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THE POLICY RESPONSE IN EMERGING MARKET ECONOMIES IN THE G20[2]

The global financial crisis caused sharp output and employment losses in most of the advanced- and emerging-market economies, and triggered an intense discussion on how to achieve financial stability and design an optimal financial architecture to minimize the risk of occurrence of such a financial crisis once more. Obviously, this debate has focused on preventive measures and looks into "before" a financial crisis. An equally important subject is the enormous problems faced "after" the global financial crisis and their linkages with a lack of policy cooperation among systemically important advanced- and emerging- market economies. This study aims at analyzing the problems faced by the emerging-market economies in the G20—Argentina, Brazil, China, India, Indonesia, Mexico, Russia, Saudi Arabia, South Africa, and Turkey (the EMEs in short) —and their economic policy response after the collapse of Lehman Brothers during the 2008 global crisis. If any, what are the regularities? Why was there international policy cooperation up to 2010? Why was not it sustainable? What is the role of domestic policy cooperation in the observed divergent monetary policies of the EMEs? What are the policy lessons that can be drawn? These are the main questions that this study addresses.

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With the emergence of the global crisis after the collapse of Lehman Brothers in September 2008, most of the EMEs faced severe turbulence in their financial markets. This turmoil reflected itself as a jump in interest rates, a significant depreciation in domestic currencies, higher sovereign spreads, a sharp deterioration in business and consumer confidence, capital reversals, and a decline in credit volumes. The first task of the policymakers in these countries was to deal with such perverse developments, which could lead to a full collapse of their financial systems if not properly controlled. The first response was to ease monetary conditions and an attempt to limit sharp depreciations by using foreign exchange reserves.

In most of the cases, the financial turmoil was followed by sharp output losses and a rise in unemployment rates. Thus, the new challenge was to address these problems. This second phase witnessed a new policy mix which was unimaginable to many of the EMEs during their past crises. Counter-cyclical fiscal and monetary policies became the norm rather than an exception. Consequently, up to 2010 what we broadly observed was the synchronization in economic policies both within the EMEs as well as between the EMEs and advanced economies.

The so-called unconventional monetary policies implemented in a number of systematically important advanced economies led to a surge in capital inflows—dominantly short-term—creating enormous problems in a number of the EMEs starting from early 2010. These countries found themselves coping with the spillover effects of the unconventional monetary policies of the developed world, such as rapid credit growth, mounting exchange rate appreciation pressures, and asset price inflations. By this time, these problems became so severe that an increasing number of EME policymakers started to raise their voices. [3] However, the only issue at the stage was not international policy cooperation. The aftermath of the Lehman collapse witnessed a search for domestic policy cooperation as well. The need arose mainly because of the pre-crisis widespread division between price and financial stability tasks fell short of addressing the problems that were created by the spillover effects of the unconventional monetary policies of the developed world. Since then, there have been a rather wide spectrum of economic policy responses—such as capital controls, macro-prudential policies, orthodox monetary policies, and the like, on the one hand—and the reorganization efforts of national financial architectures on the other.

Capital flows do not of course move in one direction. The severe problems in the European Union stopped capital flows to most of the EMEs, and in some cases even led to reversals in the second half of 2011 and the beginning of 2012. A similar development was observed in the immediate aftermath of the "tapering talk" of the then-chairman of the Federal Reserve (FED), Ben Bernanke, that was first heard in May 2013. This was a clear signal that an exit process from unconventional monetary policy of the FED could start. By increasing volatility in financial markets, such episodes put EME policymakers in a very bad position: in some cases—without even finding the time to fully put in place previously-announced economic policies

[3] A recent well known example is Rajan (2013). In one part of his speech, this prominent economist and governor of the Reserve Bank of India (Indian central bank), criticizes these policies as "…the bottom line is that unconventional monetary policies… seem to be a step into dark."

aimed at coping with the problems caused by surge in capital flows—they had to design new policies for the potentially detrimental impact of capital reversals.

The plan of the paper is as follows. The next section focuses on the international policy cooperation phase, broadly from late 2008 to the end of 2009. The main emphasis is on fiscal and monetary policies. While there is a significant similarity among policies implemented by the EMEs, the paper argues that the weakening economic activity and political feasibility of the economic stimulus played an important role in the policy cooperation phase. The analysis also includes a comparison of the fiscal response of this period ("now") with those observed in past crises ("then") in these countries. The striking fact is that—despite the fact that these economies contracted during both of the episodes and in most of the cases the depth of the contraction is almost the same—the fiscal and monetary policy responses were sharply different in the "then" and "now" periods. As expected a-priori, the analysis shows that the divergence is highly related to the EMEs' room for policy maneuvering. The EMEs were able to take fiscal stimulus measures and lower their interest rates thanks to having already put their houses in order, despite some remaining problems. This point is especially important in judging how relevant is the answer of developed countries' authorities to demands for policy cooperation, arising from EME policymakers that faced severe problems due to unconventional policies of the developed countries.

The third section covers the consequences of the unconventional monetary policies of the developed world, and their repercussions on the EMEs during the period 2010-2013. Evidence is presented for an increase in capital inflows, mainly short-term, and the subsequent credit booms and appreciation of domestic currencies.

In the fourth section, the policy responses of the EMEs since late 2009 are examined. This evaluation shows that policy responses diverged among these countries in sharp contrast to the period between late 2008 and the end of 2009.

The fifth section shows that some of the EMEs opted for unconventional monetary policies. The paper argues that the search for a new monetary policy framework mainly stemmed from the lack of domestic policy cooperation as well as the volatility of capital flows. The final section concludes.

2. Policy Cooperation Phase

Following the collapse of Lehman Brothers, the immediate challenge was to prevent a dry-up of liquidity—both in domestic and foreign currencies—due to sharply increased uncertainties and risk aversion. Policymakers responded by easing monetary policies and taking various foreign exchange measures. Policy rates, and in some cases required reserve ratios, were reduced. To prevent foreign exchange shortages, the cost of short-term foreign exchange lending facilities of central banks was decreased, foreign exchange interventions were realized, and some countries established swap lines with reserve currency countries.

Simultaneously—and in some countries before the meltdown of Lehman Brothers—real economic activity started to decline. Table 1 summarizes the evolution of seasonally adjusted real GDP from the quarter in which the pre-crisis peak level of activity was observed to the quarter in which the real economic activity first exceeded its pre-crisis peak. In three cases—China, Indonesia, and Saudi Arabia—the real economic activity did not contract, but its rate of growth declined. In the remaining seven cases—Argentina, Brazil, India, Mexico, South Africa, Russia, and Turkey—there were recessions. The Russian and Turkish recessions were more severe relative to the others in the sense that the time needed to achieve the pre-crisis peak level of economic activity, and the depth of the output loss from the pre-crisis peak to trough, were high. Mexico followed these countries. Despite either the duration was low and/or the output collapse was relatively mild, it is important once again to note that the remaining four countries—Argentina, Brazil, India, and South Africa—witnessed significant output losses as well.

Table 1. Real economic activity during crises

	Pre-crisis peak = 100 in	Trough Date	Trough Value	Exceeds pre-crisis peak in	Duration (in quarters)
"Now": 2009					
Argentina	2008Q3	2009Q2	94.8	2009Q4	5
Brazil	2008Q3	2009Q1	94.2	2009Q4	5
China	Relative to the average of the preceeding 4 year growth declined by 2.4 pps.				
India	2008Q3	2009Q1	97.7	2009Q2	3
Indonesia	Relative to the average of the preceeding 4 year growth declined by 1.1 pps.				
Mexico	2008Q2	2009Q2	93.3	2010Q2	9
Russia	2008Q2	2009Q2	90.5	2011Q4	14
Saudi Arabia	Relative to the average of the preceeding 4 year growth declined by 4.7 pps.				
South Africa	2008Q3	2009Q2	97.3	2010Q3	7
Turkey	2008Q1	2009Q1	86.7	2010Q3	10
"Then"					
Argentina: 2003	Growth rates in 2001 and 2002 are -4.4% and -10.9%, respectively				
Brazil:1999	1998Q3	1999Q1	98.4	1999Q4	5
Indonesia: 1998	1997Q3	1998Q4	81.6	2003Q1	22
Mexico: 1995	1994Q4	1995Q2	90.5	1996Q4	8
Russia: 1999	1997Q4	1998Q3	90.3	1999Q3	7
Turkey: 2001	2000Q4	2001Q4	89.6	2002Q4	8

Source: Quarterly data is the seasonally adjusted GDP for G20 series in OECD Stat. Annual data is from April 2014 World Economic Outlook database of the IMF.

2.1 Policy Cooperation: Virtual or Real?

The monetary easing of the fire-fighting phase continued as a response to the reduction in real activity for several months more. Table 2 summarizes the timing of policy rate cuts in eight of the EMEs during the period of 2008-2009.[4] The first thing to note is that some of the central banks were caught off-guard in the Lehman collapse, in the sense that they were in a policy rate hike cycle on the eve of the crisis—most notably Brazil, Indonesia, and Russia. Secondly—except the central banks of China, India, and Saudi Arabia—the central banks of the countries listed in Table 2 remained silent for some time to ease their policy rates. Most plausibly, this cautious behavior stemmed from a fear of sudden stop in capital inflows. To lower such a risk, policymakers of these countries opted for maintaining incentives for capital inflows.[5] Thirdly, in each country except Argentina, the cumulative rate reduction considerably surpassed the cumulative rate increase of 2008 in absolute terms. Thus, in net, the monetary policies were eased significantly. Note that for some of the countries, the easing cycle did not end in 2009—rather, it continued. Monetary policy during the period of 2010-2013 is discussed in section 3.

Table 2. Monetary policy response (policy rates)

	Tightening in 2008-2009		Easing in 2008-2009			
	Ended in	Cumulative increase (pps.)	Starts in	Ends in	Cumulative reduction (pps.)	Policy rate at the end (%)
Argentina	June 08	2.75	July 09	Oct. 09	1.50	11.50
Brazil	Sep. 08	2.50	Jan. 09	July 09	5.00	8.75
China	-	0.00	Sep. 08	Dec. 08	2.16	5.31
India	July 08	1.25	Oct. 08	Apr. 09	4.25	4.75
Indonesia	Oct. 08	1.50	Dec. 08	Aug. 09	3.00	6.50
Mexico	Aug. 08	0.75	Jan. 09	July 09	3.75	4.50
South Africa	June 08	1.00	Dec. 08	Aug. 09	5.00	7.00
Saudi Arabia	-	0.00	Oct. 08	Jan. 09	3.50	2.00
Russia	Feb. 09	4.00	Apr. 09	Dec. 09	4.00	8.00
Turkey	June 08	1.00	Dec. 08	Oct. 09	9.00	6.00

Notes. Policy rates are as flows Argentina, active repo rate 7 days; Brazil, selic target rate; China, 1 year best lending rate; India, repo rate; Indonesia, reference rate; Mexico, official ON rate; Russia, fixed ON repo; South Africa, repo average rate; Saudi Arabia, repo rate; Turkey, reverse repo rate.
Source, Bloomberg.

