## Central Banking in Developing Countries after the Crisis: What has changed?

Ahmet Benlialper
and
Hasan Cömert

### Abstract

*The aim of this paper is to assess how the theory and practices of central banking have evolved in developing countries in response to the crisis of 2008-2009. Our findings suggest that the recent experiences of both advanced countries and developing countries during and after the global economic crisis have exposed the problems within mainstream monetary theory. In response to the crisis, mainstream thinking has been revised considerably. In line with this, there is also a shift in central banking practices in developing world. As a result, central banks now have multiple goals and multiple tools in developing countries as well. Yet, this shift is insufficient to trigger a major change in understanding and implementing monetary policy. Especially, in the absence of a rethinking of the international financial architecture and comprehending the specific natures of the transmission mechanisms in developing world, developing countries are not satisfactorily capable of implementing effective monetary policy and are still heavily exposed to external shocks.*

### JEL Classification

### Key Words

Ahmed Benlialper is a Research Assistant, affiliated with Middle East Technical University and Ipek University, Ankara Turkey and Hasan Comert is Assistant Professor in the Middle East Technical University, Ankara Turkey.

Email for correspondence:
abenlialper@ipek.edu.tr
hcomert@metu.edu.tr.

# Central Banking in Developing Countries after the Crisis: What has changed?[1]

Ahmet Benlialper[2]
and
Hasan Cömert[3]

## 1 Introduction

During the period before the crisis, a new consensus, which was supposed to be applicable in both advanced countries and developing countries, had emerged. According to this new neoliberal consensus, inflation targeting[4] was perceived as the most appropriate form of monetary policy regime. Under inflation targeting regimes, short term interest rates are considered as the main policy tool by which the announced inflation targets could be met. 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 as the crisis ran its course.

The recent crisis revealed the inapplicability of this 'divine coincidence'[5] approach. Thus, central banks have been forced to reconsider their policy regimes and inflation targeting regimes have lost their shine. Existing inflation targeting regimes, in turn 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. Although this trend was first observed in advanced countries, central banks in developing countries followed their counterparts with some lags.

The aim of this paper is to assess how the theory and practices of central banking have evolved in developing countries in response to the crisis of 2008-2009. Our findings suggest that the recent experiences of both advanced countries and developing countries during and after the global economic crisis have exposed the problems within mainstream monetary theory. In response to the crisis, mainstream thinking has been revised considerably. In line with this, there is also a shift in central banking practices in developing world.

As a result, central banks now have multiple goals and multiple tools in developing countries as well. Yet, this shift is insufficient to trigger a major change in understanding and implementing monetary policy. Especially, in the absence of a rethinking of the international financial architecture and comprehending the specific natures of the transmission mechanisms in developing world, developing countries are not satisfactorily capable of implementing effective monetary policy and are still heavily exposed to external shocks.

The outline of the paper is as follows. Part two briefly describes the mainstream approach to central banking between 2002 and 2008. Part three focuses on the main trends and shifts in central banking in the developing countries after the crisis. Part four explores whether these new policies will pass the test of time. Part five concludes.

## 2 Central banking in developing countries before the crisis

In the two decades that led up to the crisis six major pillars of the new consensus emerged within mainstream theory. These are 1) the divine coincidence approach, 2) adoption of short term interest rate as the sole policy instrument, 3) emphasis on very low inflation 4) adoption of flexible exchange rates, 5) transparency and 6) central bank independence.

The divine coincidence approach was that by which targeting inflation was considered sufficient to achieve stability in financial markets[6]. 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 financial distress would be limited and 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 on the financial front was 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. In effect this meant that monetary policy should not react to developments

in the financial sector. As became apparent, it was however mandated with cleaning up in the event of a crisis. A natural repercussion of this approach was the delegation of microprudential measures for financial stability issues. Henceforth, 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 the adoption of one instrument for monetary policy, short term interest rates. Short term interest rates were considered sufficient for the management of price and output stability (Woodford, 2002). Short term interest rates were assumed to influence the prices and quantities of financial assets and the expectations of financial market players in a predictable way. It followed that the central bank would affect aggregate demand and, thereby, output and inflation through its use of short term rates[7].

The third tenet of the new consensus was the emphasis on 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), inflation deteriorates growth by creating an unstable and unpredictable environment.

The fourth principle was related to the appropriate exchange rate policy. Exchange rates were not to be used for policy purposes but, instead, should freely float. The underlying argument behind the popularity of flexible exchange rate regimes were the notorious 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 many countries such as Mexico, the Far East, Brazil and Russia.

