

UNIVERSITY OF LJUBLJANA
FACULTY OF ECONOMICS

MASTER'S THESIS

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**THE IMPACT OF MACROECONOMIC POLICIES IN ADVANCED
ECONOMIES ON BRIC COUNTRIES**

Ljubljana, February 2015

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INTRODUCTION

... the ideas of economists and political philosophers, both when they are right and when they are wrong, are more powerful than is commonly understood. Indeed the world is ruled by little else. Practical men, who believe themselves to be quite exempt from any intellectual influence, are usually the slaves of some defunct economist. Madmen in authority, who hear voices in the air, are distilling their frenzy from some academic scribbler of a few years back... But, soon or late, it is ideas, not vested interests, which are dangerous for good or evil (Keynes, 2011, p. 167).

The crisis that began in the United States in August 2007 and intensified in September 2008 was dubbed the Great Recession and is believed to be the worst global recession since the Great Depression of the 1930s. Like global crises in the past it affected banking and financial systems as well as regulatory and supervisory entities throughout the world. However, this time it truly *was* different. Prior to the crisis, monetary policy was conducted in a relatively predictable and systematic way. Well-functioning arbitrage ensured changes in short-term interest rates were transmitted along the yield curve of sovereign bonds and across private asset classes, ultimately affecting real economic decisions like consumption and investment (International Monetary Fund, 2013b, p. 5). Moreover, monetary policy was considered as having one target (that is, stable and low inflation) and one instrument (the policy rate), while fiscal policy was of secondary importance, hindered by the lack of political consensus that limited its *de facto* usefulness (Blanchard, Dell’Ariccia & Mauro, 2010b, p. 3). On the international level, too, it was thought central bankers should focus on their individual objectives since international monetary coordination supposedly offered no benefits (Mohan & Kapur, 2014, p. 3).

Economists consider financial investments as the main source of instability while the key institutions for establishing stability are financial institutions, *inter alia* banks, who manage the 'seductive allure of present credit and the crushing burden of future debt' on daily basis (Mehrling, 2011, p. 17). Any inclination toward fragility is bound to show itself in increasing difficulty of rolling over debt as it matures, which usually presents itself as increased demand for bank lending. Moreover, the inherent instability of credit appears as increased volatility of short-term interest rates. Consequently, the central bank (as the bankers' bank) can use its balance sheet and intervene in the money market either to impose discipline (by raising interest rates) or offer elasticity (by lowering interest rates) in the interbank payments system. Its actions are then translated across the bond and securities markets by arbitrage conditions. The unexpected shock of Lehman Brothers investment bank bankruptcy on September 15, 2008 (which served as the

proverbial Minsky moment) led to dysfunctional financial markets, evaporation of world liquidity and an increase in perceived risk, which in turn resulted in substantial TED spread jump that further increased counterparty risk between banks and led to sharp decrease in maturity of interbank loans, cash hoarding and decreased interbank borrowing. The real economy was affected through credit rationing and as unemployment soared and economic activity contracted, central banks undertook unprecedented responsibilities. Moreover, since central banks lowered their key interest rates to zero and could not go further, the zero lower bound (hereinafter: ZLB) constrained monetary policymaking and, in turn, led to the implementation of unconventional monetary policy (hereinafter: UMP) measures to provide additional monetary accommodation.

It is nearly impossible to discuss economic policymaking without touching upon its inherent politicization. Policymaking can indeed be regarded as the perpetual market for different schools of thought that tend to make spurious claims of success (particularly during economic downturns), are full of intellectual dishonesty and are known to play to popular prejudices that often make no sense. Traditionally, macroeconomists have been broadly split between two conflicting and competing approaches with respect to their faith in the 'invisible hand'. Conservatives (nowadays known as 'freshwater economists') are vehemently opposed to any government activism and believe the price mechanism alone is capable of stabilizing a capitalist market economy that is prone to shocks. Meanwhile, the Keynesians ('saltwater economists') doubt in self-righting properties of the system at a satisfactory level of employment and propose implementing fiscal and monetary policies instead. Once the 'magical economy' of the postwar era faltered in the early 1970s, conservative ideology became increasingly influential in all advanced economies while Keynesianism seemed in demise. But since conservative policymaking failed to work as well as advertised (promising a productivity and employment miracle as well as a stable, low-inflation economy), new Keynesians emerged to fight another prolonged battle with conservative new classical/RBC theorists. All in all, the steady accumulation of our understanding of macroeconomic phenomena and cyclical swings in ideology have led to economic conclusions that have had direct impact on government policies which, in turn, affect the lives of everyone.

Prior to the crisis, the decoupling theory postulated that emerging market economies ¹ (hereinafter: EMEs) mark faster growth rates and are developing autonomously, regardless of the

¹ The term was coined by the International Finance Corporation and refers to economies with middle-to-higher income among the developing countries, distinguished by enormous, fast-growing economies.

macro-policy mix employed in advanced economies (hereinafter: AEs). In 2005, the combined output of EMEs reached an important milestone as it accounted for more than 50 percent of total world GDP (measured at purchasing power parity). Despite their initial detachment and their equity markets peaking in November 2007, the impacts of the global crisis spread to EMEs by late-2008 when cross-border capital flows reversed and credit squeezed in the capital-receiving countries, resulting in falling currencies and plunging stock markets. This, in turn, proved EMEs' inability to decouple from the negative outturns in AEs.