Monetary easing was not materialized only through policy rate cuts. Most of the central banks reduced required reserve ratios as well.[6] Brazil: in October and November 2008, and October 2009. No change in the rest of 2009. China: in September, October, and December 2008. No

[4] Argentina at that time was implementing monetary control regime, thus the "policy rate" referred to can be seen as a reference rate.

[5] On this motive, see for example IMF (2009, p. xiii).

[6] In this study, the required reserve ratio is taken as a monetary policy instrument rather than macro-prudential instrument. Data for reserve ratios are taken from the web pages of the central banks as well as Lim et al. (2013).

change in 2009. India: in October and November 2008, and January 2009. No change in the rest of 2009. Indonesia: in October 2008. No change since then up to end 2009. Mexico: No change in 2008 and 2009. Russia: in September and October 2008. Reserve ratios were increased in May, June, July, and August 2009. No change since then up to end 2009. Saudi Arabia: in fall 2008. No change since then up to end 2009. Turkey: November 2008 (only for foreign exchange denominated deposits). No change since then up to end 2009. It is interesting to note that—similar to their tightening position regarding policy rates—India and Russia were rising required reserve ratios before the collapse of Lehman Brothers in 2008. China, which did not raise its policy rate in 2008, increased its reserve ratio in the first six months of 2008.

The similarity of monetary policy responses across EMEs was observed in fiscal policy response as well. All of the countries eased their fiscal policy to support declining real economic activity. Table 3 reports the announced discretionary fiscal policy measures as of July 2009 for 2009 as well as public debt, budget balance, and current account balance as percent of GDP for end 2008.[7] For the ten countries listed under the "now: 2009" panel, taking fiscal stimulus-to-GDP ratio as the dependent variable, we ran a number of cross-section regressions. Since the sample size is small, in each regression we included only one of the following three as the explanatory variable: public debt, budget balance, or current account balance. Table 4 shows the results of this exercise. The message is as expected a-priori: countries that have more policy room—lower debt, higher budget and current account surplus—took stronger stimulus measures to support their economies. To check the robustness of our results, I re-ran the regressions by making use of, first 2009 values, then the average of 2008 and 2009 values. The fundamental message was the same, so I do not provide these results.

[7] Fiscal stimulus values are taken from Horton et al. (2009, p. 27). Using announced values rather than cyclically adjusted budget balance values advised by Devries et al. (2011) on the grounds that the cyclically adjusted values do not properly reflect discretionary fiscal policy measures due to measurement problems. This view is supported by Perotti (2013) as well.

Table 3. Fiscal policy response, public debt, budget balance, and current account balance (% of GDP)

	Fiscal stimulus	Public debt	Budget balance	Current account balance
"Now": 2009				
Argentina	1.5	58.5	-0.9	1.9
Brazil	0.6	63.5	-1.6	-1.7
China	3.1	17.0	-0.7	9.3
India	0.6	74.5	-10.0	-2.3
Indonesia	1.4	33.2	0.0	0.0
Mexico	1.5	42.8	-1.0	-1.8
Russia	4.1	7.9	4.9	6.3
S_Arabia	3.3	12.0	31.6	25.5
S_Africa	3.0	27.2	-0.5	-7.2
Turkey	1.2	40.0	-2.7	-5.5
"Then"				
Argentina: 2003	-2.5	165.0	-15.9	10.0
Brazil:1999	-3.5	53.0	-6.5	-4.0
Indonesia: 1998	-1.0	71.8	0.0	-1.8
Mexico: 1995	-1.5	29.2	-0.6	-5.6
Russia: 1999	-3.5	99.0	-5.9	6.3
Turkey: 2001	-3.0	78.5	-12.6	-3.7

Source: Fiscal stimulus data for "now" episodes is from Horton et al. (2009) whereas for "then" episodes are as follows: Argentina: IMF (2003), Brazil: IMF (1998), Indonesia: IMF (1997), Mexico: IMF (1995), Russia: IMF (1999), Turkey: IMF (2001). Public debt and current account as percent of GDP are from the April 2014 World Economic Outlook database of the IMF. Budget deficit figures as percent of GDP are from the April 2014 Fiscal Monitor database of the IMF.

Table 4. Determinants of fiscal stimulus: "now"

	I	II	III
Constant	3.908	1.910	1.853
	[11.4]	[5.5]	[5.2]
Debt/GDP	-0.050		
	[6.3]		
Budget bal./GDP		0.063	
		[1.9]	
Current account balance			0.072
			[1.9]
Adjusted R^2	0.81	0.31	0.22
Number of observations	10	10	10

Fiscal stimulus and sharp policy rate cuts were not only seen in the EMEs, but also in advanced economies.[8] The similarity of policy responses between the EMEs and advanced economies on the one hand, and within the EMEs on the other hand——in the wake of the collapse of the Lehman Brothers—continued broadly up to the first months of 2010. This brings us to the question posed at the title of this section: Does this similarity necessarily imply policy cooperation? No, not necessarily. One should note two points. First, monetary and fiscal easing was politically feasible. Second, the problems at the time were similar: turbulence in the financial markets, followed by output and job losses.[9] So, it was in the interest of all countries that have policy place to take countercyclical policy measures. The "that have policy place" conditionality is important and we analyze it in the flowing section. A third factor underlying monetary easing for the EMEs that have current account deficits was the appreciation of their currencies that started in the first months of 2009. Ironically enough, this factor that, on the one hand, contributed to policy cooperation—no matter its real or virtual—paved the way for sharp policy problems and led to strong complaints about lack of cooperation on the other hand.[10]

2.2 Policy Cooperation: Role of Economic Fundamentals

Contraction in real economic activity was not unique to the period following the collapse of Lehman Brothers, as evident from Table 1. There were output losses in a magnitude comparable to that observed in the recent global crisis in six of the EMEs—Argentina, Brazil, Indonesia, Mexico, Russia, and Turkey—in some periods since the early 1990s up to 2008. It is striking that—despite the fact that these economies contracted during both of the episodes and in most of the cases the depth of the contraction is almost the same—the fiscal policy response was sharply different in the "then" and "now" episodes (Table 3). While all six countries tightened their fiscal policies in the "then" episode, they provided fiscal support through discretionary fiscal stimulus measures to boost aggregate demand during the "now" episode.[11] What is the factor that underlies such a sharp divergence in policy response?

The answer is highly related to the EMEs' room for policy maneuver. If the fiscal policy has been lax for a considerable period of time preceding an output collapse—and as a result, public debt-to-GDP ratio is high due to default concerns via inflation or a renege to repay liabilities—risk perception can be rather significant, leading to high real interest rates and a low-level of business and consumer confidence. Under these conditions, increasing government expenditures and/or decreasing taxes would plausibly increase risk perception and undermine confidence further, which would reduce private investment and consumption expenditures. Moreover, increased real interest rates would further lower aggregate demand. What is also generally observed is a sharp depreciation of exchange rate due to the herd behavior of financial investors via a selling-off of the financial assets of these countries and shifting to

[8] Horton et al. (2009, p. 27) report fiscal stimulus measures of the advanced economies in the G20. Monetary policy response of advanced economies can be easily achieved at various World Economic Outlook reports of the IMF and central banks statements.

[9] On this point, see for example, Bayoumi and Pickford (2014) and Bayoumi (2014).

[10] Discussed in the third section.

[11] There are other "then" episodes as well: For example, Argentina in 2000 and 2001, Brazil in 1997, and Turkey in 1994. Out of the EME's of G20, for example, Colombia (2000 versus 2009), Philippines (1998 versus 2009), and Thailand (1997 versus 2009). The aim of this paper is not to analyze all these episodes. But, what is clear is that fiscal policy implemented is completely different in "then" and "now" episodes.

foreign exchange. If this country has a liability dollarization, then balance sheets deteriorate, leading to a further reduction in aggregate demand. Nonetheless, all these indicate that, in such a country, fiscal stimulus efforts would most probably backfire.

To have a more clear understanding of how economic fundamentals shaped fiscal policy response in both of the episodes, I ran several regression equations with fiscal stimulus-to-GDP ratio as the dependent variable. Each country listed under the "then" heading in Table 3 faced either a currency crisis and/or a banking sector meltdown during its "then" episode. In order not to blur my results, I did not include countries that did not witness either of these crises in the "then" episode in our sample. Thus, now I have twelve observations: six "then" and six "now" episodes. I formed a dummy variable that takes a value of one in the "then" episodes, and zero otherwise, to capture the impact of a currency and/or banking crisis on fiscal stimulus. Each regression has a constant, the crisis dummy, one of the public debt-to-GDP, budget balance-to-GDP, and current account balance-to-GDP ratios, and one of these three variables multiplied by the crisis dummy. While the coefficient of the third variable—either public debt-to-GDP, budget balance-to-GDP, or current account balance-to-GDP ratios—shows the effect of this variable in the "now" episode, the difference between the third and fourth coefficients denotes the impact of one of these variables on fiscal stimulus in the "then" episode.

Results are provided in Table 5. Regression I simply shows the impact of the crisis in the "then" episodes. The coefficient of the constant term gives as percent of GDP the average fiscal stimulus in the "now" episode whereas the difference between the coefficients of the constant term and the crisis dummy shows the average of fiscal tightening as percent of GDP (1.716-4.216= 2.5 percent of GDP negative fiscal stimulus) in the "then" episodes. In addition to the results of the first regression, the second regression (II) indicates that in the "new" episode countries with lower debt ratios were able to stimulate their economies more, whereas during "then" episode stronger fiscal stance as indicated by a relatively lower public debt helped countries to decrease the tightness of fiscal policy. Similar arguments are valid for the third regression (III), where the strength of the fiscal stance is reflected by a positive budget balance.

Table 5. Determinants of fiscal stimulus: now and then

	I	II	III	IV
Constant	1.716	3.901	1.819	1.748
	[3.7]	[4.1]	[5.8]	[4.4]
Crisis dummy	-4.216	-5.999	-3.69	-4.24
	[6.4]	[4.8]	[6.4]	[7.5]
Debt/GDP		-0.053		
		[2.5]		
Debt/GDP*Crisis dummy		0.048		
		[2.1]		
Budget bal./GDP			0.432	
			[3.4]	
Budget bal./GDP*Crisis dummy			-0.342	
			[2.5]	
Current account balance				0.248
				[2.3]
Current account balance*Crisis dummy				-0.291
				[2.3]
Adjusted R^2	0.79	0.85	0.90	0.84
Number of observations	12	12	12	12

As a last exercise, I included the fiscal response during three more episodes: Argentina 2000 and 2001, and Brazil 1997. Since the results are almost the same with those given in Table 5, I do not report them.

