Da Silva and Harris, 2012: 30).

[31] This part draws upon a wide range of resources including journal papers, presentations, speeches, working papers and annual reports, some of which were published by national central banks. For the interested reader, the list of some references used in this study is given in Table A.1 in the appendix. The list contains sources for policies implemented in some individual countries.

[32] At this juncture we should note that we consider CFM measures as part of the general macroprudential policy toolkit in contrast to the bulk of the literature (See, for instance, Lim et al (2011)). Following Epstein et al (2003), we argue that it is really hard to separate CFM techniques and other prudential tools since they usually affect the same set of variables and hence are complementary in general.

2011. Brazil imposed financial transaction tax of 6 per cent on non residents' fixed income portfolio investment as of October 2010. Some other countries (Thailand and the Philippines) have taken measures to liberalize capital outflows, which are considered to dampen the impact of inflows. Indonesia applied minimum holding periods on debt instruments of the central bank (initially for 1 month in June 2010 and 6 months after May 2011). Indonesia also put limits on short term foreign exchange borrowing of banks (as 30 per cent of their capital) in January 2011. This measure also aims to curtail foreign exchange exposure of domestic banks.

Measures for capital flows	**Measures to contain foreign exchange exposures**
Tax on foreign investment: Brazil (2010): financial transaction tax of 6% on non-residents' fixed income portfolio investment Thailand (2010): withholding tax of 15 percent on interest and capital gains of non-residents in the bond market Korea (2011): tax on bond investments.	Limitations on foreign currency lending: Poland (2010): lending ceiling for foreign exchange mortgage lending
Liberalization of capital outflows: Indonesia, Thailand	Limitations to net open positions Philippines (2010): exposure limits on currency mismatches Mexico: ceilings on foreign currency liabilities of banks
Minimum holding periods: Indonesia (2011): on debt instruments of central bank	Reserve option mechanism: Turkey
Limits on short term foreign exchange borrowing of banks: Indonesia (2011)	**Measures to affect credit growth and quality**
Differentiated reserve requirements: Indonesia (2011): Increase in RR for foreign currency deposits. Peru: 60% RR to external liabilities the maturity of which is less than 2 years. Brazil (2011): Unremunerated RR of 60% on short positions of banks in foreign exchange spot market	LTV & DTI ratios: Malaysia (2011), Indonesia (2012), India, Poland (2010), Turkey (2010), Korea
Levy on non-core foreign liabilities: Korea (2010)	Countercyclical use of reserve requirements: Malaysia, Peru, Philippines, India, Indonesia, Brazil, Turkey
Ceilings on banks' foreign exchange derivative positions: Korea (2011)	**Measures to strengthen the capital base**
Policy interest rates: Malaysia, Turkey	Capital buffers and capital surcharges: India, Brazil, Turkey, Philippines, Peru Loan loss provisions: Chile, Mexico, Peru, Colombia, India, Turkey

Some macroprudential tools used in some major developing countries

Another measure is the implementation of differentiated reserve requirement in foreign exchange deposits, which is used in Indonesia and in some Latin American countries. In Indonesia, reserve requirements in foreign currency deposits increased from 1 per cent to 5 per cent in March 2011 and to 8 per cent in June 2011. Peru differentiated reserve requirements in terms of residency and also applied different reserve requirements for domestic and foreign currency by applying 60 per cent of reserve requirements to external liabilities whose maturity is less than 2 years. On the other hand, Brazil put an unremunerated reserve requirement of 60 per cent on short positions of banks in the foreign exchange spot market as of January 2011.

Korea, having experienced currency and maturity mismatches prior to the global crisis implemented other measures in order to mitigate vulnerabilities of domestic banks arising from short term external borrowing. Korean authorities imposed a levy on banks' noncore foreign currency liabilities in June 2010, which increases with shorter maturities. Moreover, they put ceilings on banks' foreign exchange derivative positions in October 2010 and tightened this policy as of July 2011.

The last policy response in coping with capital flows was through short term interest rates. Central banks of many developing countries declared that interest rate policy should be used in order to manipulate aggregate demand and control inflation whereas financial stability concerns are left to macroprudential regulations. Though the impact of monetary policy on financial stability is now recognized by policymakers[33], the main tendency of developing countries' central banks is to use interest rate policy mainly to affect inflation and output. However, some country cases distinguish from the common practice by giving a role to interest rate policy to deal with financial fragilities. In this vein, the Malaysian central bank emphasized that leaving policy rates at a low level could lead to financial imbalances and excessive credit growth in the economic environment of 2010. As a result, the bank argued that monetary policy should be adjusted preemptively in order to contain financial imbalances[34].