The global financial crisis arrived at the time that was most prosperous for countries known as the BRICs. Specifically, BRICs is a grouping acronym that refers to the 'Big Four', namely **B**razil, **R**ussia, **I**ndia and **C**hina, and was coined by Goldman Sachs in early 2000s to describe the largest fast-growing emerging markets. Encompassing approximately 43 percent of the world's population spread over three continents, the BRICs gradually evolved into important economic players. With the onset of the crisis, the BRICs effectively became the new engine of global growth as their contribution to global GDP growth grew from 11 percent in 1990 to approximately 30 percent during 2000-8 and reached roughly 45 percent post-2008 (Banerjee & Vashisht, 2010, p. 5). It is also important to note this marked yet another change in global economy: since the onset of the crisis, AEs started to resemble EMEs of a decade earlier as they hosted asset booms financed by non-residents. As a result, EMEs nowadays run surpluses and AEs run deficits. Consequently, as the BRICs' economic power increased, they also became more assertive and advocated for greater say in global policy-making, calling for an end to the dominance of the US dollar in international monetary system and a permanent seat at the table of major international institutions. The leaders of BRICs began meeting annually in 2009 and in 2014, the New Development Bank (a multilateral development bank operated by Brazil, Russia, India, China and South Africa as an alternative to the existing US-dominated World Bank and IMF) was initiated. This leads many, including this author, to believe the redistribution of economic power might take place in the foreseeable future, with China inheriting Russia's former political might and influence, thereby contributing to the development of multipolar global governance.

Table 1. General comparison of key AEs and BRICs

	World ranking by size	Total population, in millions (and world ranking)	World ranking by 2013 nominal GDP
US	4	316.2 (4)	2
EU	7	334.0 (3)	1
UK	81	64.1 (23)	6
Japan	63	127.3 (10)	4
Brazil	5	200.4 (6)	7
Russia	1	143.5 (10)	8
India	8	1252.1 (2)	10
China	3	1357.4 (1)	3

The purpose of this Master's Thesis is to discuss macroeconomic policies employed during the recent crisis by AEs and their effect on the BRICs. After the initial blow resulted in decreased imports, capital outflows, adverse impact on the financial sectors as well as downward pressure on their currencies, the BRICs quickly resumed their upward growth trend (or, in some cases, never experienced a recession at all). Since investors were discouraged by low returns in AEs due to unconventional monetary policies implemented, they began putting sizeable sums abroad. By the same token, this Master's Thesis examines and compares the increased capital inflows to the BRICs based on their size; the external stability of the capital-receiving countries (in terms of possible exchange rate overvaluations and current account deficits); financial sector stability (asset prices and credit market reactions); and the BRICs' individual coping mechanisms. At the same time, the author acknowledges the Master's thesis only offers a glimpse into time past, encompassing global events up to October 2014.

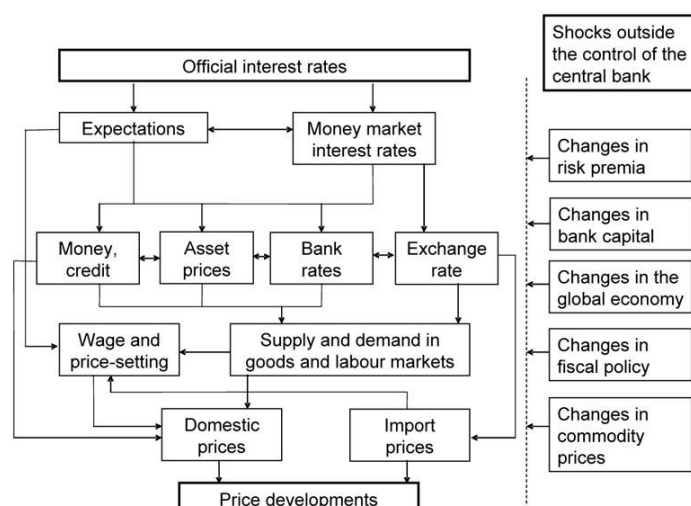
The Master's Thesis is organized as follows. **Section 2** gives an overview of the development of the policy mix concept, discussing both ideas and events. Keynesianism is used as central point of reference since all schools essentially define themselves in relation to Keynes's ideas. **Section 3** reviews the development of policy mix in AEs (the US, euro area, the UK and Japan) before and after the Lehman Brothers bankruptcy. **Section 4 and Section 5** form the main part of the Master's Thesis. They describe the transmission mechanism from AEs to EMEs and the policies used by EMEs to manage the exogenous shock; and also entail case studies of the four BRICs and sum up their respective policy measures in response to the monetary policies in AEs, as proxied by US monetary stance. The aim of the case studies is to examine and classify policy responses in these countries; as well as to analyze impacts of these responses on the domestic market to evaluate their effectiveness in meeting policy objectives. **Section 6** concludes.

1 MACROECONOMIC POLICY MIX AND ITS EVOLUTION

1.1 Macroeconomic Policy Mix Concept

The concept of policy mix denotes interactions and interdependencies between fiscal and monetary policy instruments that seek to realize a particular goal. **Fiscal policy** involves the government's use of taxation (its revenue collection) and spending (expenditure) to regulate the aggregate level of economic activity and to influence income distribution and resource allocation in the economy. Key variables for measuring fiscal activity include government deficits, debt, tax, and expenditure levels. In comparison, **monetary policy** relates to central bank's control of money supply size and its rate of growth, which in turn affects various interest rates (see Figure 1 below). To illustrate: if the nominal short-term interest rate increases (amidst sticky nominal wages and prices in the short-run) this would lead to higher real interest rates, reduced spending and investments by agents and firms, as well as depressed current consumption. Higher real interest rates also encourage current savings and profits of firms, making investments less attractive. Accordingly, output contracts and prices are pushed downwards. Higher nominal rates also make domestic financial assets attractive, incurring appreciation of domestic currency and lowering domestic prices of imports, adversely affecting the external competitiveness and, in turn, leading to reduction in net exports, aggregate demand and decline in prices.