The fifth principle is related with transparency of the central bank with respect to its actions. Central banks were encouraged to make their objectives public and give more details about their implementation of monetary policy. In the inflation targeting framework, this would lead clarity in public perception about the intentions of the central bank, thereby increasing the effectiveness of monetary policy through shaping expectations and contributing to the central bank's credibility. Lastly, central banks were assumed to have

instrument independence implying that they implement monetary policy in order to achieve their aims (mandated by law) independent from political pressures.

In the two decades leading up to the crisis these were the ideas that made up the conventional wisdom as regards central banking around the world. When the crisis erupted, there were 20 developing countries in the process of implementing inflation targeting[8]. In line with the orthodox view, monetary authorities in inflation targeting developing countries tried to achieve low levels of inflation. This was supposed to simultaneously generate financial stability and contribute to high growth. As a result, as the new consensus before the crisis suggested, interventions regarding the financial sector remained mainly on the micro level. Pursuing low inflation through only short term interest rates, however, at best, would mean neglecting the differences in the sources of inflation in the advanced countries and the developing world. 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[9]. Hence, controlling inflation through affecting aggregate demand seems irrelevant. 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[10].

Given the bottlenecks in their monetary transmission mechanism, sticky prices in non-tradable goods and adverse impact of rising commodity prices, central banks in developing countries used movements in the exchange rate to their best interest although they officially declared that they had a flexible exchange rate regime. This practice can be considered as a key difference between the mainstream framework and its implementation in developing countries. The emphasis on inflation rendered such a policy stance essential on the part of central banks in inflation targeting developing countries[11]. In general, they tolerated appreciation of their currency thereby easing inflationary pressures coming from elsewhere while fighting against depreciation pressures[12]. The availability of international liquidity in this period helped the 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.

Overall, the monetary policy management experience of major 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 (see Table 1). In this respect they outreached even their "golden age" records. Nevertheless, in many ways, they were all tied to the favorable environment in the world economy.

| Countries | 1980-2001 | | 2002-2008 | |
|---|---|---|---|---|
| | 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[13]

Source: World Bank (World Development Indicators) & IMF (World Economic Outlook Database, October 2014).

* Hyperinflation episodes are excluded.

** Data starts from 1992.

Exceptional growth performance was strongly related to increasing world trade and foreign capital inflows. The expanding demand of the advanced countries for the goods produced in the developing world, 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 the 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 an increase in external finance that contributed to increasing investment and consumption in the developing world. The fact that a serious financial collapse did not occur was associated with the aforementioned pro-growth nature of international demand and the persistence of capital flows into the major developing countries. In fact, even though the current account deficit increased in many countries (except Asian developing countries and oil exporting countries), thanks to the robust capital inflows, they were able to increase foreign exchange reserves to be used in case of a sudden reversal[15].

Moderate levels of inflation ensued largely from the disinflationary impact of the integration of some of the major 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)[16]. Given the relatively high growth and appreciation of domestic currencies, many of the major developing countries also experienced improvements in their total debt to GDP ratio.