The Turkish example, on the other hand, appears to be in contrast with the experience of the rest of developing countries in that the Turkish central bank developed a new policy framework in 2010 giving a major role to interest rate policy to manage capital

[33] In words of the Governor of the central bank of the Philippines: 'the crisis has made it clear that the objectives of financial stability and monetary stability are intertwined… complementary at times…. and yet, at times also, conflicting. The presence of financial stability enhances monetary stability and vice versa. But the tools to address financial stability could weaken monetary stability. Again, this effect could go the reverse direction as well.' (Tetangco, 2012:2). Similarly, the Polish central bank claims: 'Excessive and long-term reduction in interest rates amidst low inflation and simultaneous fast economic growth may lead to rapid asset price growth, thus increasing the risk of so-called speculative bubbles. Rapid asset price growth is accompanied by the likelihood of asset price deviation from the levels justified by fundamentals, which increases the risk of an abrupt and significant decline in asset prices in the future. This poses a threat to financial system stability, and consequently, in the longer term, to sustainable economic growth and price stability.' (National Bank of Poland, 2011: 7).

[34] According to the Malaysian central bank: 'It was recognised that leaving the Overnight Policy Rate (OPR) at a low level for a sustained period could give rise to financial imbalances and create distorted incentives for economic agents, leading to the mispricing of risks, financial disintermediation and excessive credit growth..' (Bank Nagara Malaysia, 2011: 82).

flows[35]. The framework incorporated an asymmetric interest rate corridor, the upper and lower bounds of which are adjusted in line with the amount of international liquidity. When capital inflows are strong, the lower bound of the corridor was decreased and the short term rate was allowed to deviate from the policy rate creating an uncertainty about short term yields, thereby discouraging short term inflows. When inflows began to reverse as of August 2011, however, the Turkish central bank narrowed the interest rate corridor by raising the upper bound of the corridor in order to attract foreign capital[36].

A second set of policy measures aims to contain foreign exchange exposure of economic agents, which may prove detrimental in a downturn of international financial conditions. One of the measures to deal with this concern is limitations on foreign currency lending. For instance, Poland introduced a lending ceiling for foreign exchange mortgage lending (50 per cent out of total mortgage lending). Moreover, authorities assigned differentiated risk weights for zloty loans and foreign currency loans. In Turkey, authorities banned banks from lending to consumers in foreign currency in June 2009. Another policy tool is setting limitations to net open positions of financial institutions. Prominent examples are the Philippines, which imposed exposure limits on currency mismatches in 2010 and Mexico, which put ceilings on foreign currency liability of banks. Moreover, a novel policy was invented by the Turkish central bank: a reserve option mechanism (ROM). ROM allows banks to hold some portion of reserve requirements in foreign currency or gold. When capital inflows soar, banks are expected to use the ROM facility more, thereby putting pressure on the appreciation trend of domestic currency and also assisting in the building up of foreign exchange reserves to be used in downturns. In case of outflows, on the other hand, banks in need of foreign exchange could convert foreign currency denominated reserve requirements into domestic currency. In this sense, the ROM facility was presented by some authors as 'a market friendly automatic stabilizer' that moderates the impact of fluctuations in capital flows on the exchange rate and financial system[37].

The third set of policies aims to shape credit growth and ameliorate credit quality. The most typical examples are the implementation of maximum Loan to Value (LTV) and Debt to Income (DTI) ratios and intensive use of reserve requirements. Some countries also resort to other measures. For instance, Turkish authorities declared a credit growth target of 25 per cent for 2011 (15 per cent for the following years) and guided banks to achieve this target. On the other hand, Peru introduced limits on non performing loans in 2010.

LTV and DTI measures are implemented by many developing countries. These measures are designed mostly to regulate loans in the residential property market. There are

[35] CBRT succinctly explains its new framework as follows: '… in order to contain macro-financial risks driven by global imbalances, the Central Bank enhanced the inflation targeting regime and designed a new monetary policy strategy. Accordingly, the Central Bank started to take macro-financial stability into account as much as economic conditions permit while preserving the primary objective of maintaining price stability. Within the framework of this new structure, the Central Bank designed a policy mix in which the interest rate corridor, which is formed between the overnight borrowing and lending rates, and required reserves are jointly employed besides the policy rate to ensure the diversity of instruments that is required by the monetary policy implemented to achieve multiple goals.' (Central Bank of the Republic of Turkey, 2011: 2)

[36] Interested reader can see Kara (2012) and Aysan et al (2014) for a summary of the new policy framework developed by the Turkish central bank.

[37] For more details about ROM, see Aysan et al (2014), Değerli and Fendoğlu (2013) and Alper et al (2013).

various forms of LTV in implementation. For instance, Czech Republic imposed LTV ratio limits differentiated by the value of property, attaching higher risk weights for higher LTV loans. Malaysia in 2011 put a maximum limit of 70 per cent LTV ratio for the third residential property purchase. Indonesia imposed LTV ratios for purchases in automotive and residential property beginning after March 2012. India introduced for the first time a limit of 80 per cent LTV ratio for residential real estate loans. Poland differentiated LTV measures based on the maturity of the loan and imposed caps on DTI ratios for loans to consumers in 2010. Turkey differentiated LTV ratios for mortgages and commercial real estate loans (75 per cent for mortgages, 50 per cent for commercial real estate loans) in December of 2010. Lastly, Korea, having experienced two house price booms in its recent history, implemented limits for LTV and DTI ratios in a countercyclical way if the property is in a speculative zone.