Figure 1. Schematic illustration of the main transmission channels of monetary decisions



Source: European Central Bank: Transmission mechanism of monetary policy, 2013.

Monetary measures are implemented by using instruments like discount policy, open market policy and reserve requirements. Key monetary variables include interest rate, money and credit supply and the exchange rate. Nowadays, central banks mainly emphasize prudence and low inflation and are normally autonomous but differ in structure and main objectives (see Appendix C). Generally, central banks can only pursue two out of the following: free capital flows, fixed exchange rate and sovereign monetary policy (this is known as the 'impossible trinity'). Although both policies are implemented by different bodies, they are by no means independent since a change in one will influence the effectiveness of the other and thereby the overall impacts of any policy change (Hilbers, 2005, p. 2). There are generally four types of possible policy mix (loose fiscal/easy monetary, loose fiscal/tight monetary, tight fiscal/easy monetary and tight fiscal/tight monetary policy). From the neo-Keynesian standpoint, simultaneous fiscal and monetary expansion is most beneficial in times of recession while a coordinated contractionary mix is most appropriate when trying to reduce a positive output gap. In recent history, the rules-versus-discretion debate moved to the discussion of optimal monetary policy rules (loss function optimization, Taylor rule) while formal fiscal rules (like targets for deficits and debt) have been introduced in many economies, aiming to enforce fiscal discipline (however, they also limit active stabilization).

It is believed the use of fiscal policy is more complex since monetary policymakers have a single instrument at disposal (that is, the nominal interest rate) while governments can make use of many instruments (Philippopoulos, Varthalitis & Vassilatos, 2012, p. 2). Moreover, monetary policy is considered as the 'first line of defense against economic slowdown' (Elmendorf & Furman, 2008, p. 4) since monetary decisions are easily implemented and have profound influence on the short-run performance of the economy, whereas other government policy may require more time. Admittedly, monetary policy is more effective in slowing down an overheated economy (this is known as 'taking away the punch bowl') than when it comes to quickly inducing an economy to expand as money is eased ('pushing on a string'). Moreover, both policies depend on the development of the financial markets and work for its advancement. While the extent to which both policies can affect output in the short run is debatable, there is general consensus that an imprudent use of the instruments may have harming effects in the medium or longer term (Andrès & Doménech, 2006, p. 9). By the same token, a policy mix will be Pareto-optimal and will attain higher economic stability (that is, lower inflation and higher growth rate) if the two policies work in unison (Nordhaus, 1994, p. 149). It is therefore important to pursue a consistent

policy mix with coordinated, transparent policies in order to prevent monetary and fiscal forces pulling the economy in opposite directions.

1.2 Evolution of the Concept Prior to the Crisis

In the early years after the Second World War, the predominant view assumed both policies could help correct aggregate instability while some degree of selective government intervention could make up for the shortcomings of the invisible hand (Snowdon & Vane, 2003, p. 29). The central paradigm was laid out in Keynes's magnum opus, *The General Theory of Employment, Interest and Money* (1936), that invited many interpretations (see Appendix D). One of them - neoclassical synthesis - was developed to make Keynes's core ideas more accessible and combine them with older classical theories (examples of 'Keynesianization' include the Hicksian IS-LM model and Samuelson's renowned textbook). However, the discussion on effectiveness of both policies and the preferred instrument of short-run interventionist stabilization policy was most pronounced during the Keynesian-monetarist debate that took place from 1950s to the mid-1970s and was never fully resolved.

Blinder (in Snowdon & Vale, 2003, p. 110) defines Keynesianism as a theory of aggregate demand and its effects on real output and inflation, emphasizing wage and price stickiness (that is, sluggish response of goods and labor market to shocks). Nonetheless, the preceding does not divide Keynesians and monetarists as much as it distinguishes Keynesians from another major economic school - the new classical. Keynesians namely believe changes in aggregate demand have the biggest short-run effect on real output and employment (and not on prices). Moreover, both Keynesians and monetarist accept the Keynesian multiplier, while new classicals claim changes in money affect real output only if unanticipated. Furthermore, Keynesians and most monetarists believe both fiscal and monetary policy affect AD, whereas new classicals believe in debt neutrality, meaning the substitution of debt for taxes has no effect on total demand.

Indeed, it was the policy-related normative tenets that were central to the Keynesian-monetarist debate. **First**, Keynesians (representatives include Tobin, Modigliani and Solow) advocate for reduction in involuntary unemployment and see recessions as economic maladies. **Second**, they are more concerned with fighting unemployment than conquering inflation. **Third**, they believe some degree of government stabilization is necessary to fill in cyclical troughs rather than shave off peaks. By the same token, in a developing recession, the proposed monetary expansion would

increase the money supply and help resume the circular flow of spending and production by household and firms that keeps the economy near full employment. Since economic output is positively correlated with money velocity, increased money holdings (via reduced spending) of economic agents will lead to the paradox of thrift, only worsening the economic downturn. Should the recession turn into depression with households and firms unwilling to spend (this is known as 'liquidity trap'), the government ought to spend. Fiscal expansion thus works as a 'strategy of desperation' (Krugman, 1994, p. 32). Accordingly, government spending (which is increased by a multiplier effect) would offset investment shortages and tax reduction could undermine potential cash hoarding and stubborn thriftiness, while monetary policy (regarded as relatively impotent and unimportant) is in place to keep interest rates low in order to stimulate debt-financed purchases and maintain high aggregate demand level (Reynolds, 2001, p. 263).