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 contributed to the success, its role is overemphasized in the relevant literature. This argument is validated by the events following the crisis. After the crisis, many 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 in the sample witnessed economic contractions due to the reversals in international trade and finance[17].
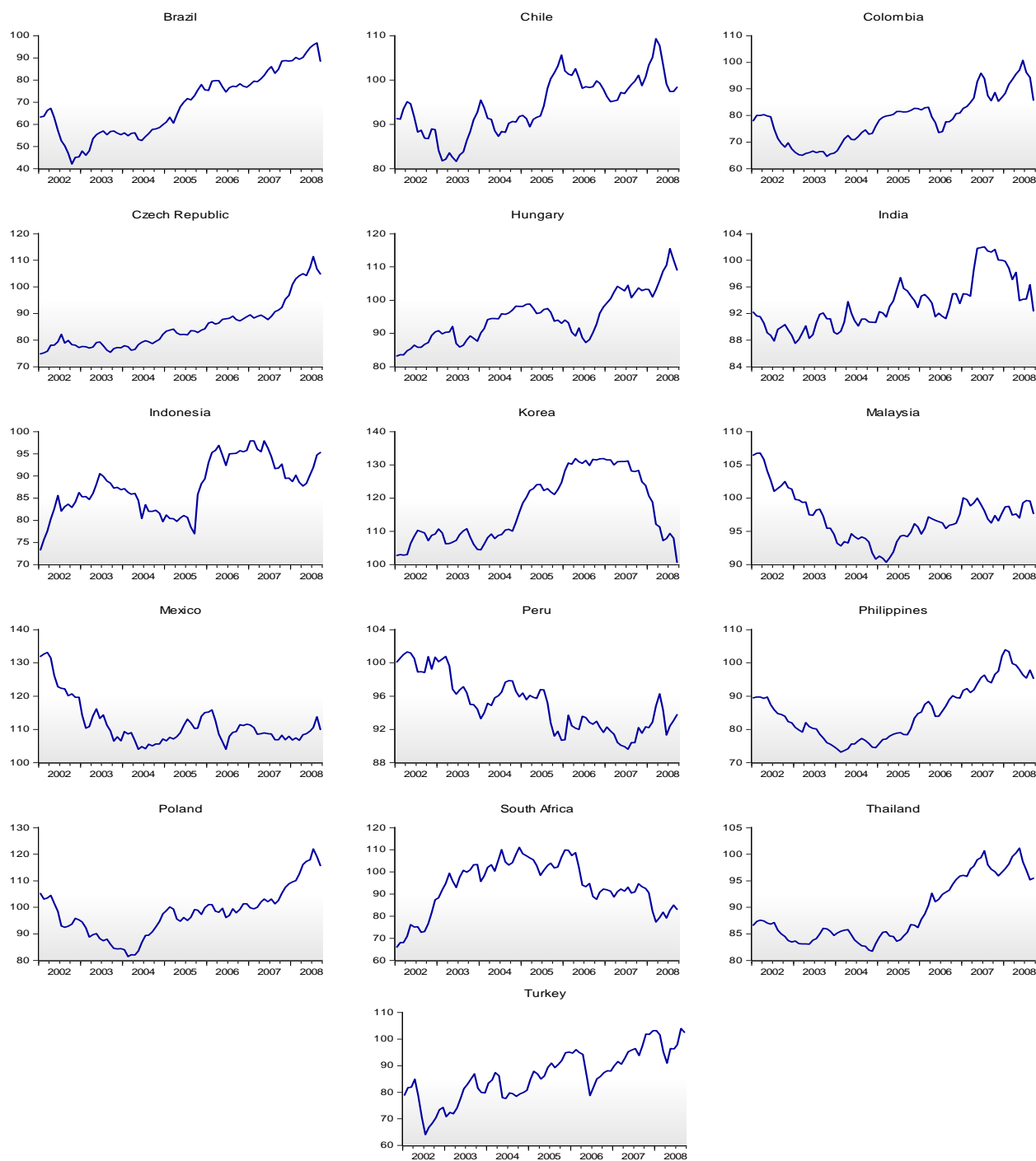
Figure 1: Real effective exchange rates of selected countries, 2010=100[18].

Source: Bank for International Settlements (BIS).

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

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.  Regarding the first tenet, the pioneers of mainstream thinking and advocates of inflation targeting admitted that stable inflation does not necessarily stabilize asset prices and financial markets[19]. 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' came to be  recognized as quite high, as the impact of the unprecedentedly aggressive interest rate policy response on economic activity remained limited[20]. Third, it is now 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 swollen 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 Shim (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 procyclical component, 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.

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 opposite and contradictory 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 the 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]. It is plausible to leave this problem to central banks, who can then 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. As previously mentioned, central banks are now seen as entities that can play a role in ensuring the stability of the financial system. To this end, policy suggestions are generally classified as 'macroprudential', implying that they target systemic risk and are implemented throughout the financial system rather than targeting individual institutions (FSB, IMF and BIS, 2011). We will analyze these measures in detail in the next subsection[23].

Regarding the relation between interest rate policy and macroprudential policies, 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[24] or when there are side effects of macroprudential policy, the main tendency is to leave financial concerns to macroprudential policy[25].

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.

The fifth tenet, transparency of central banking was also undermined to some extent[26]. In the new era, central banks found merit in creating some level of uncertainty in order to preserve stability in financial markets. The reason follows from the observation that a highly predictable environment may create fragilities. The mechanism is now widely known as the "risk taking channel". Low interest rates and a stable economy may create optimistic expectations with respect to the course of the economy and thus may prompt economic agents (particularly financial institutions) to take more risk through "search for yield" activity and thereby to increase leverage, all eventually leading to an unsustainable expansion of credit and asset bubbles to be concluded with an overall collapse.