The aftermath of the crisis witnessed the intensive use of reserve requirements, which were widely utilized previously as a monetary policy tool but were subordinated in the new consensus framework[38]. Many developing countries including Malaysia, Peru, the Philippines, India, Indonesia, Turkey and Brazil have used reserve requirements as a 'speed limit' by adjusting it in a countercyclical way to increase lending rates and thereby curb credit growth in the presence of strong capital inflows. In the case of mounting risk perception, they decreased reserve requirements to supply additional liquidity to the banking system in order to avoid credit shrinkage. The most notable cases of countercyclical implementation of reserve requirements in this respect are Turkey and Brazil. Turkey, having decreased their interest rates in order to restrain capital inflows, struggled with the adverse impacts of this policy stance (excessive credit growth) via hikes in reserve requirements. The Turkish central bank also differentiated reserve requirements from December 2010 on the basis of both maturity and leverage by requiring more reserve requirements for shorter maturities and for more leveraged banks. Besides using reserve requirements countercyclically to combat the credit cycle, Brazilian authorities also aimed to direct liquidity to small financial institutions by exempting large institutions of reserve requirements if they provide liquidity to others.

The last group of measures is related to the desire of strengthening the capital base of financial institutions. During upswings, the likelihood of future losses increases as credit is extended to a broad base including more risky activities. In good times, banks' capital ratios appear robust whereas they can quickly deteriorate in downturns as the quality of credit diminishes. Countercyclical measures may provide buffers preemptively, which could be used to strengthen banks' balance sheets when the winds have changed. Moreover, imposing them can also restrain financial institutions to extend credit excessively in the upswing. Some examples of countries using capital buffers countercyclically and capital surcharges for banks involving risky activities are the Philippines, India, Turkey, Peru and Brazil.

The Philippines imposed capital surcharges for systematically important banks in order to combat the moral hazard problem. Turkey introduced a target capital adequacy

[38] Different roles of reserve requirements as a policy tool and their impact are discussed in detail in Tovar et al (2012), IMF (2012a), and Montoro and Moreno (2011).

ratio of 12 per cent for banks and required a higher ratio for banks, which are subject to maturity mismatches. Moreover, in August 2011, the Banking Regulation and Supervision Agency imposed capital surcharges for those banks with strategic foreign shareholders. Peruvian authorities required banks to build up an additional capital buffer, which rises when credit growth is strong and decreases when credit shrinks. Brazil imposed differentiated capital adequacy ratios for different types of credit and maturity in 2010 and 2011. Banks demanded higher capital requirement for extending credit to consumers as of December 2010.

Many countries also required banks to build up loan loss provisions in order to ensure the maintenance of credit in case of an increase in nonperforming loans. India introduced a provisioning coverage ratio as 70 per cent of gross nonperforming loans in December 2009. In Turkey, provisions for consumer loans (excluding vehicle and housing) were increased for banks, with consumer loan to total loan ratio exceeding 20 per cent and for banks with nonperforming loan ratios for consumer loans exceeding 8 per cent in June 2011. Chile and Mexico implemented a differentiated loan loss provisioning system depending on the risk level of banks' loans. Peru and Colombia, on the other hand, implemented a provisioning scheme in a countercyclical way and accumulated provisioning when credit growth was strong.

Some of these measures had been implemented before the crisis as well. For instance, Korea (2001), Thailand (2003), Malaysia (1995) and the Philippines (1997) introduced LTV and DTI ratios long before the crisis. India used reserve requirements before the crisis as a policy tool. Colombia resorted to measures for capital flows in order to curb excessive credit growth. This is also true for some other measures described above[39]. The novelty is that after the crisis the implementation of these measures gained popularity, spread to many other countries and the macroprudential policy framework was organized much more systematically. Besides, the procyclical nature of the financial system is now widely accepted and there is a growing case for the idea that central banks should lean against the wind[40]. In comparison to the past, there is also more emphasis on systemic risks rather than soundness of individual institutions. Another novelty is that the relationship between monetary policy and financial stability is much more recognized. Accordingly, ensuring financial stability through the use of macroprudential measures started to be considered as one of the major tasks of central banks. Thus, central banks are now much more actively involved in ensuring financial stability in the new era. There is also a more cautious policy stance with regards to capital flows. Latin American countries had already used related tools prior to crisis but now countries such as Turkey and some East European countries have also joined the group. Lastly, reserve requirements started being used much more frequently and by many countries.

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[39] Borio and Shim (2007) give a good account of the macroprudential policies that are implemented in both advanced countries and developing countries before the crisis.

[40] We should note that most of the policy tools discussed above were used in a countercyclical manner. When capital inflows and concomitant credit growth is strong they were used to counteract these forces. However when risk sentiments of international markets increased and led to reversals in capital flows (especially in the second half of 2011 and in the first months of 2012) these tools were used in the opposite direction by easing credit conditions.