In comparison, monetarists (like Friedman, Brunner and Meltzer) claim government intervention is harmful since it can crowd out productive private investment (Modigliani in Snowdon & Vale, 2003, p. 248). In its place they propose mechanical monetary rules that would prevent money itself from being a major source of economic disturbances (Friedman, 1968, p. 12). Indeed, as noted by Mayer (in Snowdon & Vale, 2003, p. 181), monetarists see changes in the money stock as the predominant (but not the only) factor explaining changes in money income. In turn, they equate monetarism with quantity theory, seeing the velocity as generally stable (thereby implying that nominal income is largely a function of money supply). To put it differently, monetary changes are seen as the *cause* (not the consequence) of major recessions. **Second**, monetarists believe in the inherent stability of the private sector and put greater emphasis on unanticipated inflation than on disadvantages of unemployment (since corrective forces will bring the private sector close to full employment only if left undisturbed by government policies). **Third**, they reject the notion of a long-run inflation-unemployment tradeoff in favor of the real, expectations-augmented Phillips curve (which is vertical in the long run). Specifically, post-war stabilization policy relied on the stable long-run inflation-unemployment trade-off the government can exploit by influencing AD. In comparison, the monetarists believed people cannot be fooled in the long run (but short-run policy could be effective) while the new classicals claimed people can never be fooled at all because of the rational expectations hypothesis. **Fourth**, monetarists support long-term monetary policy pre-stated targets. This, in turn, reflects their skepticism about how much economists really know about the short-run workings of the economy (Friedman, 1968, p. 17). They favor the reserve base as the indicator of monetary policy (over short-term interest rate used by the Keynesians); money stock as the target (over

long-term interest rates or credit); and advocate the monetary growth rule (that is, a constant increase in money supply of around three percent, independent of economic conditions and in line with the underlying growth of output). Monetarist insights were gradually incorporated into mainstream macroeconomics. They revealed the potential of activist discretionary policies is much more limited than previously thought. The usually sharp and overrated swings in policy actions were attributed to policymakers trying to 'determine their actions by today's conditions - but their actions will affect the economy only six or nine or twelve or fifteen months later' (Friedman, 1968, p. 16).

In the 1970s, the new classical approach replaced monetarism as the main alternative to Keynesianism whose importance had also diminished due to its theoretical shortcomings (like weak microeconomic foundations) while conservative ideologies resurged in the US and elsewhere (Laidler in Snowdon & Vale, 2003, p. 334). **First**, new classicals (like Lucas, Sargent and Barro) postulate macroeconomic models should have microeconomic foundations, entailing the (highly controversial) assumption of continuous market clearing and optimization by rational agents, perceiving economic shocks as triggered by unanticipated (monetary) shocks (Snowdon & Vale, 2003, p. 267). **Second**, they emphasize the inefficiency of any systemic policy (this became known as the 'policy ineffectiveness proposition') and accentuate the importance of credibility in monetary announcements. **Third**, they give priority to rules-based (not discretion-based) monetary policy and believe in the long-run neutrality of money. **Finally**, they claim the effects of increased government expenditure on the economy is the same, regardless of whether the government increases taxes or borrows from the private sector (this is known as 'Ricardian debt equivalence'). In other words, new classicals not only believe systematic policy has no effect (like the classicals) and that it is unsuccessful because of insufficient knowledge of the policymakers (like the monetarists) but that it is truly impotent since it cannot stabilize the economy even in the short run and could only cause harm (Maddock & Carter in Snowdon & Vale, 2003, p. 306). In fact, they believe recessions are self-correcting in and by themselves. (Keynes, too, allowed for self-correction in the long run but since 'in the long run we are all dead' this was no reason to ignore macroeconomic policies.)

Once the postwar growth had come to a halt, inflation accelerated, budget deficits grew, unemployment increased and prices of raw materials rose, aggravated by the 1973-4 and 1979-80 oil price shocks. This cast doubts on the effectiveness of monetary policy in reducing inflation at a politically acceptable cost. Similarly, the interest regarding the adverse effects of

taxation and regulation on output and growth had increased. The inflationary go-stop monetary policy proved incompatible with the maintenance of gold convertibility established under the Bretton Woods system of fixed exchange rates that ended in 1973 with the US dollar falling dramatically against major currencies shortly thereafter (Goodfriend, 2007, p. 4). The combination of higher tax rates and faster money growth created stagflation (the combination of inflation and high unemployment) which was considered as an anomaly, inconceivable to Keynesians who regarded inflation and recession as mutually exclusive. This led to a complete breakdown of the Keynesian Philips curve which, together with theoretical critiques by Lucas, pointed to an inadequate theory of aggregate supply by the Keynesians (Snowdon & Vale, 2003, p. 460). Keynesians advocated Tobin's funnel theory (seeing fiscal or monetary policy are perfectly interchangeable tools for managing growth of nominal GDP) while the supply siders (the Reagan-endorsed radical conservative movement) attributed stagflation to disruptions in the supply side. Its proponents (like Mundell and Laffer) supported fixed exchange rates and the return to the gold standard, saw demand-side policies as completely ineffective and claimed potential supply could be enhanced by tax incentives, privatization and deregulation up to a point where lower taxes would increase economic activity so dramatically that tax revenues would rise and not fall (Krugman, 1994, p. 74).