The substantial difference between the "now" and "then" episodes was not only observed in fiscal policy, but also in monetary policy. In all the "then" episodes, monetary policies were restrictive. Here are some quotes from letters of intent submitted by the authorities of these countries to the IMF, and related press releases and news briefs by the IMF:

For Argentina 2003: *"The monetary program seeks to strengthen the nominal anchor for price expectations… Indicative targets have been established for an adjusted monetary base. The Central Bank will target this aggregate to return to its end-December 2002 level by August 2003"* IMF (2003, item 16).

For Brazil 1999: *"The priority goal of monetary policy is continued low inflation… The Central Bank will continue to apply a flexible interest rate policy as appropriate to support real… As the adjustment effort takes hold and confidence is rebuilt, interest rates will be allowed to decline."* IMF (1998, item 25).

For Indonesia 1998: *"Fiscal policy will be supported by tight monetary conditions."* IMF (1997, under the heading "The Program for 1997/98 and 1998/99").

For Mexico 1995: *"The program is centered on a further strengthening of the public finances, a correspondingly restrictive monetary policy…"* IMF (1995, p. 1).

For Russia 1999: *"…monetary policy will be conducted in the context of a flexible exchange rate policy and will be geared to reducing inflation"* IMF (1999, item 8); and *"…The Central Bank of Russia will, accordingly, closely monitor developments in this market and stand ready to tighten reserve money growth…"* IMF (1999, item 30).

For Turkey 2001: *"In seeking to resume disinflation over the balance of 2001, the Central Bank of Turkey will focus on the control of monetary aggregates… in particular, the Central Bank of Turkey stands ready to raise money market interest rates promptly… to counter inflationary pressures. "* IMF (2001, item 43).

These sharp divergences in monetary and fiscal policies between the "now" and "then" episodes are very important for judging how relevant are the answers of advanced economies' authorities in response to demands for policy cooperation arising from EME policymakers who face important problems due to the unconventional policies of developed countries. What is generally told to the EMEs is "they should have kept their houses in order." However, the evidence documented so far demonstrates that on the eve of the global crisis, in correcting economic fundamentals, the EMEs had come a long way. Moreover, policy coordination demands were raised because the enormous disorder in financial markets of significantly important advanced economies caused the global crisis as well as the following severe problems for the EMEs in the first place.

3. Lack of Policy Cooperation Phase: Consequences

In the absence of convincing signs of recovery in real economic activity—despite the fact that conventional policies like cutting interest rates reached their natural limit—large advanced economies changed course and started to implement unconventional monetary policies. The most prominent of these policies was various forms of quantitative easing in the US, Japan, the euro area, and the UK with substantial spillover effects across borders. An important number of the EMEs witnessed a surge in capital inflows, rapid credit growth, and appreciation pressures on domestic currency, with repercussions on inflation and growth (see, among others, for example IMF, 2011; Chen et al., 2012; Fratzscher et al., 2013; Subraniam, 2014).

3.1 Capital Inflows

Table 6 provides information regarding current account balance and various measures of capital inflows for the 2004-2007 and 2010-2013 periods for countries with current account deficits during the 2010-2013 period, as period averages.[12] Except India and South Africa, all current account deficit countries faced a significant increase in net capital inflows during the period of 2010-2013, compared to the period of 2004-2007. Gross portfolio debt flows from

[12] Argentina also registered a current account deficit, but its 2010-21013 period average is small: -0.5 percent of GDP. Both due to this reason and data problems, for the details of capital flows it is not included in the table.

capital centers are more important than net capital inflows and net portfolio flows in assessing the impact of monetary policies of large advanced economies on the EMEs. The main-source countries are advanced economies, and furthermore there has been a sharp concentration in source countries. Among these countries, the US and the UK—the two unconventional monetary policy implementers—account for almost half of the flows.[13] Looking from this perspective, it is striking how debt inflows to countries in the table increased substantially in the period of 2010-2013, compared to the period of 2004-2007.

Table 6. Capital flows to current account deficit countries (% GDP, period averages)

	Brazil	India	Indonesia	Mexico	South Africa	Turkey
Net capital inflows						
2004-2007	1.5	4.4	0.6	1.8	8.3	6.4
2010-2013	3.9	3.8	2.7	4.4	5.2	8.4
Net portfolio inflows						
2004-2007	1.1	1.6	1.4	-0.3	3.9	1.6
2010-2013	1.5	1.1	1.1	4.2	1.5	3.3
Portfolio debt liabilities						
2004-2007	7.5	1.7	3.6	6.7	7.2	7.3
2010-2013	10.2	3.2	6.0	12.8	12.0	11.0
Current account balance						
2004-2007	1.2	-1.0	1.7	-1.0	-4.7	-5.0
2010-2013	-2.6	-3.3	-1.3	-1.2	-3.8	-7.5

Source: Values for net capital inflows and net portfolio inflows are from the central banks of each country. Current account balance and GDP data are from the October 2014 World Economic database of the IMF. Portfolio debt liability data are taken from "Portfolio debt securities non-resident investment in debt securities taken from derived liabilities" of the Coordinated Portfolio Investment Survey database of the IMF.

The spillover effects of unconventional monetary policies created significant policy problems and complaints. Just a few examples:

"… *the Fed's announcement of the Quantitative Easing II, in an already abundant liquidity scenario, have raised concerns about possible excessive depreciation of the dollar and the formation of bubbles in asset markets, hastening the adoption of capital control measures in many emerging economies.*" Central Bank of Brazil (2010, p. 166).

"*In the monetary area, policy management was confronted with the challenges of … huge capital inflows…*" Bank Indonesia (2010, p.32).

"*Over the past two years, many emerging-market currencies appreciated substantially on account of sizeable capital inflows, resulting in significant changes in international*

[13] See BIS (2014, pp. 7-8) and IMF (2014a, pp.37-38).

competitiveness. … As a result … a number of other emerging-market economies introduced capital controls and other prudential measures aimed at capital inflows in an attempt to neutralize upward pressure on exchange rates. Quantitative easing in advanced economies, a surge in commodity prices, the stronger growth performance, higher interest rates and more favorable fiscal conditions in emerging-market economies resulted in sizeable capital inflows to these countries." Reserve Bank of South Africa (2011, p. 22).

"The monetary easing policies implemented by the central banks of advanced economies to mitigate the effects of the global financial crisis had notable effects on Turkey as they did on many emerging market economies. Availability of ample and low-cost short-term external financing led to a rapid credit growth and gradual appreciation of the Turkish lira in this period, paving the way for the accumulation of macro-financial risks and external imbalances as of the second half of 2010." Central Bank of Turkey (2011c, pp. 2-3).

"…*the consequences of these sustained unconventional policies pile up in the financial markets, where risk taking increases… And they spill over into foreign markets as capital flows lead to greater leverage and stronger exchange rates in recipient countries… "* Rajan (2014, p.1)

3.2 Credit Growth

There is a close relationship between capital flows and credit growth. For example, in a sample of 19 advanced and 28 emerging market economies, the IMF (2011, Box 1.2) finds that excessive capital inflows are good predictors of credit booms between 1960 and 2010. Lane and McQuade (2013) show that domestic credit growth in advanced and emerging-market economies is strongly related to net debt inflows during the period of 1993-2008. Individual country studies reinforce this finding. Barroso et al. (2013) show that capital inflows led to credit booms in Brazil during the period of 2000-2012. Özatay (2014) demonstrates that capital flows have significant predictive power for the real credit cycle in Turkey between 2002 and 2013.

Table 7 reports averages of annual changes in quarterly credit-to-GDP ratios between 2010 and 2013 for the EMEs. China has the highest credit growth, followed by Brazil and Turkey. For the period between 2012Q1 and 2013Q4 I can include Indonesia and Russia in this group. The rapid credit growth and high current account deficit combination is a notorious one. Lane and Milesi-Feretti (2011) show that there is a strong positive correlation between the extent of credit growth and current account imbalances between 2003 and 2008, on the on the one hand, and the size of recessions during the period of 2008-2009, on the other. China and Russia are current account surplus countries, whereas Brazil, Indonesia, and Turkey had current account deficits in the period of 2010-2013. For Brazil and Indonesia, current account deficit-to-GDP ratios are even higher during the rapid credit growth phase after 2011 (see Table 6).

Table 7. Credit to nonfinancial private sector as percentage of GDP (averages of changes with respect to the same quarter of the previous year, percentage points)

	2010Q1-2011Q4	2012Q1-2013Q4	2010Q1-2013Q4
Argentina[a]	1.08	0.91	1.00
Brazil	5.31	5.96	5.63
China[a]	5.13	12.59	8.86
India	0.14	1.85	1.00
Indonesia	1.12	4.25	2.68
Mexico	-0.26	1.19	0.47
Russia	-6.05	6.10	0.02
Saudi Arabia[a]	-7.30	2.22	-2.54
South Africa	-4.61	1.51	-1.55
Turkey	4.40	5.84	5.12

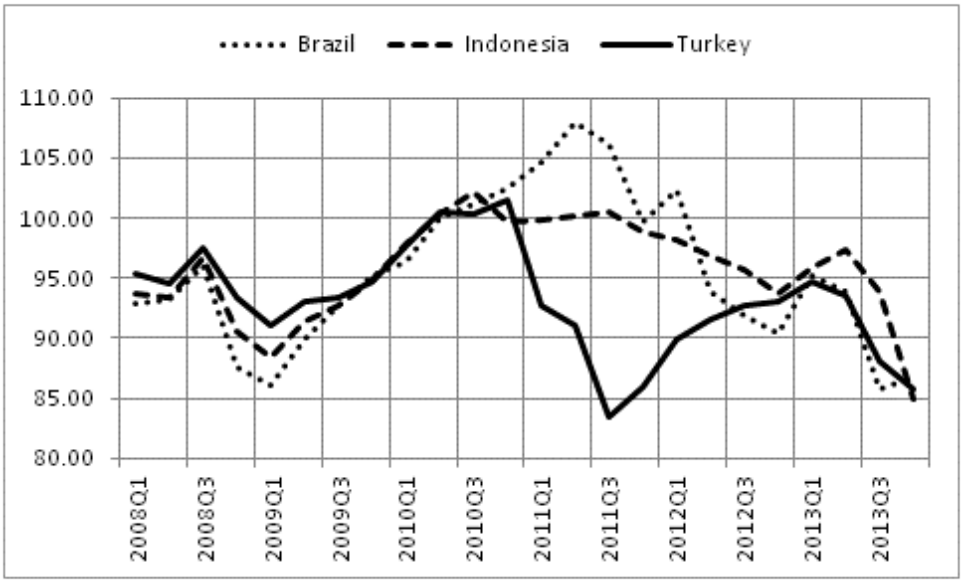
Notes. [a] Annual data. For quarterly frequency, credit as a percentage of GDP is calculated as the credit stock as a ratio to the sum of the last four quarters" GDP. Source: Credit data is from the BIS. Quarterly GDP values are seasonally adjusted at the source and from OECD Stat, whereas annual GDP values are from the October 2014 World Economic Outlook database of the IMF.