Mainstream thinking still lacks a different framework for the economies of developing countries (in general) which have been characterized quite differently than those of advanced countries. Hence, the practice in developing countries has mostly followed, although with a lag, mostly what is happening in advanced countries. The new development as in the advanced countries is the inclusion of financial concerns in designing monetary policy. And here lies the distinction between the mainstream design of monetary policy and its 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. Thus, many developing countries have taken measures in order to safeguard their economy against the potential detrimental spillovers of what is happening in the international economy. In the next section, to shed more light on new policies in developing countries we will present a brief discussion about the stance of monetary policy in the major developing countries in the aftermath of the crisis.

### 3. 2 The shift in central banking in the major developing countries

The immediate response of monetary authorities in many of the major developing countries to the crisis lagged behind advanced countries. Many developing countries did not adjust 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 to decrease policy interest rates was directly related to excessive focus on inflation. On the eve of the crisis, central banks in many of the major developing countries were trying to avoid overheating and sought to control inflationary pressures ensuing from hikes in commodity prices. Moreover, with the advent of the crisis, currencies in many of the important 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 many of the major developing countries (especially in

2010 and 2011). The increase in domestic demand, however, was not matched with an expansion of exports to advanced countries and led to deteriorating current accounts in many developing countries[27].
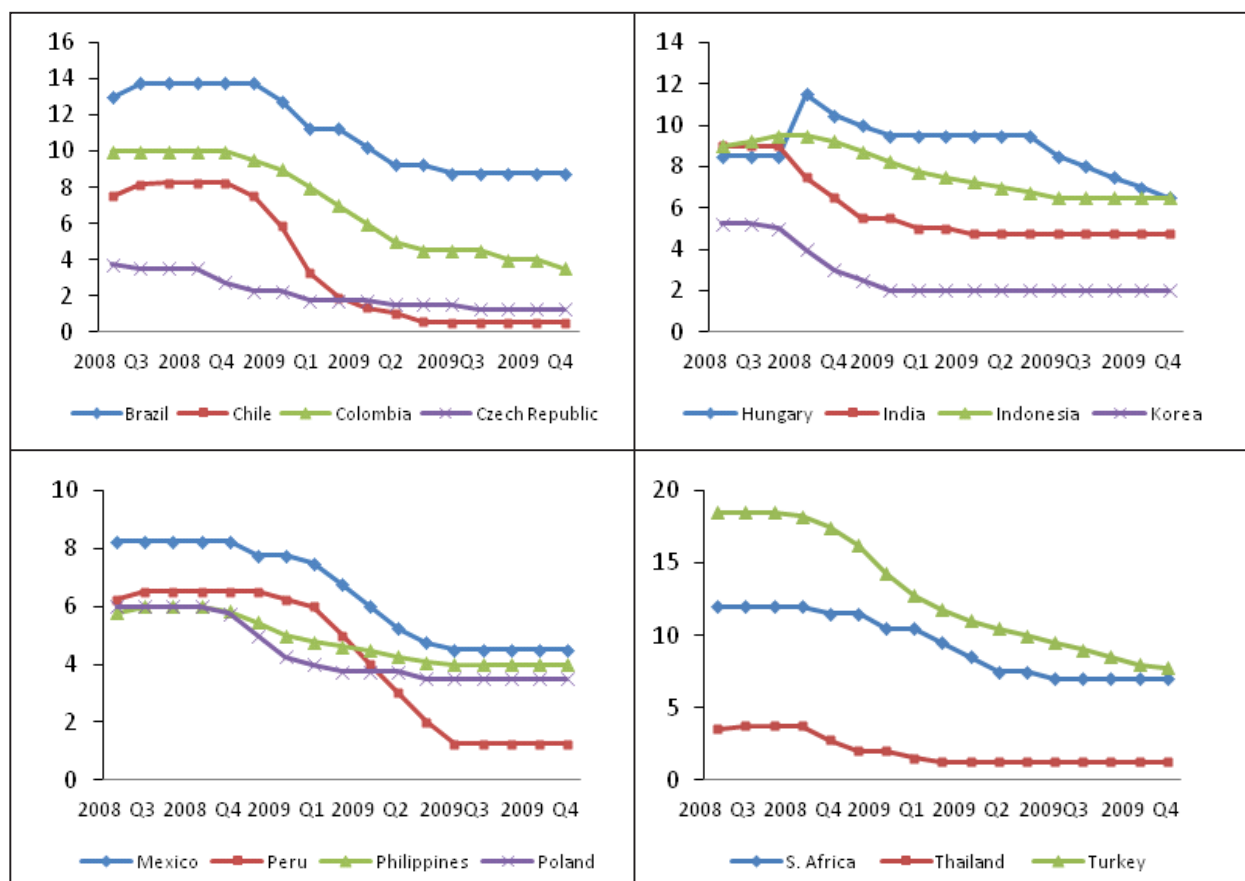