4 Are the shifts in developing countries' central banking enough?

It is now widely recognized that mainstream macroeconomic thinking underestimated the importance of some facts learnt by previous generations throughout the course of history. The 'great moderation' led to a misperception that financial markets are self regulating, although the history is actually full of financial crises[41]. In other words, mainstream thinking, by adopting a single minded approach focused on inflation, turned its back on historical experience of central banking in which financial stability was among the key goals, if not the chief, of central banking. At the same time it appeared to forget the lessons of the Great Depression and turned a blind eye to the Japanese deflation[42].

We have seen that the recent practice of central banking in developing countries can be classified as a shift from the previous framework in some respects. The narrow view of central banking is being abandoned in both academia and policymaking, implying a convergence to the historical tasks of central banks. Now, central banks are expected to target multiple objectives through multiple instruments. In this vein, they are expected to take ex ante measures in order to dampen procyclicality of the financial system. However, it can also be said that the new approach does not incorporate elements that are essential for a thorough shift toward a heterodox perception of monetary policy. What is more, even the adoption of the existing framework is problematic on the part of policymakers. A recent questionnaire answered by central bankers and economists throughout the world reveals that a consensus has not emerged yet and there is wide confusion over the analysis of what has happened, why it happened and what should be done thereafter (Carre et al, 2013). Central bankers are reported to admit the bottlenecks of the former conception of monetary policy, though with some hesitations and contradictions[43]. Nevertheless they are reluctant to embrace a new monetary policy regime. Hence, central banking practice in the world still adheres to a modified version of the mainstream approach, which has marked the last several decades.

However, this is not sufficient for a far reaching and profound change. What is understood as monetary policy is still changing policy interest rates in line with the inflation target. In this sense, the approach of mainstream thinking to inflation targeting is illustrative. In a recent book, *Is inflation targeting dead,* to which some prominent scholars

[41] Stiglitz (2013: 2) brilliantly calls this as: 'the ability of ideology to prevail over the lessons of history and theory'. On the other hand, Masaaki Shirakawa strikingly makes the case for a watchful eye on financial markets and makes a caveat for the dangers created by an excessive focus on inflation: 'In retrospect, however, when we look back at how bubbles were formed and then developed into financial crises, the most significant imbalance that destabilized the macroeconomy emerged on the financial front instead of the price front.' (Shirakawa, 2013: 375-377).

[42] The similarities between the crisis in Japan and the US are recognized by the former governor of the Bank of Japan, Masaaki Shirakawa. Interestingly he also mentions that he feels a sense of 'déjà vu' in this respect (Shirakawa, 2010).

[43] For instance, the approach of Ben Bernanke indicates that there is a reluctance to admit that the main tenets of mainstream approach to monetary policy are based on false presumptions. He argues that the recent crisis was a failure of management and design related issues rather than of theoretical foundations (Bernanke, 2010).

of the mainstream thinking contributed, the main theme is that there is no alternative to inflation targeting. Moreover, on the basis of the recognition of the limits of what monetary policy can achieve, it is asserted that inflation targeting was not unsuccessful and is needed now more than ever (Reichlind and Baldwin (eds), 2013). Some other authors emphasize that the occurrence of such financial crises is extremely infrequent, thus, the main principles of inflation targeting is not undermined (Gerlach, 2013). In this line of reasoning there are both negligence of the role of inflation targeting in generating financial imbalances and the acute consequences of financial turmoil. It is implausible to ignore these episodes of financial turmoil by marking them as exceptions from the rule, because they may lead to catastrophic results, which is evident in the recent crisis as the world economy still suffers from the reminiscent of the crisis in many respects. Given the reluctance to embrace a different monetary policy regime, the main modification in the new framework is the inclusion of financial stability in monetary policy. Thus, the new research mostly focuses on how to incorporate financial concerns into monetary policy by keeping the inflation targeting framework.

In this sense, we can say that macroprudential policy tools became integral to the mainstream framework and the mainstream approach of central banking kept its core. However, this is not sufficient for a full convergence of the historical tasks of central banks. During the course of the 20th century, central banks emerged as the natural agents of development in developing countries. In this heterodox framework, central banks actively took a role in order to contribute to the development process of their countries. In today's world, such a developmental role is still desirable for central banks in developing countries[44]. However, assigning central banks developmental roles is not applicable in many developing countries given political economy constraints. Financial elites of both advanced countries and developing countries have an interest in the current monetary policy framework in which developmental concerns are absent. In this regard, comparing the current framework with the historical roles of central banking may be interesting.

First of all, the new framework sticks to the ineffectiveness of monetary policy in longer horizons[45]. Accordingly, it lacks credit allocation and exchange rate policies through which investment can be directed into strategic sectors. In the new framework, growth and employment concerns are absent; structural transformation of productive capabilities are out of the policy agenda; there is limited scope for restrictions to capital inflows[46] and the exchange rate is not allowed to be managed for different purposes. In this sense, we should emphasize that the stabilization role of central banks rule the day whereas there is no mention of the developmental roles that were once assumed widely by most central banks. However, as Epstein (2006) argues, a right balance between these two historical objectives

[44] In this paper, we do not embark on developing a framework through which monetary policy can be used for developmental purposes. For the historical examples of developmental central banking, the reader is referred to Gerald Epstein's research (Epstein, 2006; 2009). For the modern examples of a heterodox approach, see Epstein (2013) and Bangladesh Bank (2012).