3.3 Exchange Rates

Figure 1a and 1b show the evolution of quarterly real effective exchange rates of countries that registered current account deficits in this period (see Table 6). Several points are worth emphasizing. First, the currencies of all six countries appreciated heavily since early 2009 up to end of 2010. This trend broadly continued to mid-2011, except Turkey, though in most cases it is milder than that observed in the first phase. Note that this period almost exactly matches with the first and second quantitative easing programs of the FED, as well as with similar programs of the Bank of England and the Bank of Japan. Second, the peak level of the real exchange rate in each country at the end of this appreciation period was much higher than the pre-crisis level. That is, the appreciation was not a correction of the depreciation that was realized in the first months of the global crisis.

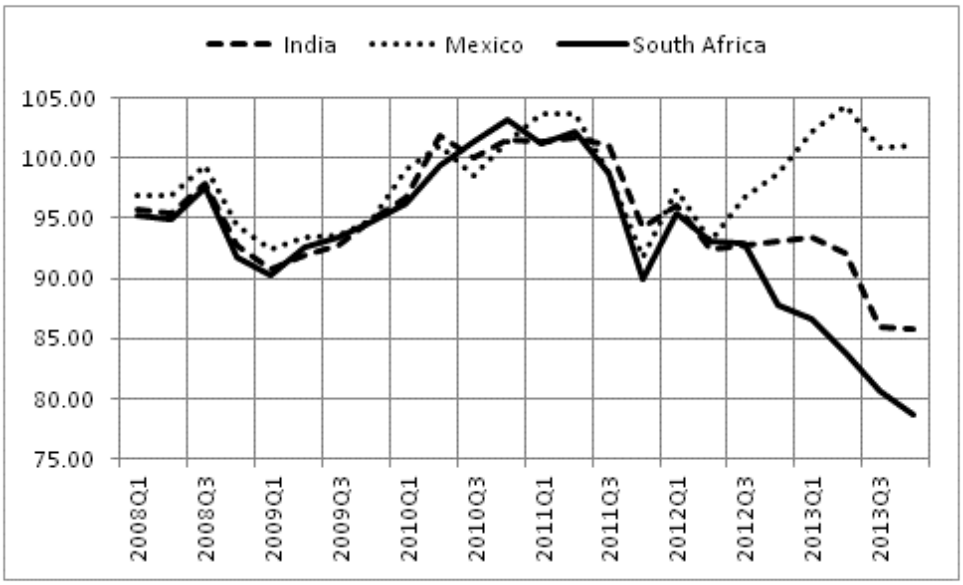
Third, from mid-2011 to mid-2012—albeit, with a short period of appreciation—almost all currencies depreciated in real terms. Note that this is the period of heightened problems in the European economy. Fourth, from mid-2012 to April 2013, besides the South African rand, all currencies appreciated in real terms. This almost overlaps with the start of the third quantitative easing program of the FED up to tapering talks. Fifth, since May 2013 to the end of our sample (December 2013) all currencies depreciated in real terms. Other than South Africa, this depreciation marked the end of the appreciation phase that broadly encompasses the period. Of course, this striking similarity is not by chance. On the contrary, on May 22, 2013 the then-chairman of the FED Ben Bernanke made his famous speech about first slowing than stopping quantitative easing.

Figure 1a. Real effective exchange rates: 2008Q1-2013Q4 (monthly averages, 2010=100).



Source: Bank for International Settlements, real broad effective exchange rates.

Figure 1b. Real effective exchange rates: 2008Q1-2013Q4 (monthly averages, 2010=100).



Source: Bank for International Settlements, real broad effective exchange rates.

There is no doubt that the only determinant of exchange rates is not the monetary policy decisions of large advanced economies. After all, a real exchange rate is not exogenous to domestic developments and policy responses of an emerging market economy. It is beyond the scope of this study to analyze determinants of real exchange rate fluctuations. However, what is important from the perspective of this paper is that periods of sharp changes in monetary policies of large advanced economies—quantitative easing, pausing, unwinding- and changes in the level of problems in European economy—coincided with the real exchange rate cycles of the EMEs. Moreover, economic theory points to the fact that interest

rate differentials between advanced economies and emerging economies—and changes in risk aversion—are two most important determinants of exchange rates. Thus, what we have in our hands is not only a simple correlation. This theory—together with the observed correlation between real exchange rate cycles and monetary policy decisions of large economies and their problems—indicate that the above-mentioned criticisms of the EMEs' policymakers are not misplaced.

3.4 Growth and Inflation

In order to better understand the policy response of EMEs, one should also analyze the inflation rate and the growth rate developments. Table 8 shows the evolution of these two variables between 2009 and 2013. The 2004-2007 averages are also provided to facilitate comparison of the post Lehman Brothers collapse period, with the four-year period before that collapse. The first important point to note is that, except Indonesia and Saudi Arabia, the average growth rate of each country in the 2010-2013 period is less than that of the 2004-2007 period, whereas Saudi Arabia's growth rate in the two periods were almost similar. This regularity is even more evident when one filters out the bouncing effect in 2010 and makes the comparison between the periods of 2011-2013 and 2004-2007. Second, inflation performance is more diversified: in China, Mexico, and South Africa average end-year inflation rates of the periods of 2004-2007 and 2010-2013 were almost the same. Argentina, Brazil, India, and Saudi Arabia faced a rise in inflation. In India and Indonesia, the inflation performance diverged sharply between the two periods.

Table 8. Consumer inflation (year-end) and GDP growth rates: 2008-2013 (%)

	Inflation						Growth					
	2004-2007	2009	2010	2011	2012	2013	2004-2007	2009	2010	2011	2012	2013
Argentina	9.2	7.7	10.9	9.5	10.8	10.9	8.6	0.1	9.1	8.6	0.9	2.9
Brazil	5.2	4.3	5.9	6.5	5.8	5.9	4.7	-0.3	7.5	2.7	1.0	2.5
China	3.3	1.9	4.6	4.1	2.5	2.5	12.1	9.2	10.4	9.3	7.7	7.7
India	5.9	11.8	9.7	9.4	10.4	8.3	9.1	8.5	10.3	6.6	4.7	5.0
Indonesia	9.0	3.0	7.0	3.8	3.7	8.1	5.6	4.6	6.2	6.5	6.3	5.8
Mexico	4.1	3.6	4.4	3.8	3.6	4.0	3.9	-4.7	5.1	4.0	4.0	1.1
Russia	10.9	8.8	8.8	6.1	6.6	6.5	7.6	-7.8	4.5	4.3	3.4	1.3
Saudi Arabia	2.6	4.0	5.8	3.6	3.6	3.0	6.0	1.8	7.4	8.6	5.8	4.0
South Africa	5.4	6.3	3.5	6.1	5.7	5.4	5.2	-1.5	3.1	3.6	2.5	1.9
Turkey	8.8	6.5	6.4	10.4	6.2	7.4	7.3	-4.8	9.2	8.8	2.1	4.1

Source: October 2014 World Economic Outlook database of the IMF.

4. Lack of Policy Cooperation Phase: Policy Responses

As documented above, the unconventional monetary policies of large advanced countries created a substantial impact on currencies and credit cycles of the EMEs. In a recent study for advanced- and emerging-market economies, Gourinchas and Obstfeld (2011) show that domestic credit expansion and real currency appreciation have been the most significant predictors of financial crises. I now analyze policy responses of these countries.

4.1 Fiscal policy

Table 9 provides information regarding changes in cyclically-adjusted primary balances, with respect to the end of 2008.[14] The values for 2009 are shown for comparison purposes. A negative sign indicates that the fiscal stimulus of 2009 is not totally off-set during the period mentioned in the relevant column. Despite rapid credit growth and current account imbalances, fiscal stimulus measures in the first phase were not unwound during the 2011-2013 period in Brazil, Indonesia, and Turkey. More interestingly, Brazil and Indonesia eased fiscal policy even more, and Turkey kept the dose of easing intact as of the end of 2013. There is pronounced tightening in India, and to a certain extent in China as well. While Russia offset almost half of the fiscal stimulus of 2009, as of end 2013 its fiscal policy was still lax. Argentina, Mexico, and South Africa also remained in the lax fiscal policy camp.

Table 9. Changes in cyclically adjusted primary balance-to-GDP ratios (percentage point changes with respect to 2008)

	2009-2008	2011-2018	2012-2008	2013-2008
Rapid credit growth and current account deficit countries				
Brazil	-0.63	-0.65	-1.24	-1.53
Indonesia	-1.71	-1.08	-2.18	-2.67
Turkey	-0.68	-0.02	-0.50	-0.63
Rapid credit growth and current account surplus countries				
China	-2.07	0.24	-0.57	-0.20
Russia	-9.43	-2.80	-4.18	-5.64
Others				
Argentina	-0.73	-3.70	-3.01	-3.84
India	-0.08	0.75	1.68	2.37
Mexico	-3.24	-2.31	-2.62	-2.57
South Africa	-2.63	-2.81	-3.04	-2.71

Notes. There is no data for Saudi Arabia. Source: Author's calculations based on the April 2014 Fiscal Monitor of the IMF.

The absence of an offset of fiscal stimulus could partly be linked to volatility in risk appetite in financial markets as well as the associated fluctuations in interest rates, exchange rates, and business confidence. As already pointed-out, in the second half of 2011 and most of 2013, risk aversion increased sharply and raised concerns about slower growth in these countries. For example, in the 2013 article IV consultation report, the IMF notes for Brazil that "…*in response to sharp deceleration in activity since 2011, the authorities have introduced several rounds of fiscal stimulus*."[15] This is from the 2013 article IV consultation report for Turkey: "*In the view of staff, given the large current account deficit, and with inflation well above target, there would be little justification to respond with more than the automatic stabilizers to a moderate*

[14] Since policy measures are not announced, cyclically adjusted data is used despite the criticism mentioned in footnote 4.