A decade later, new Keynesian economics emerged with stronger microeconomic foundations while the 'monetary surprise' new classical economics was replaced by the real business cycle (RBC) theory (Mankiw in Snowdon & Vale, 2003, p. 425). Similarly to the new classicals, RBC economists (like Plosser, Kydland and Prescott) believe in rational agents, continuous clearing and see business cycles as the natural, Pareto-efficient response of the economy. In their belief, business cycles are driven by supply-side (not demand-side) shocks to technology that lead to shift in the aggregate production function, which results in fluctuations of relative prices to which rational agents respond by altering their consumption and supply of labor (Snowdon & Vale, 2003, p. 362). Moreover, they claim money is neutral even in the short run and that monetary policy is irrelevant (since nominal variables are assumed futile in explaining fluctuations in real variables), while fiscal policy could cause great harm if its changes in taxation or spending policies should distort the optimal amounts of output and employment chosen by firms and workers. There are some similarities when comparing RBC economists to new Keynesians (like Mankiw, Romer and Stiglitz). **First**, new Keynesians also incorporate rational expectations and the natural rate hypothesis in their models but remain skeptical about the invisible hand's ability of preserving full employment. **Second**, they do not support the

continuous market clearing assumption, see business cycles as signs of market imperfections with macroeconomic consequences (claiming people are not perfectly rational and competition is relatively imperfect) and believe in the short-run inflation-unemployment tradeoff. However, new Keynesians depart from orthodox Keynesians in many other respects. Their view has been dubbed 'Keynes after Lucas', leading some economists to regard New Keynesians as closer to Hume's classical and Friedman's monetarist line of thinking (Snowdon & Vale, 2003, p. 465). Most notably, they do not believe excessive saving leads to inadequate aggregate demand (but rather to additional investment in the long run). **Lastly**, they claim fiscal policymakers (who are almost always politicians) are bad at reaching timely consensus on countercyclical fiscal policy. Accordingly, all stabilization attempts are passed to central banks which are usually staffed by apolitical technocrats and can also be ineffective at times (Mankiw in Snowdon & Vale, 2003, p. 448). In the same manner, they believe in rough or 'course' tuning (that is, policy rules to offset and avoid more pronounced macroeconomic policy mix problems). Both schools - that is, new Keynesian (nowadays better known as 'saltwater economics') and new classical/RBC ('freshwater economics') - came to represent the new consensus macroeconomics in early 1990s and are nowadays considered as mainstream/orthodox approach. However, this consensus was severely challenged by real-world events during the recent global crisis.

With respect to policymaking settings, monetarist ideas were put into use only briefly during 1979-82. The Paul Volcker-chaired Fed implicitly took responsibility for the record-high inflation of the 1970s and restricted the money supply by letting short-term interest rates rise dramatically (Goodfriend, 2007, p. 8). This helped reduce inflation but also precipitated a double-dip recession in 1980 and 1981-2. However, since monetary supply is difficult to target, the Fed then abruptly switched policies in 1982 back to short-term interest rates and initiated monetary expansion that continued until the 1990-2 weakening that coincided with the first Gulf War (Krugman, 1994, p. 121). Nowadays, monetary growth targets play no official role in the US monetary policy. In similar fashion (but truer to Friedmannesque disinflationary policies of announcing targets for a broad monetary aggregate M3), the UK Bank of England also conquered high inflation at a cost of massive long-term unemployment and deep recession during 1979-83. It abandoned monetary targeting in 1986 and adopted inflation targeting after leaving the European Monetary System in 1992. In contrast, monetary targeting proved more long-lived in other countries like Germany, Switzerland and Japan. After the 1989 reunification of Germany and subsequent inflationary fears, the German *Bundesbank* (which is known for its stern opposition to inflation) raised interest rate which in turn led to recession throughout Europe

(Krugman, 1994, p. 187). Objections notwithstanding, Europe proceeded to adopt a common currency that aids the Eurosystem to control inflation, while combining a weak form of monetary targeting and an implicit form of inflation targeting, collectively known as the 'two pillars' strategy (Rudebusch & Svensson, 1999, p. 1). In retrospect, these actions prove central banks alone can reduce inflation permanently (albeit at the cost of lower output and higher unemployment) while their efforts for transparency and communication can boost their credibility as an independent entity. This, in turn, affects inflation expectations and helps maintain low inflation rates. It also strengthened the belief that maintaining price stability is where monetary policy contributes most to growth.

Oppositely, conservatism was more successful in the political realm, most notably with the elections of Thatcher in 1979 and Reagan in 1980. Neoliberal ideas argued taxation and financial regulation were obstacles to investment and growth, especially after 1973 as the once-rapid productivity growth and living standards deteriorated and inequality of income distribution increased. Ironically, it was these ideas that subsequently led to slower economic growth and widening income inequality, both within and between countries (Palley, 2004, p. 6). Moreover, the influence of conservative ideologies helped undermine the theoretical support for activist government policy by first proclaiming fiscal policy was slow and possibly counterproductive and the rational expectations proponents going further, claiming even monetary policy was ineffective. However, no government in the world implemented their prescriptions in entirety since it proved to be 'obviously in conflict with reality' (Harris, 2001, p. 5). During the Great Moderation era (from the mid-1980s), business cycle volatility was reduced and responsibilities of the two authorities were separated, resulting in low inflation, positive economic growth and predictable policymaking. Monetary policymakers mainly followed the Taylor principle, while fiscal policymakers basically accommodated monetary decisions, making monetary policy 'the only game in town' (Orphanides, 2013, p. 7).