Figure 2: Policy interest rates of selected countries between August 2008 and December 2009

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 especially huge uncertainties regarding the future path of international finance. Accordingly, developing countries, in general, have given more importance to prudential policies as to financial markets in contrast with the practice before the crisis. To that end, a common feature of post crisis central banking in many of the important developing countries is 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 behind the 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 currency appreciation. These new measures did not only aim to contain the impact of inflows but also to ensure a more stable financial system. Developing countries benefited from the change in the international environment in which a more watchful eye on cross border flows is now tolerated by the international community[28]. 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 many 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 inflation targeting regimes[29].

| 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)

We classify the policy measures used by central banks in the new era in the following way[30]. First, central banks used various instruments in order to affect capital flows. 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[31]. The new measures are 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 full-fledged financial crisis in the case of a sudden reversal. Third, in the new era there is an emphasis on the potential threats created by excessive credit growth. Hence, central banks (along with regulatory agencies in many cases) imposed 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 financial collapse.

In what follows in this section we briefly summarize some prominent examples of these new policies[32] (Table 3). With regards to capital flow management (CFM)[33] some countries imposed tax on foreign investment. For instance, Thailand imposed a withholding tax of 15 percent on interest and capital gains of nonresidents 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 2011. Brazil imposed financial transaction tax of 6 per cent on nonresidents' 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 reduce the foreign exchange exposure of domestic banks.

Another measure used in Indonesia and in some Latin American countries is the implementation of differentiated reserve requirements in foreign exchange deposits. 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 was 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. The Korean authorities imposed a levy on banks' noncore foreign currency liabilities in June 2010 that increase 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. Although the impact of monetary policy on financial stability is now recognized by policymakers[34], the main tendency in developing countries is to use interest rate policy mainly to affect inflation and output. However, some country cases distinguish themselves from others by giving a role to interest rate policy in the management of financial fragilities. The Malaysian central bank for instance 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[35].

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

Table 3: Some macroprudential tools used in some major developing countries

Source: Author's compilation from various sources

The Turkish example, on the other hand, appears to be in contrast with the experience of the other major developing countries in that the Turkish central bank developed a new policy framework in 2010 giving a major role to interest rate policy in the management of capital flows[36]. The framework incorporated an asymmetric interest rate corridor, where the upper and lower bounds 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 uncertainty around short term yields, thereby discouraging short term inflows. When inflows began to reverse as of October 2011, however, the Turkish central bank widened the interest rate corridor by raising the upper bound of the corridor in order to attract foreign capital[37].

A second set of policy measures aims to contain foreign exchange exposure of economic agents. One of the measures designed to deal with this concern is the limitation on foreign currency lending. For instance, Poland introduced a lending ceiling for foreign exchange mortgage lending (50 per cent out of the total mortgage). Moreover, the 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 new policy tool was the setting of limitations on the 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 the foreign currency liability of banks. Moreover, a novel policy was devised 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 restraining the appreciation trend of the domestic currency and the building up of foreign exchange reserves that can be used in downturns. In the 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 way, 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[38].

The third set of policies aims to shape credit growth and improve 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. Peru's approach was much more direct; in 2010 it introduced limits on non-performing loans in 2010.

LTV and DTI measures have been implemented by many developing countries. These measures are designed mostly to regulate loans in the residential property market. There are 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 put a maximum limit of 70 per cent LTV ratio for the third residential property purchase in 2011. 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 manner if the property was in a speculative zone.

The aftermath of the crisis witnessed the widespread use of reserve requirements[39]. Many developing countries including Malaysia, Peru, the Philippines, India, Indonesia, Turkey and Brazil have used reserve requirements as a 'speed limit' by adjusting them 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 impact 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 provided liquidity for other financial agents.