[45] In this sense, the assumptions about the vertical Philips curve are left unchallenged. In this regard, Palley (2011) presents an alternative theory.

[46] While international institutions such as the IMF tolerated capital controls in developing countries after the crisis, they have now returned to their neoliberal agenda, which dictates financial deregulation. For an argument about this issue see Epstein (2013).

may be desirable in the sense that a developmental role can complement a stabilization role through redirecting investment from speculative areas (which proved very costly during and after the crisis) to productive areas.

The case of obsession with low inflation is illustrative. Debates over the proper rate of targeted inflation is still stuck in a very narrow range (between 2 and 4 per cent) maintaining that low inflation is for the benefit of the society[47]. In this sense, all inflation targeting countries still define themselves as inflation targeters and declare that their main objective is to ensure price stability. However, the recent evidence appears to be at odds with their presumption. It is more likely that there is a non linear relationship between inflation and economic growth. For instance, Anwar and Islam (2011) suggest that there is a threshold level of inflation up to which inflation positively affects output growth. More importantly, in today's world, the hampering impact of inflation on growth, if there is any, remains subordinated by the huge uncertainties regarding the future path of the economy, which affects economic agents' spending decisions adversely. Inflation targeting does not have a proposal for this damaging problem, and maintaining a focus on inflation at the expense of ignorance of demand side problems may even exacerbate the situation. Hence, it remains unclear that low inflation leads improved growth performance. There are more serious problems in achieving robust economic growth, which should be handled with a broader vision as to monetary policy.

In addition to the misspecification of low inflation as a key for robust economic growth, affecting it through conventional policy tools is also problematic. In the new framework, interest rate decisions are once again set mainly in line with the inflation target. However, the effectiveness of monetary policy in determining the level of output and inflation is subject to question, even in advanced countries[48]. What is more, setting policy interest rates is more ineffective in determining inflation due to the aforementioned different characteristics of the economies of developing countries. Hence, we can argue that, in the case of developing countries, the diagnosis was not true (low inflation is what is needed to achieve high and stable growth), nor were the policy tools that were chosen correct.

Besides the absence of developmental concerns, the new framework has another bottleneck for developing countries. In the existence of massive financial flows, the effectiveness of monetary policy is likely to be reduced as external finance can substitute for domestic funding and main macroeconomic variables such as credit growth and exchange rates are affected by financial flows[49]. Hence, even in the presence of a flexible exchange rate regime, external developments are likely to shape domestic economic conditions, posing challenges for an independent monetary policy. In fact, as can be seen

[47] In this paper, we do not make an attempt to suggest an optimal monetary policy for the society as a whole. However, we believe that optimal monetary policy differs from one segment of the society to others. For the discussion about the differential impacts of monetary policy on different layers of the society, see Palley (2011).

[48] Cömert (2013) presents empirical evidence suggesting a gradual decline in effectiveness of monetary policy in the US.

[49] Rey (2013) goes further and makes the case for the presence of 'dilemma' rather than 'trilemma', meaning that in a world of free capital mobility independent monetary policy is not possible independent of the chosen exchange rate regime.

from Figure 3, the correlation of capital flows with credit growth, GDP growth and real effective exchange rate is strong in developing countries[50].

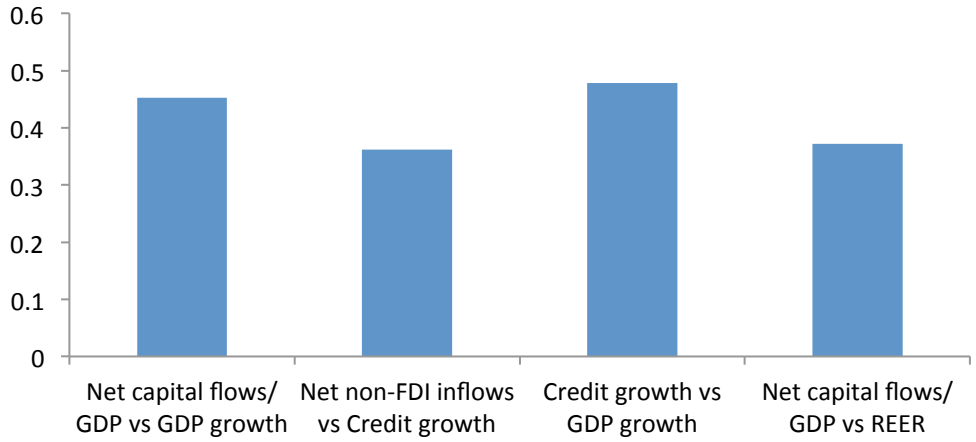

Figure 3: Average of correlations over countries (1990-2014).
Source: IMF (International Financial Statistics), World Bank (World Development Indicators), BIS and authors' calculations

This vital problem is surely recognized by central bankers in developing countries. Accordingly, as summarized above, some measures were taken in order to dampen the effect of capital flows on domestic financial conditions. The introduction of capital flow management measures is a valuable first step in this respect. However, in their current form they are inadequate for containing the impact of international financial conditions on domestic economies. A much more systematic management is needed. In this respect, we can argue that in the absence of a newly established international financial architecture that helps individual countries to coordinate their policies by taking into account the impact of their policy choices on their counterparts, the current framework lacks a fundamental change that can curtail the impact of external financial shocks on developing countries[51].