2 CHANGES IN THE MACROECONOMIC POLICY MIX OF ADVANCED ECONOMIES DURING THE CRISIS

2.1 Before the Lehman Bankruptcy

Following the 2000 dotcom crash, terrorist attacks and invasions of Afghanistan and Iraq, the US Federal Reserve (hereinafter: the Fed) fought a mild recession and deflationary fears with a

highly accommodative monetary policy, slashing the federal funds rate to historic low that prevailed during 2001-4 (this became known as 'Greenspan's put'). To stimulate aggregate demand, the fiscal authority engaged in deficit spending, deregulation and the President's Bush's 2001 and 2003 unpopular tax cuts for the wealthy (Stiglitz, 2004, p. 5). By mid-2004 the booming housing market and the recovered economy led to monetary tightening. Higher interest rates raised borrowing costs for lenders using warehouse lines and deposits which, in turn, led to smaller down payments and even looser underwriting standards while the subsequent higher home prices resulted in defaults and foreclosures. Until the peak of home sales in 2005 and the peak of home prices in mid-2006, fiscal authorities supported market fundamentalism, allowing predatory lending and poor regulatory oversight of asset securitization and financial derivatives, while investors continued relying on credit ratings as substitutes for their due diligence. However, with thousands of subprime mortgages stuffed into a single bond and no loan-level detail, it was nearly impossible to analyze all the underlying loans in order to make sure investments were safe (Barofsky, 2013, p. 84). On the other hand, the Fed (who bears the ultimate responsibility in guiding the banking regulatory infrastructure) did not voice its concerns, emphasizing instead its belief in a well-functioning market that could police itself more effectively than any government bureaucrats could (Verma, 2013, p. 40). As the subprime RMBS collapsed in early 2007, it was expected financial institutions would easily absorb any losses. Instead, contagion spread to financial institutions and money markets in mid-2007, particularly in the US and the UK, and extended to regular mortgage pools (prime RMBS) and corporate credit, dramatically shaking investor confidence, then metastasized to mainland Europe (impacting banking systems) in early 2008 and emerging markets (mostly through trade) in late-2008.

Responding to the credit crunch, the Fed acted as Bagehot's dealer of last resort that 'lends freely but at a high rate against good collateral' as it sold off its Treasury securities and lent out the proceeds through various extensions of its discount facility (Mehrling, 2011, p. 101). It increased both the (normally narrow) set of institutions and the list of assets that qualify as collateral, which in turn led to increased monetary base (Blanchard, 2009, p. 16). It introduced various new sources of credit for broker dealers (see Appendix E) but the total size of their loans was not up to the magnitude of the problem (Shiller, 2008, p. 21). It also authorized an increase in its swap lines with other key central banks and gradually slashed the federal funds rate from 5.25 percent in June 2007 to 2 percent in May 2008. However, the Fed failed to prevent the crisis from spreading to other parts of the financial system over which it normally has less influence

(especially with regards to liquidity problems faced by Wall Street broker dealers). Responding to fears of possible market freeze-up, the Fed widened credit for securities dealers (that could now borrow from the Fed on same terms as banks); engineered the sale of Bear Stearns to JP Morgan Chase in March 2008, whereas only months later it refused to help Lehman Brothers out of similar predicament while it bailed out the insurance giant AIG. In fact, the AIG bailout was later perceived as 'backdoor bailout of the banks' since the government money had essentially been funneled directly to the banks, despite initial claims that the bailout was enacted to protect AIG's insurance policy holders (Barofsky, 2013, p. 187). By early September 2008, mortgage giants Fannie Mae and Freddie Mac were placed under federal conservatorship; Goldman Sachs and Morgan Stanley were turned into bank holding companies (thus subjected to greater regulation by the Fed) while Bank of America acquired Countrywide and Merrill Lynch in June 2008 and September 2008, respectively. As regards the US fiscal policy, it only addressed the mortgage meltdown after the Bear Stearns hedge funds failure in mid-2007 by initiating the *FHA Secure Program* intended for defaulted borrowers to qualify for refinancing. Despite positive response of financial markets to this show of bipartisanship, the program covered about 2 percent of the mortgages guaranteed by Fannie Mae alone so it fell short in practice (Shiller, 2008, p. 20). Other expansionary fiscal measures were also implemented shortly thereafter. Early policy responses in the US had an overall positive effect on the expectations of private economic agents and ensured a less steep decline in growth, whereas the sizeable stimulus only added to the already too-large budget deficit.

On the other hand, the euro area within the European Monetary Union (EMU) delegated monetary decision-making to the European Central Bank (hereinafter: the ECB), a supra-national authority with the objective of price stability, while fiscal and structural policies remained central to national sovereignty. Budgetary policy thus assumed a more significant role in smoothing the impact of country-specific shocks on real output, while formal fiscal rules were outlined at the national level by the 1992 Maastricht Treaty and the Stability and Growth Pact adopted by the Council in 1997 and later revised in 2005. The purpose of these rules were to avoid overburdening of the ECB, enhance fiscal discipline, prevent the 'beggar-thy-neighbor' effect and other negative spillover effects due to trade and financial linkages, ensuring national fiscal policies were in line with the stability-oriented policies of the ECB (Hilbers, 2005, p. 7). To illustrate, the Treaty specifies each country is to take care of its own fiscal matters and lists criteria for EU member states that wish to enter the EMU and adopt the euro as currency. Meanwhile, the SGP prescribes rules for euro zone members such as government deficit and debt