[15] IMF (2013a, box 4).

slowdown in growth."[16] Another plausible underlying factor is the fact that fiscal tightening measures are generally unpleasant for politicians. This brings me to monetary policy responses in rapid credit growth-cum-current account deficit countries.

4.2 Monetary Policy

During the 2010-2013 period, the monetary authorities of current account deficit countries faced important challenges which are more pronounced in countries with rapid credit growth and under considerable appreciation pressures. The following passage from the Central Bank of Turkey vividly shows the problems faced due to the unconventional monetary policies of large advanced economies, on the one hand, and a sharp decrease in risk appetite due to problems in Europe, on the other:

"In the period from the adoption of the new policy framework in November 2010 to intensifying uncertainties in the European in August 2011, the Central Bank aimed at limiting short-term capital flows and preventing excessive appreciation of the Turkish lira on the one hand, and ensuring a more controlled growth in domestic demand… Since August 2011, intensified concerns over global growth and sovereign debt problems in some European countries led to a global increase in risk aversion and a record-high volatility in risk appetite. Upon the acceleration of capital outflows from emerging economies in this period, the Central Bank, in accordance with the new policy implementations, utilized its policy tools in the opposite direction of what it did in times of accelerated capital inflows." Central Bank of Turkey (2011c, pp. 3-5)

The following passages from two different inflation reports in 2011 from the Central Bank of Brazil show how the environment in which central banks live could change sharply in a relatively short period. March 2011 Inflation Report: *"The perspectives of faster than expected recovery of the global economy and the smaller likelihood of this process to be reverted seem consolidated."* Central Bank of Brazil (2011a, p.7)

December 2011 Inflation Report: *"The economic outlook for the global economy has deteriorated…. Uncertainties regarding measures to be taken by European economies have widened the perception of risk, with repercussions on credit conditions as a whole. These developments, among others, have negatively reflected on business and consumer expectations in Brazil"* Central Bank of Brazil (2011 a, p.1).

Table 10 and 11 provide information about policy rate and required reserve ratio decisions during the period of 2010-2014, respectively. As expected, given the divergence in macroeconomic imbalances, responses were not identical. For example, while two of the three high current account deficit-rapid credit-real appreciation countries—Brazil and Indonesia—tightened in 2010 and 2011 (up to last quarter), Turkey eased. In the current account surplus camp, Saudi Arabia kept its policy rate intact. China tightened in 2010 and the first half of 2011, whereas Russia eased. The timing of reserve requirement changes of

[16] IMF (2013b, item 23).

EMEs did not match either. However, an important regularity emerged after May 2013: all current account deficit-rapid credit growth countries tightened policy rates between May 2013 and December 2013. This is not by coincidence—on the contrary, this is the period in which the Fed's tapering talk was heard, and risk aversion and depreciation pressures increased in financial markets.

Table 10. Monetary policy response (policy rates)

Rapid credit growth and current account deficit countries					
Brazil	TC[a]: May 10-July11 3.75	EC[b]: Sep. 11-Oct. 12 -5.25		TC: April 13-Dec.13[c] 2.75	
Indonesia	TC: Feb. 11-Feb. 11 0.25	EC: Oct. 11-Feb. 12 -1.00		TC: June 13-Nov.13 1.75	
Turkey	EC: Sep. 10[d]-Aug. 11 -0.75	TC: Nov. 11-May 12 4.00	EC: June 12-May 13 -4.75	TC: June 13-Dec.13[e] 1.85	
Rapid credit growth and current account surplus countries					
China	TC: Oct. 10-July 11 1.25	EC: June 12-July 12 -0.56			
Russia	EC: Jan. 10[f]-Dec. 11 -1.50	TC: Sep. 12-Sep. 12[g] 0.25			
Others					
Argentina	No change since Oct. 09				
India	TC: March 10-Oct. 11 3.75	EC: April 12-May 13 -1.25		TC: Aug. 13-Sep.13[h] 2.75	EC: Oct. 13-Dec.13[i] -2.00
Mexico	No change in 2010-2012				EC: Aug. 13[j]-Oct.13[k] -2.00
Saudi Arabia	No change since Jan. 09				
South Africa	EC: March 10[l]-July 12 -1.50				

Notes. [a] "TC": tightening cycle. [b] "EC": easing cycle. [c] Tightening continued in 2014.[d] Easing continued since December 2008.[e] Shifted implicitly to another policy rate in November 2011 and since then changed it almost daily most of the time (discussed in the text in the domestic cooperation section).[f] Tightening continued up to February 2014.[g] Easing cycle continued since April 2009.[h] There is additional tightening in 2014.[i] Shifted implicitly to another policy rate in August 2013 and since then changed it almost daily most of the time up to end of 2013 (discussed in the text in the domestic cooperation section).[j] Last easing was in July 2009. Since then up to August 2013 policy rate is kept constant.[k] Easing continued in June 2014.[l] This is the continuation of the easing cycle that started in December 2008.
Source: Bloomberg and the central bank of each country.

Table 11. Monetary policy response (required reserve ratios)

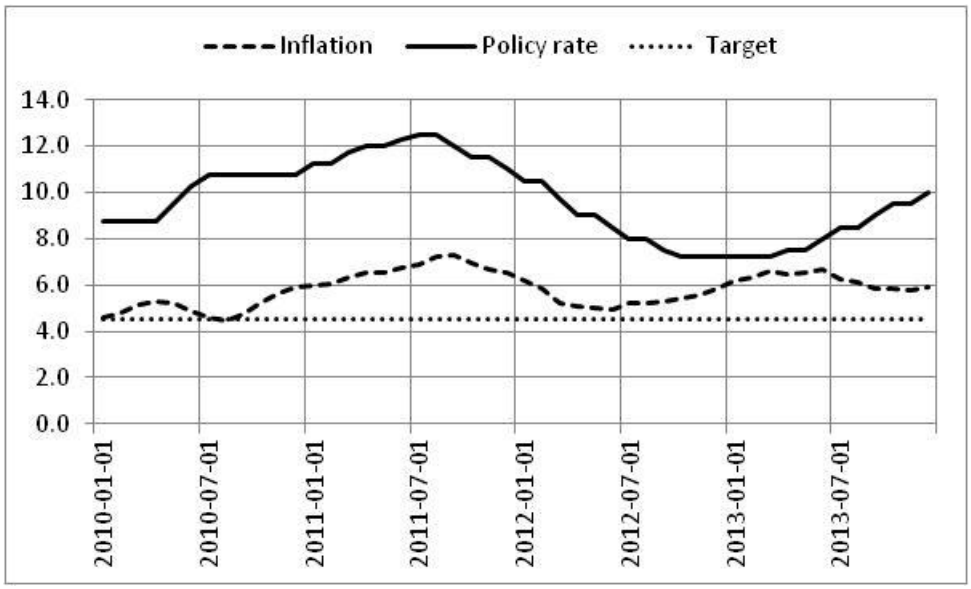
Rapid credit growth and current account deficit countries			
Brazil	Inc.[a]: Feb. 2010-Dec. 2010	Red.[b]: Oct. 2012-Nov. 2012	
Indonesia	Inc.: Sep. 2010-June 2011		
Turkey	Inc.: Nov. 2010-July. 2011	Red.: Aug. 2011-Oct. 2011	Inc. 2012-March 2013
Rapid credit growth and current account surplus countries			
China	Inc.: Jan. 2010-Nov. 2011	Red.: Dec. 2011-May 2012	
Russia	Inc.: Feb. 2011-April 2011	Red.: March 2013	
Others			
India	Inc.: Feb. 2010-April 2010	Red.: Jan. 2012-Feb. 2013	
Mexico	No change		
Saudi Arabia	No change		
South Africa	No change		

Notes. [a] "Inc" stands for increase. [b] "Red." denotes reduction. Source: the central bank of each country and Lim et al. (2013, Appendix)

As discussed below, high current account deficit-rapid credit-real appreciation countries—Brazil, Indonesia, and Turkey—responded to credit growth and real appreciation mainly through making use of: macro prudential tools (all three countries), capital controls (all except Turkey), and reserve building (all three). Changes in reserve requirements were also related with these developments. This means that growth and inflation developments should have played a dominant role in policy rate decisions. To give a full account of the monetary decisions of all ten countries, in the period of 2010-2013, is clearly beyond the scope of this paper. However, at this stage it would be instructive to look at inflation and growth developments in these three countries.

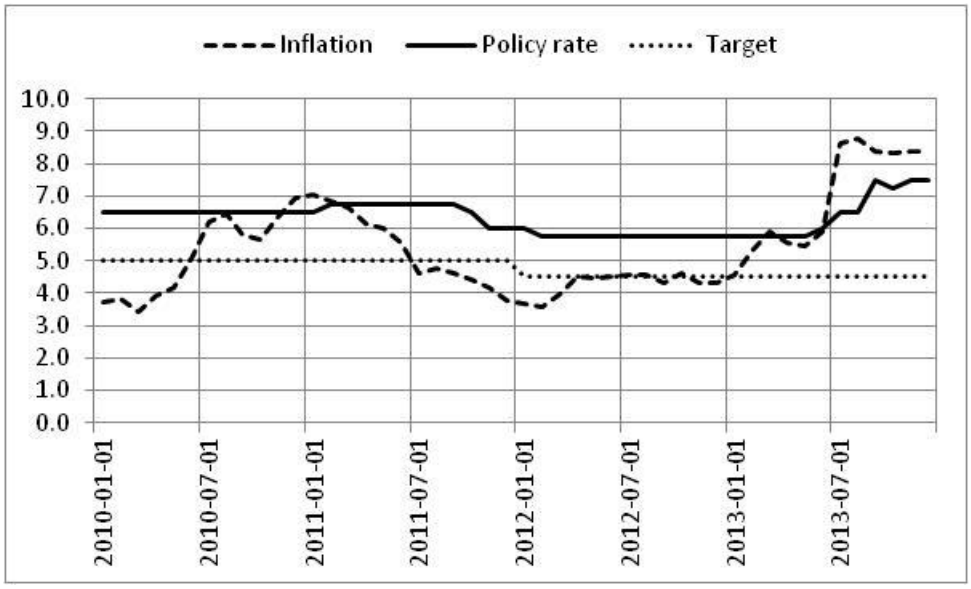
Figures 3a, 3b, and 3c show the inflation rates, policy rates, and the year-end inflation targets, between January 2010 and December 2013, in Brazil, Indonesia, and Turkey. In Brazil inflation fluctuated around a band of 4.2-5.3 percent between April 2009 and August 2010. Since that time until September 2011 it rose almost continuously and reached a peak of 7.3 percent. This is broadly in line with its policy rate tightening period. In Indonesia, the inflation rate rose with mild fluctuations to a peak of 7 percent in January 2011 from a trough of 2.4 percent in November 2009. Note that it tightened once in February 2011. The Turkish inflation cycle was different. From a trough of 5.1 percent in October 2010, it rose to a peak of 10.2 percent in April 2010 and then continuously declined to a trough of 4 percent in April 2011. Note that its easing cycle is consistent with the disinflation period. While Brazil reached its pre-crisis peak level of GDP at the end of 2009, for Turkey that time was the third quarter of 2010 (see Table 1 and 8). There was not any recession in Indonesia throughout the post Lehman collapse, and its growth hovered slightly above 6 percent in the period of 2010-2011. Again, policy rate decisions were broadly in line with output developments.