This argument is particularly important in the current environment in which policy decisions of central banks of advanced countries (particularly Federal Reserve) expose

[50] Here we should note that what we referred to as credit growth is only a proxy. The data for ratio of domestic credit to private sector over GDP is obtained from the World Bank and we calculated the percentage change in the nominal credit stock. And then the resulting change in credit stock is adjusted for inflation since developing countries had high inflation levels during 1990s. It is very likely that using credit growth data directly instead of a proxy leads to higher correlations. For the exchange rate, we should note that there were many countries who fixed their exchange rates until the 2000s. Moreover, even after adopting inflation targeting, these countries made interventions to decrease the volatility of their exchange rate and also to fight with depreciation pressures. Hence, the impact of inflows on foreign exchange market is also expected to be higher.

[51] Borio (2011) points to the deficiencies of 'country-centric' approaches. He emphasizes that the safety of individual countries cannot be ensured by themselves. It can only be evaluated in a global context. Hence a more 'global-centric' approach is called for.

developing countries to potential dangers. In the aftermath of the crisis, in the case of the US in particular, the abundant liquidity made available to financial markets has stimulated, once again, the search for yield activity. Consequently, developing countries' economies witnessed large capital inflows, accumulation of foreign exchange reserves and high credit growth along with deteriorating external conditions: appreciation and worsening current accounts. In this sense, these years were very reminiscent of the booming phase of what is called the 'developing country Minskian cycle' by Frenkel and Rapetti (2009: 689).

Consistent with the new framework and having benefited from the available policy space for a more cautious stance with respect to capital flows, developing countries tried to contain systemic risks associated with the abundant liquidity. To some degree, they coped. But the resilience of their economies is not tested yet. Macroprudential policies provided a shield but the degree of their effectiveness remains contentious. What is more, in the case of an abrupt change in market sentiments triggering capital outflows, developing countries are likely to be affected heavily. A good indicator of that is the impact of Federal Reserve's (Fed) policy decisions on economic conditions in developing countries. Here, the battle continues as the Fed is being prepared to make the transition from an ultra easy monetary policy to normal monetary conditions. From the second half of 2013, the reflections on developing countries of the so called tapering (gradual reduction of asset purchases by the Fed) news are hikes in interest rates and depreciation of their currencies[52]. In this regard it is important to note that the Fed is trying to make this transition gradually, hence the impact is not abrupt. However, as the markets expect that higher global interest rates materialize in the near future, the magnitude of outflows is likely to increase. Along these lines, it is very interesting to observe the reactions of the financial markets to the Fed's statements by analyzing every sentence word by word. Even speculations about whether the Fed will remove the phrase 'considerable' from its statements, indicating that the target for the federal funds rate will be kept low for a considerable time, could result in excessive fluctuations in financial markets of developing countries for few days. In other words, the expectations of developing countries' economies are shaped by only a single word in the Fed's policy statements revealing the high level of exposure of developing countries to external developments.

In line with these, the prospect of the performance of developing countries in the near future depends on the advanced countries' exit strategies[53]. There are some possible scenarios. The first possibility is that interest rates gradually increase as the Fed is being prepared to increase short term rates by 2015. Restoring high returns in advanced countries would mean that advanced countries reclaims their safe haven roles. This development is likely to trigger reversals in capital flows to developing countries, further exacerbating the ongoing processes of depreciation, rise in interest rates and decreases in stock markets. As

[52] There is now an emerging literature on the impact of Fed tapering news on the economies of developing countries. A few examples are Aizenman et al (2014), Mishra et al (2014), and Eichengreen and Gupta (2014). All these papers analyze the impact of tapering announcements on some indicators in emerging markets such as stock markets, exchange rates, foreign reserves and government bond yields. Here, we only focus on the impact on exchange rate.

[53] This part draws upon some arguments made in Cömert and Çolak (2014).

the magnitude of reversals increase, so does the likelihood of a fully fledged financial crisis in some countries.