The last group of measures is related to the desire to strengthen 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 circumstances change. Moreover, imposing countercyclical measures can also restrain financial institutions from extending 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 ratio of 12 per cent for banks and

required a higher ratio for banks which were subject to maturity mismatches. Moreover, in August 2011, the Banking Regulation and Supervision Agency imposed capital surcharges for those banks with strategic foreign shareholders. The Peruvian authorities required banks to build up an additional capital buffer, which rise when credit growth is strong and decrease when credit shrinks. Brazil imposed differentiated capital adequacy ratios for different types of credit and maturity in 2010 and 2011. Banks were 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 of 70 per cent of gross nonperforming loans in December 2009. In Turkey in June 2011, 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 exceed 8 per cent. 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 similar measures for capital flows in order to curb excessive credit growth. This is also true for some of the other measures described above[40]. What is new is that after the crisis the implementation of these measures gained the ascendancy, spread to many other countries and the macroprudential policy framework was organized much more systematically. 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[41]. There is also more emphasis on systemic risks rather than soundness of individual institutions. Another new feature is that the relationship between monetary policy and financial stability is now much more recognized. Accordingly, ensuring financial stability through the use of macroprudential measures has become one of the major tasks of central banks. Thus, central banks are now much more actively involved in ensuring financial stability in the post crisis environment. 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 in the aftermath of

the crisis countries such as Turkey and some East European countries have also joined the group. Lastly, reserve requirements are now used much more frequently by many more countries.

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

It is now widely recognized that mainstream macroeconomic thinking underestimated the importance of some lessons learnt by previous generations. The 'great moderation' led to a misperception that financial markets are self-regulating, although history is actually full of financial crises[42]. 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 goal), 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[43].

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. 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, there are still several important inconsistencies and gaps within new central banking theories and practices.

First, even the adoption of the existing framework is problematic for some policymakers. A recent questionnaire answered by central bankers and economists throughout the world reveals that there is wide confusion over the analysis of what has happened, why it happened and what should now be done (Carre et al, 2013). Central bankers recognize the weaknesses of the pre-crisis conception of monetary policy. Nevertheless they don't have a clear cut agenda about what to do[44].

Second, although, as mentioned before, in the aftermath of the crisis, a very low inflation target is challenged due to zero-lower-bound considerations, 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[45]. 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 nonlinear 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 output concerns 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.

Third, in addition to the misspecification of low inflation as a key for robust economic growth, affecting it through conventional policy tools is also problematic. Although in practice many developing countries have to resort to exchange rate as an anchor to curb inflation 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[46]. 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.

Fourth, the new post crisis framework sticks to the ineffectiveness of monetary policy in longer horizons[47]. Theoretically, monetary policy is still assumed to have no impact on long run growth. Thus, the role attached to central banks is still related to short term concerns. Central banks should focus on what they can do, i.e. price stability and output stabilization and should not attempt to target long term growth through conventional monetary policy[48].

In line with this, the new framework does not assume growth related objectives for central banks. Besides the ineffectiveness of interest rate policy on growth, it also does not have a room for other nonconventional policy tools. For instance, it lacks credit allocation and exchange rate policies through which investment can be directed into strategic sectors. In the new framework, employment concerns are absent and structural transformations of productive capabilities are out of the policy agenda. The stabilization role of the central

bank now rules the day and there is no mention of the developmental roles that were once assumed by most central banks. However, as Epstein (2006) argues, a balance between these two historical objectives 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[49].

Fifth, the new framework has another major deficiency as far as developing countries are concerned. With the existence of massive financial flows, the effectiveness of monetary policy is likely to be reduced. Flexible exchange rates may not be panacea to that problem. External finance can substitute for domestic funding and the main macroeconomic variables such as credit growth and exchange rates are themselves affected by financial flows[50]. 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 from Figure 3, the correlation of capital flows with credit growth, GDP growth and real effective exchange rate is strong in our sample of developing countries[51].