Figure 3a. Inflation, policy rate, and the year end inflation target in Brazil: January 2010 and December 2013.



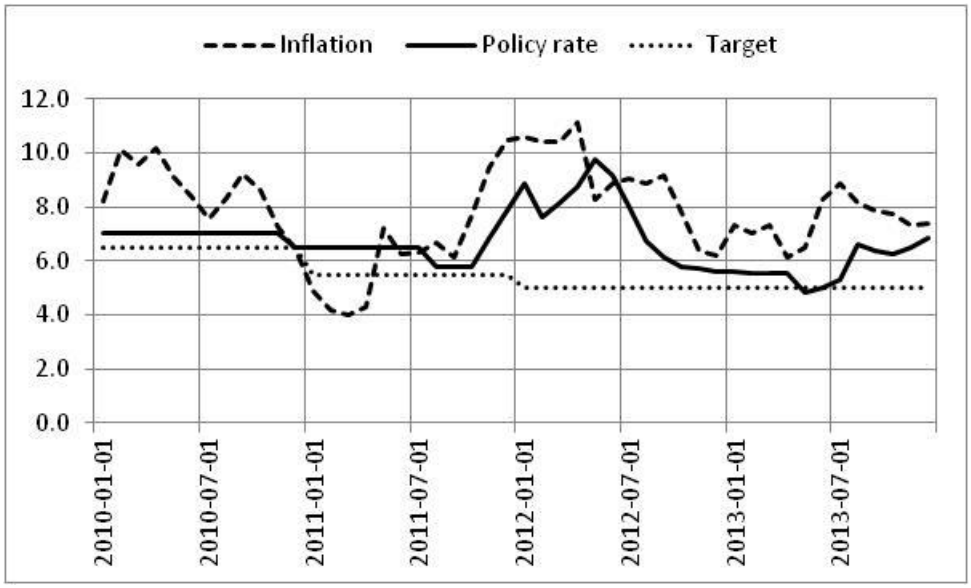
Source: Policy rate is from Bloomberg. Inflation target is from the Central Bank of Brazil. Inflation figures are taken from the OECD Main Economic Indicators complete database.

Figure 3b. Inflation, policy rate, and the year end inflation target in Indonesia: January 2010 and December 2013.



Source: Policy rate is from Bloomberg. Inflation target is from the Bank Indonesia. Inflation figures are taken from the OECD Main Economic Indicators complete database.

Figure 3c. Inflation, policy rate, and the year end inflation target in Turkey: January 2010 and December 2013



Source: Policy rate is from Bloomberg. Inflation target is from the Central Bank of Turkey. Inflation figures are taken from the OECD Main Economic Indicators complete database.

However, the consistency that I pointed at, between policy rate decisions and inflation, are for broad trends, not for levels. A close look into the levels of inflation and policy rates in each of these three countries reveal the fact that while in Brazil the policy rate almost is kept above the inflation rate, in Turkey—in most of the period of 2010-2013—the policy rate remained below the inflation rate. The Indonesian policy rate remained between these two extreme examples.

4.3 Macroprudential Policy

The global financial crisis burst despite the fact that inflation rates in advanced economies were at levels compatible with price stability, and most of EMEs had single-digit inflations. This fact led to a lively discussion on whether the one objective (price stability)-to-one policy tool (short term policy rate) monetary policy framework of the pre-crisis period should change or be kept intact.[17] Since then quite a few central banks have increasingly used macro-prudential tools to mitigate systemic risks to financial stability. All of the EMEs besides Saudi Arabia jumped on the bandwagon and, starting from the early 2010, have taken various macro-prudential measures. The most common were loan-to-value ratios and changes in risk weights in capital adequacy ratios.[18] Listed below are brief passages that state the reasons behind such policies from reports of central banks of countries with rapid credit growth, high current account deficits, and real appreciations.

[17] See, for example, Blanchard et al., (2013).

[18] Lim et al. (2013, Appendix) give information on macroprudential policies implemented in a number of countries up to late 2013. Argentina and Russia is not in their sample.

"In December 2010, the Central Bank introduced macro-prudential measures aimed to increase the security of longer-term credit operations, especially in the modalities of acquisition of goods and personal credit, so as to mitigate the risks identified in the credit market. The impact of these measures, which are expected to raise interest rates and reduce the terms of new operations, shall reinforce the effects of the raise of the Selic rate target decided by Copom" Bank of Brazil (2011, p. 52).

"The Indonesian economy was also influenced by developments on the external side, particularly heavy inflows of foreign capital … These conditions led to formidable challenges in the national economy during 2010, and is expected to continue. The Bank Indonesia has responded to the challenges by applying an appropriate combination of available instruments, instead of focusing on a single policy instrument. The monetary and macro-prudential policy mix, combining a range of instruments, was announced in part in the policy package of 16 June 2010." Bank Indonesia (2011a, p.3).

"… 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…" Central Bank of Turkey (2011c, p.1).

"While aiming at keeping inflation close to target, the CBRT will continue to safeguard financial stability. In this context, the CBRT will maintain its policies to contain the volatility led by capital flows on domestic economy. So as to achieve price stability and financial stability, instruments developed under the new policy framework will remain effective alongside the traditional instruments in the forthcoming period" Central Bank of Turkey (2013, p.2).

4.4 Capital Controls

A non-negligible possibility of a sharp capital reversal is a nightmare for policymakers of most of emerging-market economies. As documented for example in Calvo et al., in 2006 there were quite a few sudden stops before the global financial crisis. Accumulating evidence on the role played by a surge in short-term capital inflows and their subsequent dry-up in financial crises led to a heightened discussion on the benefits and costs of capital flows much earlier. The evidence documented so far is mixed (Prasad et al., 2007, Klein and Olivei 2008, Aizenman et al., 2013). Benefits and costs of capital flows aside, Calvo (2005) warns that with more international financial integration, emerging-market economies become more vulnerable to exogenous shocks originating from global capital markets. Gourinchas and Obstfeld (2011) show that domestic credit expansion and real currency appreciation—the two most important consequences of capital inflows—have been the most significant predictors of financial crises. Reinhart and Reinhart (2009) provide convincing evidence that episodes of high capital inflows increase likelihood of financial and economic crises.

Crises experiences of various countries on the hand, the growing literature on consequences of capital flows on the other hand, started to change the view that capital flows are always growth-enhancing, and intensified discussions on whether controls on at least some forms of capital flows are warranted. The global financial crisis constituted a turning point in sentiment towards capital controls in important Washington institutions. For example, the IMF revised its view on capital controls and published various reports on the pros and cons of such controls (IMF 2011b, IMF 2012a).[19]

These developments certainly lessened perverse perceptions for countries taking capital control measures, and increased potential for such measures. However, not all of the EMEs used this potential. Argentina, China, India, Indonesia, and South Africa already had a framework for capital controls before the global financial crisis. Indonesia mildly relaxed existing capital control measures in 2013, while China, India, and South Africa had been relaxing in most of the period under consideration. Saudi Arabia, Mexico and Turkey refrained from adopting any capital control measures. Brazil was one of the most active countries in using capital controls and lifting them totally or partially according to prevailing conditions.[20]

4.5 Exchange Rate Policy

Most of the EME central banks saw surges in capital inflows episodes as an opportunity to raise their foreign exchange reserves, and consequently conducted rule-based and/or surprise interventions (see papers in BIS 2013 for example). Note that an exchange rate policy cannot be analyzed independent of monetary and macro-prudential policies. After all, even a central bank with a one target-one policy tool, as an inflation-targeting one, reacts to exchange rate fluctuations to the extent that they affect arguments of the objective function of a central bank. In a world in which an increasing number of central banks aim at financial stability as well, central banks could respond to exchange rate fluctuations even if such fluctuations have negligible impact on the inflation rate. This is because exchange rate developments could have important repercussions for financial stability.

In this context, the monetary and macro-prudential policies discussed so far, at least in some cases, were also reactions to developments in exchange rates. One notable example is Indonesia: *"For a small open economy like Indonesia, exchange rate movement does not always reflect fundamental value… Our strategy is to include exchange rate policy in the monetary and macroprudential policy mix consisting of five instruments, i.e., interest rate policy, exchange rate policy, management of capital flows, macro-prudential policy, and monetary policy communication"* (Warjiyo, 2013, p. 177).

In the surge in capital flows episodes, some EMEs partly allowed their currencies to appreciate in order to reduce inflation. An example is again from Indonesia: *"The strengthening of the Rupiah was attributable to investors' positive perception of the solid Indonesian economic*

[19] In a recent study, Davis and Presno (2014), point to benefits of capital controls even when monetary policy is determined optimally.

[20] From 2099 through 2011, Forbes et al. (2013) provide changes in capital control measures for all of the EMEs except Saudi Arabia. Additional information is provided in the IMF's Article IV reports for each country (IMF 2011b, 2012a, 2012b, 2012c, 2012d, 2013a, 2013c).

fundamentals. The Bank of Indonesia believes that the Rupiah appreciation is consistent with the efforts to contain inflationary pressures, and at the same time is still conducive to maintaining the momentum of economic growth" Bank Indonesia (2011b, p.3).

Two citations—one from the Bank of Indonesia deputy governor and another from a Bank of Indonesia report—show once more how it is difficult to implement monetary, macro-prudential, and exchange rate policies in an environment where large advanced countries implement unconventional policies, and at the same risk appetite continuously and radically changes. One has to have an idea whether an exchange rate development reflects fundamentals or a deviation from a trend. If it is a deviation from fundamentals, is it temporary or, if not reacted, could it last for a considerable period of time? Would it change the inflation outlook and cause inflation to deviate from the target? If a country that faces large swings in exchange rate is a country with large amount of foreign currency denominated liabilities, would exchange rate developments jeopardize financial stability through the impact on balance sheets? Would it change the competitiveness of the country?