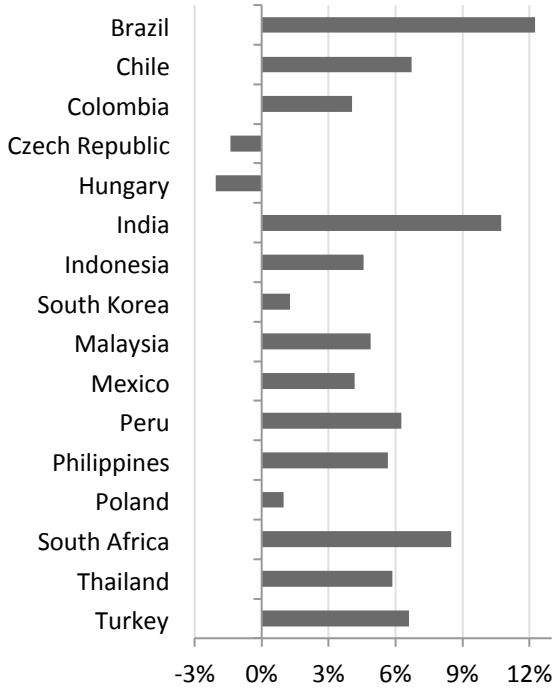

Figure 4. Percentage changes in dollar exchange rate from March-May to June-August 2013.

Source: IMF, International Financial Statistics

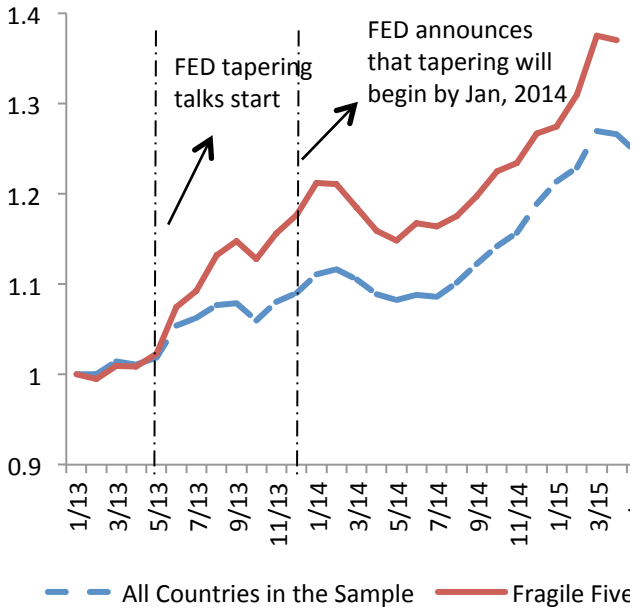

Figure 5. The change in dollar exchange rates of developing countries (average across countries).

Source: IMF, International Financial Statistics and authors' calculations[54]

However, the abandonment of an aggressively easy monetary policy proceeds very slowly and a reversal is always possible in case the recovery in real sectors remains subdued. In this case, capital inflows to developing countries are likely to continue, increasing asset prices, fueling credit growth and appreciating the currency, all of which may create financial fragilities. In this case, developing countries would have a tendency to develop their macroprudential frameworks. Nevertheless, given that the effectiveness of macroprudential policies is open to question, the challenge will continue as developing countries endeavor to shield their economies from external developments. In this case, even if developing countries manage to avoid financial turmoil, their growth prospects will be bleak. The years following the crisis are illustrative in this sense. Most developing countries remained unsuccessful in restoring both their export and growth performances during 2011 to 2014, as Figure 6 and 7 shows. In this vein, if the recovery of advanced

[54] Following Aizenman et. al (2014) we set the dollar exchange rate of each country equal to 1 for January 2013. Then we took the average of the index across countries. The sample is the same with that of Figure 1. Fragile Five consists of Brazil, India, Indonesia, South Africa and Turkey.

countries remains subdued, the demand for developing countries' exports will be limited posing challenges especially to export oriented economies[55].

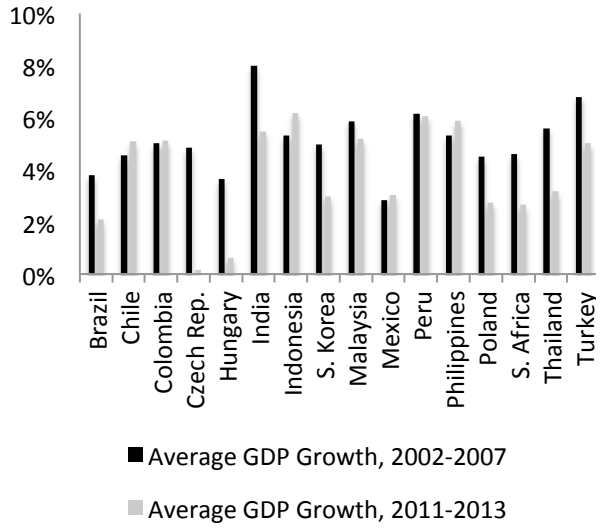

Figure 6. Change in Average GDP Growth of Selected Countries, Source: World Bank (World Development Indicators)