not exceeding 3 and 60 percent of GDP, respectively. Compared to the US that can implement both policies, the euro area thus relies only on monetary policy to counter potential (a)symmetrical shocks. In early 2000s, low euro interest rates helped create a seemingly-liquid pool of government bonds as bond yields of government debts were relatively close, mirroring market perception of the euro area as indissoluble (Attinasi, Checherita & Nickel, 2009, p. 7). This boosted economic growth in countries where interest rate has fallen (whereas Germany marked lower economic growth, growing unemployment and social expenditure during 2000-5; Scharpf, 2011, p. 18). However, the belief that the convergence between the core (Germany, France, the Netherlands) and peripheral countries (Portugal, Ireland, Italy, Greece, Spain) would happen on its own led to sizeable debts accumulated by the peripheral countries, fueling investment bubbles (especially in property). Specifically, the PIIGS marked higher economic growth and employment, rising per-capita incomes and prices, leading to an increase in imports while the export competitiveness suffered and current account deficit widened. Moreover, the availability of cheap capital and too low borrowing costs for peripheral countries allowed job creation through debt-financing spending but also reduced pressure on governments to adopt necessary reforms for the success of the monetary union, which ultimately prevented them to catch up (Manolopoulos, 2011, p. 261). As fiscal policies continued to be loose and violations of the Treaty and the SGP mounted, it became clear the euro area's institutional pillars were inadequate. Portugal was the first to breach the 3 percent reference value in 2001, followed by Germany and France in 2002, the Netherlands and Greece in 2003 and Italy in 2004. Sanctions were threatened but never imposed and by 2005 the SGP was nearly inoperable (Manolopoulos, 2011, p. 135). Moreover, the regulations failed to limit excessive deficit and enhance policy mix coordination while the ECB was reluctant to loosen monetary policy, waiting instead for greater fiscal discipline (Eichengreen, 2005, p. 3).

At the outbreak of the global crisis, EMU countries were hit on two fronts. **First**, through the banking sector. Examples include the French BNP Paribas freezing three of its funds after being unable to value subprime mortgage-based assets in August 2007; bank run on the British Northern Rock in September 2007 and its nationalization in February 2008; and the German Hypo Real Estate, IKB and various state-owned *Landesbank* banks receiving capital injections, credit lines and asset-backed security loss guarantees. By contrast, Spanish banking regulation prohibited Spanish banks from engaging in off-balance activities abroad (Scharpf, 2011, p. 30), while countries with deposits-funded banking sectors had minimal exposure (Midthjell, 2011, p. 25). **Second**, they were affected indirectly through falling exports due to lower global demand.

Examples here include Germany, Sweden and Finland where exports account for nearly 40 percent of GDP.

Moreover, the average 10-year sovereign bond spreads widened vis-à-vis the benchmark German *bund* (the Greece-German spread amounting to 270 basis points, compared to around 10 basis points in early 2000s) which reflects concerns about countries' credit and liquidity risks as well as higher international risk aversion (Attinasi, Checherita & Nickel, 2009, p. 36). Both the ECB and the Bank of England (hereinafter: the BOE) cut their policy rates, conducted larger amounts of repo operations, increased the volume of longer-term funding and broadened collateral requirements in their open-market operations (see Appendix F). In comparison, the Fed and the BOE entered the crisis with a narrower range of eligible collateral than the ECB, so they expanded their eligible collateral even more (Cheun, Köppen-Mertes & Weller, 2009, p. 41). Moreover, the BOE initiated a £200 billion *Special Liquidity Scheme* in April 2008, allowing banks to swap high-quality, yet temporarily illiquid MBS and other securities for UK Treasury bills for up to three years (Bean, 2011, p. 2), and the 2008 British bank bailout plan preceded those that followed across Europe and the US. As the situation deteriorated, debates regarding the legality of the prohibition of 'bailing out' individual governments that cannot meet their debt obligations (as specified in the Treaty), slow decision-making (that often required individual nation's parliamentary approval) along with only minimal commitments made by the policymakers put a significant toll on the recovery (Manolopoulos, 2011, p. 228).

Finally, following the 1989 asset price bubble burst and the 1991-2001 Lost Decade, Japan marked economic stagnation and deflationary spiral despite extremely low interest rates and easily available credit. Roubini and Mihm (2010, p. 44) note Japan's policy mix was inefficient because it was not timely. The government waited two years after the bubble burst to initiate stimulus spending while it took the Bank of Japan (hereinafter: the BOJ) eight years to cut the call rate to near-zero and then raised it too quickly, plunging the economy into severe recession during 1998-2000 which, in turn, lead to new reduction of call rate to near-zero in 2001 where it has more or less remained. As such, Japan experienced liquidity trap² well before the onset of the 2008 global crisis. To stimulate the economy the BOJ employed a 'super super expansionary' monetary policy, marked by two non-standard measures. **First**, the zero-interest-rate policy (that is, keeping policy rate at zero until deflation is eliminated) and **second**, since near-zero rates did

² Long considered to be of doubtful practical relevance, it implies a situation where expansion of the money supply simply enlarges the money holdings and does not stimulate aggregate demand (Flath, 2005, p. 134).

not stop deflation, the BOJ implemented quantitative easing in 2001 (Bernanke, Reinhart & Sack, 2004, p. 5). Specifically, quantitative easing (hereinafter: QE) denotes unconventional monetary policy used when the central bank's short-term policy nominal interest rate is at or near zero and cannot be lowered further to stimulate economic activity (Palley, 2014, p. 2). Furthermore, Japan started increasing its monetary base by purchasing assets central banks do not normally buy (like longer-term Treasuries and corporate debt) from financial institutions. It was aimed to either push long-term interest rates down (and induce spending and investments) or lead to depreciation of yen relative to foreign currencies and thereby increase foreign purchases of Japanese goods (Flath, 2005, p. 134). On the fiscal front, a stimulus was also implemented in 1998-9 to encourage households and businesses to spend and invest (Eggertsson & Woodford, 2003, p. 141). Although QE lowered the longer-term yields and substantially increased the base money, the measures were ineffective since deflation persisted and banks were still unwilling to make loans (Bernanke et al, 2004, p. 80). This led some economists to propose 'helicopter money', as envisioned by Friedman, while unlike the monetarists, Paul Krugman proposed an intentional rise in inflation expectations that would help stimulate current spending, by affecting the determinants of longer-term interest rates and the exchange rate (Eggertson & Woodford, 2004, p. 77). Japan marked slight recovery during 2003-7, largely due to boost in export demand from China and other East Asian countries, but did not have any long-term effect on growth (Siddiqui, 2009, p. 4). In 2008, Japan experienced a new recession due to both the global crisis as well as persisting domestic financial issues like the high value of yen; total exports falling by nearly half; and public debt reaching 170 percent of GDP in 2008 (compared to around 60 percent of GDP in 1990).