This brings us to the unconventional monetary policy response of the Central Bank of Turkey: a country with large current account deficits, receiving substantial amounts of portfolio debt inflows, with rapid credit growth, relatively high inflation, and a large negative international investment position.[21]

5. Domestic Policy Cooperation

As of November 2010, the Central Bank of Turkey started to implement a new monetary policy. In its various reports, speeches, and articles from its managers, it has been explicitly stated that since that time it has had two objectives: price stability and financial stability. The Bank pointed to sharp swings in capital flows as the main threat to financial stability. According to the Central Bank of Turkey, this is realized through two channels: parallel fluctuations in exchange rate and credit growth. The policy implication then is to curb excessive credit growth (decline) and deviations of real exchange rate from its fundamental level. To this end, the Central Bank of Turkey enlarged its policy set (Central Bank, 2011c; Alper, Kara, and Yörükoğlu, 2013).

One of the new tools that have been actively used is the width of the interest rate corridor. The Central Bank of Turkey started to change reserve requirements frequently as well. In contrast to its policy rate easing cycle that continued up to August 2011, Turkey raised its reserve ratios up to July 2011, beginning from April 2010, for foreign exchange denominated deposits, and from November 2010 for domestic currency denominated deposits (see Tables 10 and 11). This sharp difference between Turkey's interest rate and reserve ratio policies is related to rapid credit growth, on the one hand, and appreciation pressure on the lira on the other. Reserve ratios were raised to curb rapid credit growth, whereas easing was for preventing sharp appreciation of the lira. Turkey reduced reserve ratios in August and September 2011. The

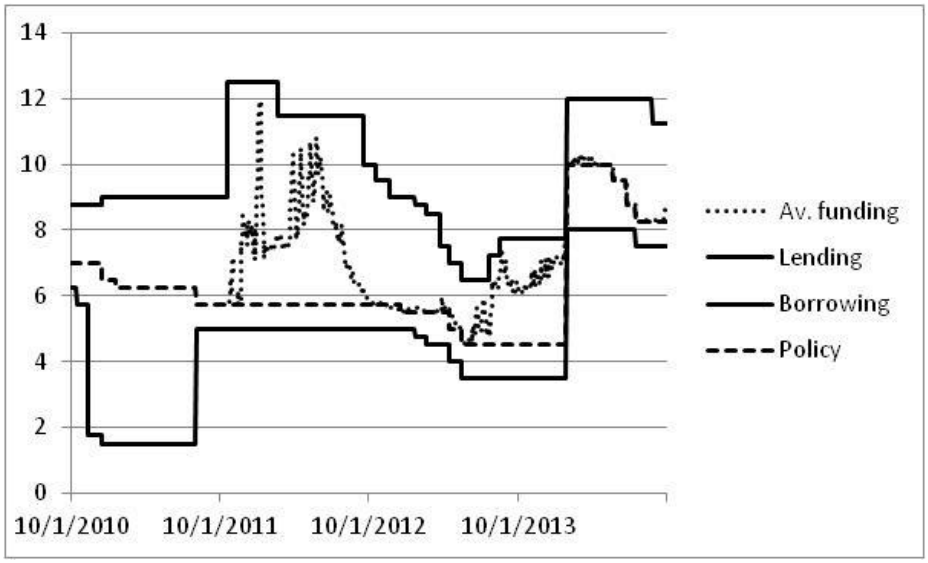
[21] Net international investment position (assets minus liabilities) of Turkey is -53 percent of its GDP as of the end of 2013. This is the highest negative number in between the EMEs in the G20. Moreover, relative to 2007 it denotes almost a ten percentage points increase in absolute terms. See, "Principal Global Indicators" database of the IMF.

Central Bank of Turkey emphasized that the rationale of this decision is to ease liquidity conditions in the financial sector in a period in which risk perception was heightened due to intensified problems in the European economy. Note that during the same period, policy rates were increased to mitigate depreciation pressure on the lira and to prevent a rise in inflation (Central Bank of Turkey, 2011c, pp 3-7). There were two mild increases in reserve ratios between the end of 2012 and February 2013. This was again just the opposite of the June 2012 to May 2013 easing cycle. The underlying reason was similar: as early global risk appetite was recovered, the Central Bank of Turkey once more tried to decrease credit growth rate and counter appreciation pressures (Central Bank of Turkey, 2012, pp. 6-8).

It is important to emphasize that during most of this period, monetary policy tightening or easing was not materialized through conventional methods. That is, in most of this period the Central Bank of Turkey either kept its "policy rate" intact or changed it rather mildly. However, it allowed the overnight interest rate—that is determined in the interbank market—to fluctuate widely in the corridor. It achieved this by appropriate liquidity operations. In the early months of the new policy, the average cost to the banking sector was not given a specific name by the Central Bank. Since late October 2011 it declared a new short-term rate—the so-called "average funding rate" of the banking sector, which became implicitly the new policy rate. Since that time, the Central Bank of Turkey changed this implicit policy rate almost daily. That is, if it opted for a tight policy at specific dates, it lent to the banks not only from its "policy rate," but also from its overnight lending rate (upper limit of the corridor). Conversely, when it judged that it was necessary to ease the monetary policy, it also sold money by introducing auctions at interest rates below its "policy" rate. Note that during times of increased risk aversion, the width of the corridor had been widened by significantly increasing the overnight lending rate; whereas during surges in capital flows it generally increased the width of the corridor downwards by reducing its overnight borrowing rate. According to the Central Bank of Turkey, in an environment where risk aversion sharply changes as since 2010, such a policy allows it to give an immediate response without waiting for the next monetary policy committee meeting or calling for an extraordinary meeting.

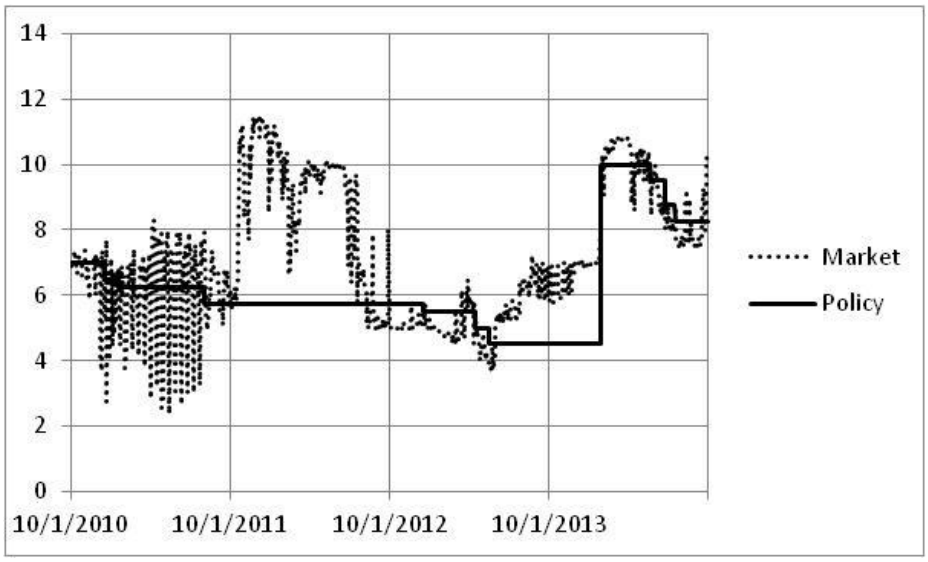
Figures 4a and 4b neatly summarize what has been said so far. Since November 2010 up to the beginning of 2014, the overnight rate determined in the market deviated from the "policy rate" most of the days. This was not a result of liquidity shortage in the interbank market stemming from extreme conditions in the financial markets. On the contrary, it was a deliberate policy of the Central Bank of Turkey. This is reflected in the sharp divergence of the so called average funding rate from the "policy rate." In other words, the average funding rate became the new policy rate—albeit, implicitly—and the so called the policy rate (the repo rate) lost its meaning as the policy rate. That is why the above policy rate has been placed in quotation marks.

Figure 4a. Policy rate (weekly repo rate), average funding rate (implicit policy rate), overnight lending rate (upper limit of the corridor), and overnight borrowing rate (lower limit of the corridor) of the Central Bank of Turkey: November 1, 2010 – September 30, 2014 (%).



Source: Central Bank of Turkey

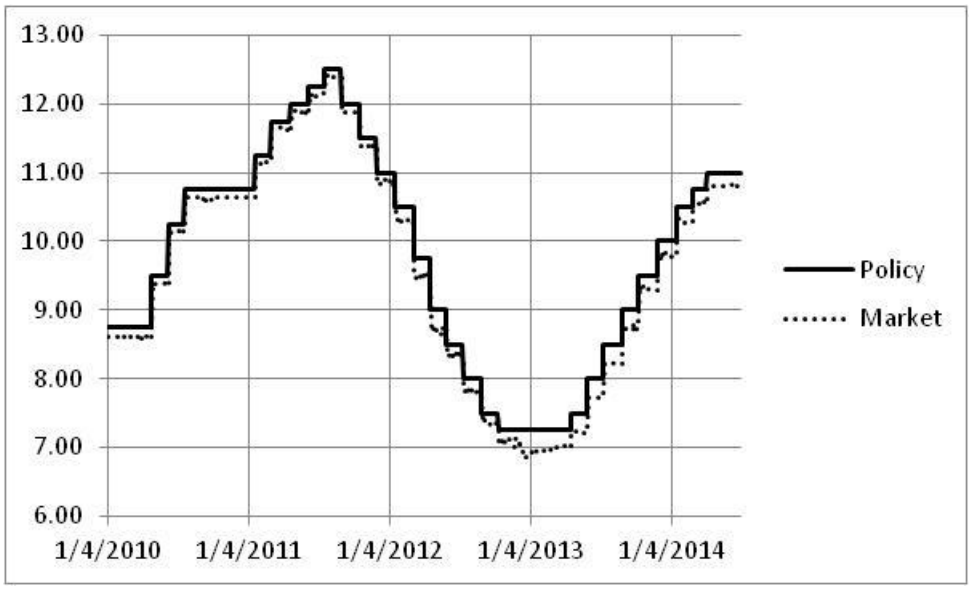
Figure 4b. The "policy rate" of the Central Bank and the overnight interbank market rate: November 1, 2010 – September 30, 2014 (%).



Source: Central Bank of Turkey

It is time to contrast the Turkish policy with that of the Brazilian policy—another rapid-credit growth, high current-account deficit country. The Central Bank of Brazil did not use the width of the corridor as a new policy tool, sticking to its policy rate as the policy rate. Even in monetary policy committee statements, information on the upper and lower limits of the corridor is absent. Figure 5 shows how the policy rate of the Central Bank of Brazil and the interbank market rate moved closely together. This is an example of a conventional interest rate policy of an inflation-targeting central bank.