**Figure 3.Average of correlations between capital flows and macroeconomic indicators over countries (1990-2014).**
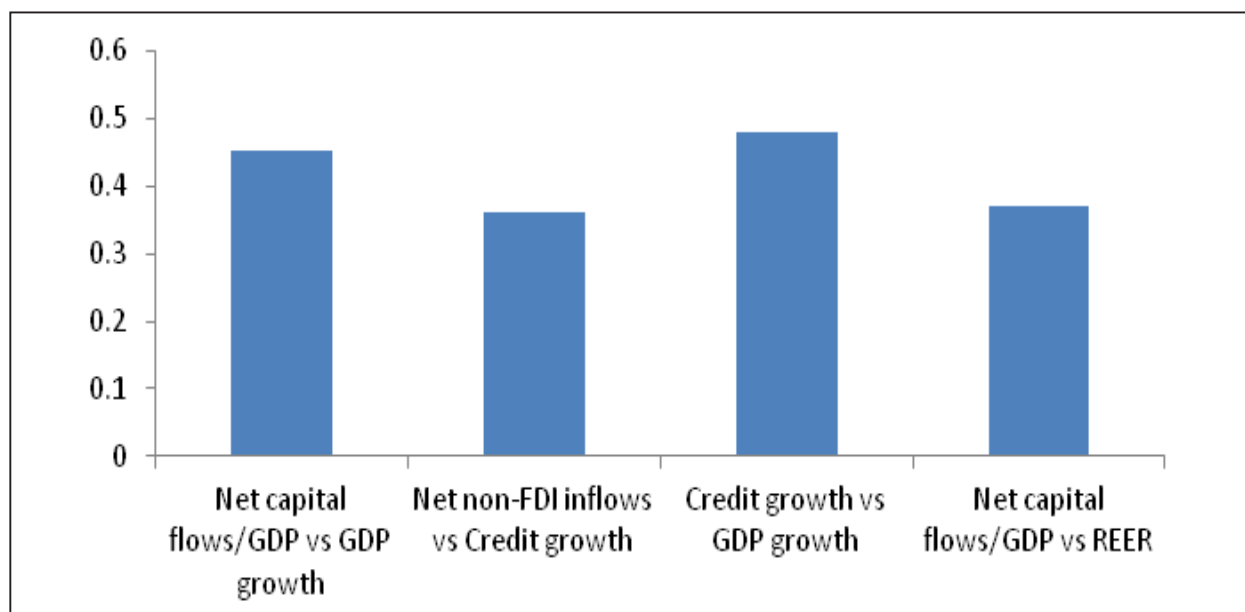


Source: IMF (International Financial Statistics), World Bank (World Development Indicators), BIS and authors' calculations

Central bankers in developing countries have taken measures (described above) in order to dampen the effect of capital flows on domestic financial conditions. However, in their current form these measures are inadequate and much more systematic management approach is needed[52]. In this respect, we can argue that in the absence of a new 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 remains unchanged in that it cannot insulate the developing world from the impact of external financial shocks.[53].

This argument is particularly important in the current environment in which policy decisions of the central banks of advanced countries particularly Federal Reserve can expose developing countries to potential dangers. In the aftermath of the crisis, the abundant liquidity made available to financial markets has stimulated, once again, the search for yield activity. Consequently, the developing countries' economies witnessed;

- large capital inflows with an accumulation of foreign exchange reserves.

- high credit growth.

- domestic currency appreciation.

- worsening current accounts.

In this way, these years were very reminiscent of the boom phase of what is called a '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, the developing world has tried to contain systemic risks associated with the abundant liquidity. But the resilience of their economies is not tested yet. Macroprudential policies have 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 the Federal Reserve's (Fed) policy decisions on economic conditions in developing countries. We know that tapering (the gradual reduction of asset purchases by the Fed) news has led to hikes in interest rates and significant depreciation of currencies in developing countries as Figures 3.4 and 3.5 illustrate[54].
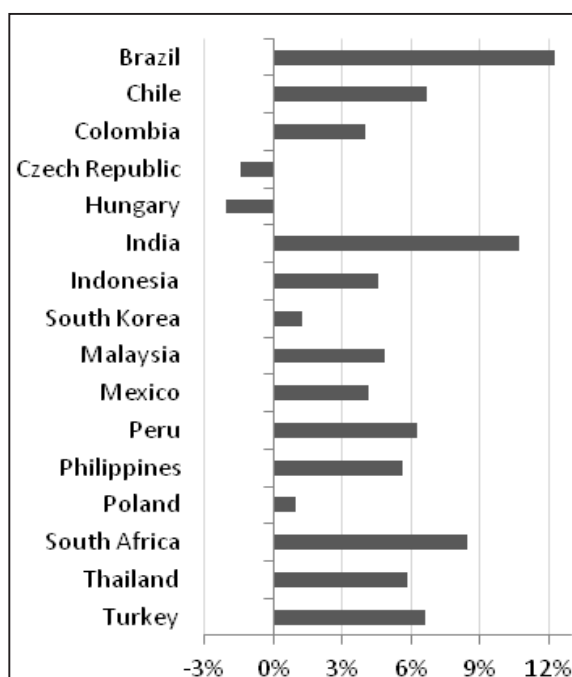
Figure 4. Percentage changes in dollar exchange rate from March-May to June-August 2013.
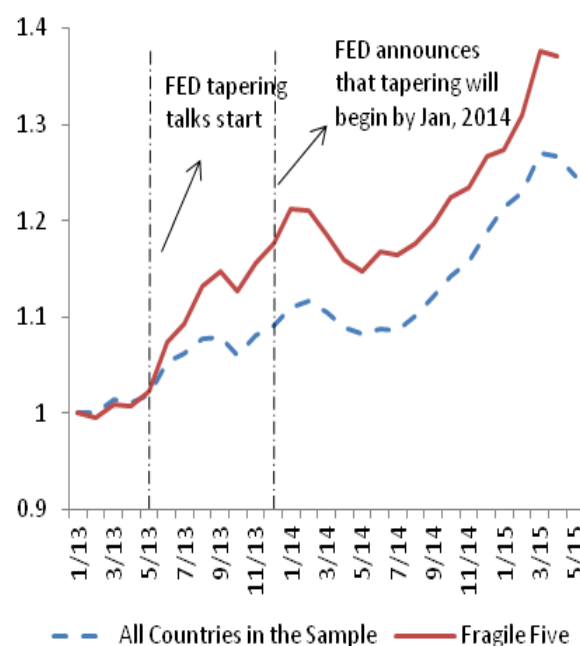
Source: IMF, International Financial Statistics