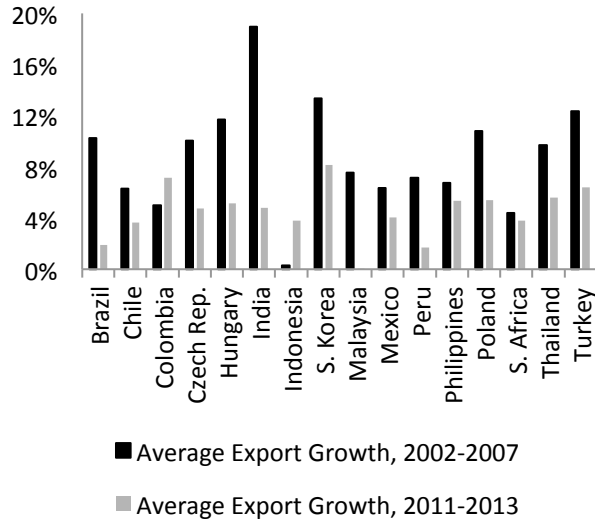

Figure 7. Change in Average Export Growth of Selected Countries, Source: IMF (World Economic Outlook)

There is another possibility as well. The prolonged expansionary monetary policy of advanced countries creates considerable danger through ensuing high risk taking behavior, increases in leverage, and sharp rises in asset prices instead of increased bank lending and spending (Akyüz, 2013). This progress can result in economic catastrophe if it results in asset and credit bubbles formed in a similar way before the crisis. The financial sector needs balance sheets to be repaired but overly expansionary policies hinder this process. This may create detrimental repercussions in developing countries through the same channels after the crisis. With its current version until now, modified monetary policy in advanced countries, seemingly, tries to save the day[56]. Therefore the current framework is still subject to considerable threat coming from the financial sector given its inability to turn the tide. The resilience of developing countries in this respect after adopting a new monetary policy framework will be tested throughout the new developments in the world economy.

[55] Eichengreen (2009) elaborates the case for mounting risks for export led growth in the new environment.

[56] Borio (2011) gives an account of risks emanating from such an aggressive and prolonged expansionary monetary policy. He points to the danger of a 'vicious circle' developing as a result of this process, which hinders the exit. 'Put differently, when dealing with major financial busts monetary policy addresses the symptoms rather than the underlying causes of the slow recovery. It alleviates the pain, but masks illness. It gains time, but makes it easier for policymakers to waste it.' (Borio, 2011: 6).

5 Conclusion

There was a well established new consensus within the mainstream macroeconomic theory before the crisis. The divine coincidence approach, the adoption of short term interest rates as the sole instrument, overemphasis on low inflation and the adoption of flexible exchange rates were the main tenets of the new consensus. Before the crisis, in line with the new consensus, developing countries were following the path of advanced countries in the conduct of monetary policy since the causes of inflation and the policy tools that could be used to contain it were assumed to be same within these two groups. The recent experiences of both advanced countries and developing countries during and after the global economic crisis have revealed the problems within the mainstream macroeconomic theory. In response to the crisis, mainstream thinking has revised itself over the course of recent events. Financial stability concerns gained ground and usage of multiple instruments to target multiple objectives became much more acceptable. However, the resulting modified framework is far from a radical shift and the core of the previous consensus is preserved. The new framework sticks to the ineffectiveness of monetary policy in longer horizons. In this sense, growth and employment concerns are absent; structural transformation of productive capabilities is out of the policy agenda; there is limited scope for restrictions to capital inflows. Debates over the proper rate of targeted inflation are still stacked in a very narrow range (between 2 and 4 per cent). In addition to the misspecification of low inflation as a key for robust economic growth, affecting it through conventional policy tools, especially in developing countries, is also problematic. Although the central banks in developing countries went one step further and put more emphasis on capital controls, exchange rate volatility and credit growth, they more or less operated within the emerging framework. Besides the absence of developmental concerns, the new framework has another bottleneck for developing countries as well. In the existence of massive financial flows, the effectiveness of monetary policy is likely to be reduced as external finance can substitute for domestic funding, and financial flows directly affect main macroeconomic variables such as credit growth and exchange rates. In the absence of a rethinking of the international financial architecture, developing countries are still heavily exposed to external shocks, restraining effective monetary policy. In the case of an abrupt change in market sentiments triggering capital outflows, developing countries are likely to be affected heavily. In this sense, the resilience of developing countries' economies has not been tested yet since the crisis.

Appendix

Countries/Regions	References
Brazil	Da Silva (2013); Da Silva and Harris (2012); IMF (2013a),
Chile	Marshall (2012)
India	Sinha (2011)
Indonesia	Warjiyo (2013)
Korea	Kim (2014); Huh et. al (2013)
Malaysia	Bank Nagara Malaysia (2011); Bank Nagara Malaysia (2012)
Mexico	Calafell (2013)
Thailand	Chai-Anant (2012); Nijathaworn (2010)
Turkey	Kara (2012); Kara (2013); Kenç (2013); Aysan et. al (2014); Kenç et. al (2011); Başçı (2012); Akçelik et. al (2013)
Latin America	Tovar et al (2012); Terrier et al (2011)
Asia	Zhang and Zoli (2014); Se (2013); Siregar (2011); Park (2011); Aizenman (2011)
Cross country studies	Moreno (2011); IMF (2012a); Aizenman (2010); Lim et. al (2011)

Table A.1 : Some studies presenting macroprudential policies implemented in some developing countries

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