Figure 5. The policy rate of the Central Bank of Brazil and the market rate: January 1, 2010 – June 30, 2014 (%).



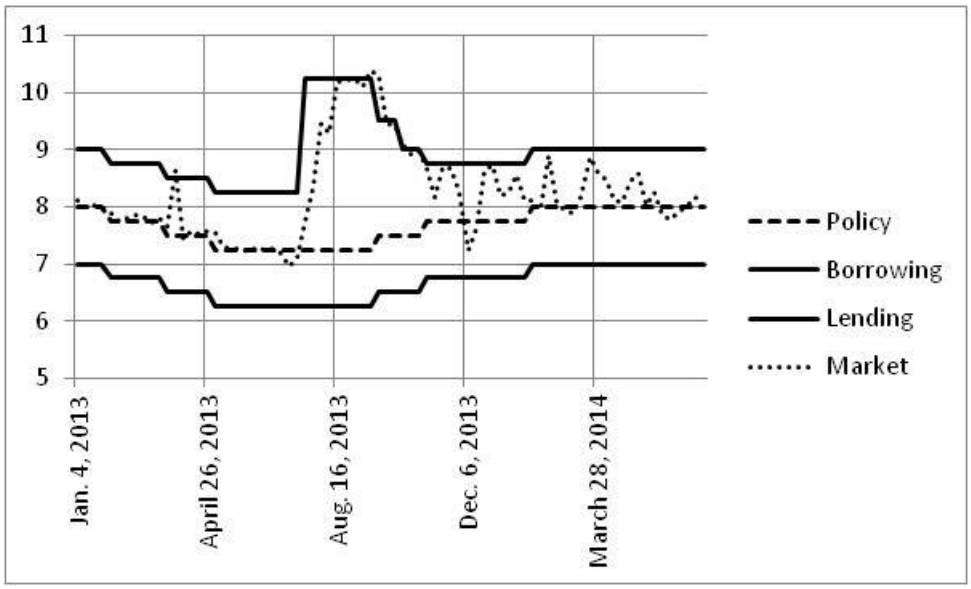
Source: Bloomberg

What is the importance of all this? It is not my aim to discuss the pros and cons of such policies. From the perspective of this study, the importance of the unconventional monetary policy of the Central Bank of Turkey, and the absence of such a policy in Brazil, stem from the fact that they are highly related to the extent of domestic policy cooperation between monetary policy makers and macro-prudential policy authorities, which are discussed below. However, before that we briefly summarize a short-lived unconventional monetary policy experiment in India in 2013.

The Reserve Bank of India allowed the call money rate—the short-term market rate—to deviate from its policy rate significantly in the second half of 2013 (Figure 6). The IMF interpreted this move as follows: "*In the summer, in the midst of exchange market pressure, the Reserve Bank of India took a number of steps to tighten domestic liquidity and support the exchange rate… As a result, the interbank call money market rate was increased by some 300 basis points… The preference for these liquidity tightening measures to increase short-term interest rates (rather than increase the policy rate) was due to the fact that they could be put in place quickly and can be unwound as pressures ended… A compatible tightening undertaken through increases in the repo rate would have been unprecedented, likely had a larger impact on growth, and been politically difficult to achieve.*" IMF (2014b, pp. 8-9)

Note that the Indian policy had nothing to do with the rapid credit growth—it aimed at curbing depreciation of domestic currency. The timing of this unconventional monetary policy is important. It is in the second half of 2013, just after the tapering talk of Bernanke. This is one more important example how unconventional monetary policies of large advanced economies—and sooner or later the unwinding of them—create enormous headwinds for the EMEs.

Figure 6. The "policy rate", the overnight lending rate (upper limit of the corridor), and the overnight borrowing rate (lower limit of the corridor) of the Reserve Bank of India and the call money rate (market rate): First week of January 2013 – Last week of June 2014 (%).



Source: Reserve Bank of India.

The above summarized unconventional monetary policy of the Central Bank of Turkey is basically a reflection of the fact that the authorities responsible for prudential policies and macro-economic policy are different in Turkey. Most of the important macro-prudential tools are at the disposal of the prudential authority, whereas the Central Bank has policy rates and reserve requirements along with foreign exchange operations as main policy tools. As discussed in some detail in Özatay (2014), increases in the required reserve ratios between late 2010 and mid 2011 (see Table 10) did not help to curb rapid credit growth. Özatay (2012) shows that in that period, as a response to this policy, the banking sector increased its borrowing from the Central Bank of Turkey. Consequently, required reserves held at the Central Bank, and the short-term borrowing from the Central Bank, moved upwards in tandem. Despite continued rapid credit growth, the prudential authority shied away taking macro-prudential measures up to June 2011, just a few weeks after which risk aversion in international financial markets increased sharply due to sharpened problems in the European economy, while the necessity of emergency measures against rapid credit growth diminished. One of the most important factors that led the Central Bank of Turkey to allow sharp volatility in the interbank market rate (see Figure 4b) was the absence of the prudential authority in the show at the proper time. The Central Bank at that time aimed at increasing uncertainty in the money market by increasing volatility in order to curb heavy short-term capital inflows—the root cause of rapid credit growth. This is evident in various reports of the Central Bank its managers' articles (for example, Başçı and Kara (2011, p.21).

It should be also emphasized that in the period under discussion, Turkey had not used capital controls, whereas Brazil had frequently taken such measures and relaxed them subsequently.

This could be another reason behind the sharp divergence between monetary policies of Brazil and Turkey. Note, however, that this possibility once more points to coordination issues among domestic authorities and institutions with different mandates.

There is no doubt that countries asking for international policy cooperation should first achieve a successful level of domestic policy cooperation, if not coordination, among fiscal, monetary, and prudential authorities. Since the collapse of Lehman Brothers, the surge of multi-purpose central banks and the practice of using macro-prudential policies have brought to forefront the issue of how to design a domestic financial architecture. On the one extreme there is the alternative of creating a "super-powerful" central bank, responsible for both financial stability and price stability. On the other extreme is having separate institutions with different mandates. There are also choices that lie between these two extremes. Several important questions arise at this stage. Which tools should be given to which institutions? If there are different institutions with different mandates, how should they coordinate?

Given the scope of this paper, I have nothing to add to the mushrooming literature on domestic policy cooperation.[22] However, it is evident that the unconventional monetary policies of large advanced economies—and the possible unwinding of those policies along with yet-unresolved problems of the European economy—substantially increased the need for policies to mitigate volatility of short-term capital flows, to curb rapid credit growth, and to prevent real exchange rate misalignments. Along with conventional monetary policies, macro-prudential polices are among the main candidates to achieve such aims. Thus, under these conditions, achieving an optimal way of domestic cooperation among different objectives and institutions is needed more than ever.

[22] Among others, see for example, BIS, 2011; Blanchard et al., 2013; Cecchetti and Kohler, 2012; Shin, 2011.

6. Concluding Remarks

This paper analyzed problems faced by EMEs and their economic policy response after the collapse of Lehman Brothers. Broadly, since the collapse of Lehman Brothers up to 2010, monetary policy and fiscal policy responses were similar across EMEs. All of these countries eased to support declining real economic activity and—especially on the firefighting phase to calm heightened tensions in their domestic financial markets. Fiscal stimulus and sharp policy rate cuts were not only seen in the EMEs, but also in advanced economies. The similarity of policy responses between the EMEs and advanced economies, and within the EMEs in the wake of the collapse of Lehman Brothers, continued broadly up to the first months of 2010. However, this similarity does not necessarily imply policy cooperation. Note first that monetary and fiscal easing is politically feasible. Second, in that period, the G20 countries faced similar problems: output and job losses. So, it was in the interest of all countries that have policy place to act take counter-cyclical policy measures.

Due to the absence of convincing signs of recovery in real economic activity despite the fact that the conventional policies reached their natural limit, large advanced economies implemented unconventional monetary policies. The spillover effects of the unconventional monetary policies created significant policy problems and complaints. An important number of EMEs witnessed a surge in capital inflows—mainly portfolio debt, appreciation pressures on domestic currency, rapid credit growth, and a rise in asset prices.

By time, these problems differed among the EMEs and occurred in different time periods. Consequently, monetary policy responses of EMEs diverged from each other. For example, while two of the three high current account deficit-rapid credit-real appreciation countries tightened in 2010 and 2011, Turkey eased. In the current account surplus camp, Saudi Arabia kept its policy rate intact. China tightened in 2010 and the first half of 2011, whereas Russia eased. The timing of reserve requirement changes did not match each other either. Fiscal policies were relatively more similar: fiscal stimulus measures of the first phase were not unwound during the period of 2011-2013, except in India and, to some extent, in Russia. However, an important regularity emerged after May 2013: all current account deficit-rapid credit growth countries tightened in the period following the tapering talk of Bernanke.

All of EMEs took various macro-prudential measures. Most common were loan-to-value ratios and changes in risk weights in capital ratios. Some countries like Brazil actively used capital flow management measures, whereas Saudi Arabia, Mexico, and Turkey did not. Argentina, China, India, Indonesia, and South Africa already had a framework for capital controls before the global financial crisis. Indonesia mildly relaxed existing capital control measures in 2013, while China, India, and South Africa had been relaxing in most of the period under consideration. Another issue brought to forefront by the global financial crisis is domestic policy coordination. I argued that lack of such coordination in some of EMEs led monetary policymakers of these countries to opt for unconventional monetary policies.

Four points deserve emphasizing once more. First, the considerable problems faced by EMEs, after the burst of the global crisis, show that the complaints of these countries about

unconventional monetary policies of large advanced economies are not unfounded. Second, the sharp difference in monetary and fiscal policies, between the late 2008-2009 period and episodes of old crises, are very important to judge how relevant are the answers of advanced economies' authorities to demands for policy cooperation arising from policymakers of the EMEs that face important problems due to unconventional policies of the developed countries. What is generally told to the EMEs is that "they should have kept their houses in order." However, on the eve of the global crisis, in correcting economic fundamentals the EMEs had come a long way. Moreover, policy coordination demands were raised only because enormous disorder in financial markets of significantly important advanced economies caused the global crisis and the following severe problems in the EMEs in the first place.

Third, the absence of tightening in fiscal policies and proper and timely macro-prudential measures, especially for savings deficit countries, is plausibly the main underlying reason behind the uncooperative answer of developed countries' authorities to cooperation demands stemming from EMEs in the aftermath of the unconventional monetary policies of the developed economies. Fourth, countries asking for international policy cooperation should, first of all, achieve a successful level of domestic policy cooperation, if not coordination, among fiscal, monetary, and prudential authorities.

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