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

Source: IMF, International Financial Statistics and authors' calculations[55]

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. As a result, the main macroeconomic indicators in developing countries can deteriorate rapidly.

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. This reiterates the high level of exposure of developing countries to external developments.

## 5 Conclusion

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, the narrow view of central banking has been abandoned by both academia and policymakers. 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 time horizons. 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 and changes in the international financial architecture. In the case of an abrupt change in market sentiments triggering capital outflows, developing countries are likely to face huge challenges. At that point the resilience of the modified approach to central banking will be tested especially in the developing world.

## 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); Baþçý (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

## Notes

[1]     A version of this paper will appear as a chapter in a forthcoming book (Edward Elgar Publisher), *The Global South after the Crisis (edited by Hasan Cömert and Rex McKenzie).* The names of the authors are in alphabetical order by authors' last name. This does not necessarily reflect the relative contribution of the authors.

[2]     Ipek University, abenlialper@ipek.edu.tr

[3]     Middle East Technical University,hcomert@metu.edu.tr

[4]     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.

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

[6]     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.

[7]     Within this framework, interest rate smoothing was accepted to be optimal in order to decrease uncertainty about monetary policy (Woodford, 2003).

[8]     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).

[9]     See, among others, Mohanty and Klau (2001), and Benlialper and Cömert (2013).

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

[11]    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).

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

[13]    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.

[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).

[15]    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.

[16] 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.

[17] On the other hand, it is true that after 2009 developing countries resumed their growth and outreached 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 tested yet. 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.

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

[19] Among others, see Blanchard et al (2010), Mishkin (2013), Svensson (2009), and Hahm et al (2012).

[20] 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.

[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] 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.

[24] 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).

[25] 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 contra ctionary 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. Controversy surrounds the effectiveness of interest

rate policy in dealing with financial imbalances. After all, in order to dampen increases in asset prices, very sharp movements of interest rates are needed which may have many side effects. 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).

[26]   We will analyze the relevance of the trilemma argument for developing countries in the next section. Central bank independence, on the other hand, remains to be the only intact principle of the new consensus in post crisis central banking experience.

[27]   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.

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

[29]   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).

[30]   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, IMF and BIS (2011), IMF(2013b), and Galati and Moessner (2011).

[31]   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).

[32]   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.

[33]   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.

[34]   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).

[35]   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).

[36]   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)

[37]   Monetary authorities in Turkey also tried to influence the composition of inflows by an active use of the corridor. In the expansion period, they widened the corridor in order to create short term interest rate uncertainty and thereby discourage short term capital flows. 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.

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

[39]   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).

[40]   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.

[41]   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.

[42]   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 Shirakawastrikingly 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).

[43]   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).

[44]   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).

[45]   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).

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

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

[48]   This principle is criticized by especially Post-Keynesian economists. For instance, Fontana and Palacio-Vera (2007) present some of the important rejections to the neutrality of monetary policy in the long-run. Taking into account the path dependency of the economy yields different results with those of New-Keynesian models. In the presence of path dependency, permanent changes in aggregate demand may have long-run implications for the level of unemployment and output indicating the "long-run non-neutrality of monetary policy"

[49]   It is obvious that central banks cannot easily implement developmental policies within the current domestic and global financial structure. However, we argue that current domestic and global financial structure should be questioned in order to increase effectiveness of central banking policies to tackle with both financial instability and address some development concerns. In this sense, of course, within the current structure, central banks cannot even effectively address inflation and financial stability concerns.

[50]   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.

[51]   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. 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.

[52]   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).

[53]   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.

[54]   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.

[55] 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.

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