2.2 Since Lehman Bankruptcy

Since the unexpected bankruptcy of the Lehman Brothers on September 15, 2008, policies were implemented to stimulate growth and reduce financial system risks. On the fiscal front, rescue plans for the banking systems and the subsequent economic stimulus became the most common policy tools. Specifically, to prevent bank runs, governments extended guarantees accorded to depositors to interbank claims (Blanchard, 2009, p. 18) and isolated toxic assets via asset purchases and recapitalization. On the monetary front, the implemented monetary measures in advanced economies were three-fold. **First**, central banks reduced policy rates to near-zero, aiming to increase liquidity and incentivize hitherto debt-free households to spend (since indebted consumers stopped spending). They also provided unlimited access to liquidity to

solvent financial institutions that were facing liquidity problems, thereby easing the deleveraging process. Moreover, while their later actions differed, key central banks took an unprecedented step in October 2008 as they coordinated their key interest rate cut. **Second**, central banks addressed dysfunctional markets by providing liquidity directly to key credit markets and focused on containing and narrowing the interest rate spreads. In some cases, central banks intervened to save financial institutions that were regarded as too big to fail (since the cost of their recovery was lower compared to the cost in case they failed), thereby contributing to moral hazard among banks. **Third**, facing the zero lower bound (hereinafter: ZLB), banks sought to further reduce the short-term nominal policy rates below zero. One option was to push up inflationary expectations (as was done in Japan). However, if the central bank wishes to push down longer-term nominal rates without tampering with inflationary expectations, two strategies can be implemented (Bernanke et al, 2004, p. 3). **First**, it can use its communications policies to shape public expectations regarding the future course of interest rates and hold short-term interest rate near zero for a prolonged time even when normalization appears to be in order (this is what the Fed calls 'forward guidance'). **Second**, it can increase its balance sheet and/or change its composition by buying longer-term bonds to enhance demand for them and push down the longer-term rate (this was done through LSAP programs conducted in the US, UK and Japan).

The most notable difference between the Fed, the BOE and the ECB is the latter's lower weight of purchased (government) securities and its larger role of lending to credit institutions (De Molina, 2013, p. 40). Specifically, as pertains to the QE programs, a vast body of empirical research (like Hamilton & Wu, 2011; Krishnamurthy & Vissing-Jorgensen, 2011; Gagnon, Raskin, Remache & Sack, 2010; D'Amico, English, Lopez-Salido & Nelson, 2012) found four aspects worth highlighting. **First**, QE significantly expanded the central bank's balance sheet, marking the new role of central banks that Mehrling names 'dealer of last resort' (Mehrling, 2011, p. 110). As a byproduct, the purchases more than doubled the Fed's and the BOE's balance sheet since 2008, while for the ECB it only increased by 60 percent (Lenza, Pill & Reichlin, 2010, p. 16). **Second**, QE also altered the composition of balance sheets since it increased excess reserves of the commercial banking system. **Third**, it eased broader financial conditions by lowering the term premium component of the longer-term interest rate as well as long-term interest rates on a range of securities (including securities not even included in the purchasing program). **Finally**, it contributed to significant capital inflows to emerging markets (to be discussed in more detail below). For Figures, please refer to Appendix G.

As regards the US monetary front: **first**, the Fed reduced the target for the federal funds rate to its effective ZLB (that is, to a range of 0 and 25 basis points) where it has remained as of December 2008. **Second**, it communicated its intentions to lower market expectations on the policy rate for an extended period. **Third**, it initiated various liquidity programs and extended loans through foreign exchange swap lines between central banks (Hamilton & Wu, 2011, p. 9). These measures notwithstanding, consumption did not increase as economic agents rather held the money as property which prevented the Fed to stop deflation and the recessionary spiral. However, contrary to Keynes who proposed fiscal policy action in case of liquidity trap (a view also advocated by Nobel laureates like Krugman and Stiglitz), monetary expansion continued while the then-Fed chairman Bernanke departed from his predecessor Greenspan's doctrine of the central bank reacting only when the bubble burst (known as 'sweeping the trash that has arisen'). In November 2008, additional monetary stimulus took form of purchases of substantial quantities of assets with medium or long maturities. These large-scale asset purchase (hereinafter: LSAP) programs, more commonly referred to as QE, aimed to reduce longer-term interest rates (and thus the yield curve), thereby easing financial conditions and spurring economic activity. Here, it is worth highlighting the difference between the QE employed in the US and in Japan. Although mechanically identical, Bernanke claimed the Fed was performing 'credit easing' not 'pure' QE like Japan. It is his belief the BOJ performed QE for the sake of getting money in circulation and influencing inflationary expectations, whereas the Fed aimed to increase demand for longer-term bonds and decrease their yields. On the other hand, no bank in AEs considered depreciating the exchange rate as central objective, even though they did not rule it out as side effect (Rajan, 2013, p. 9).

At time of this writing in October 2014, there have been three rounds of QE starting from November 2008. The first round included purchases of housing agency debt and agency MBS of up to \$600 billion. In March 2009, the LSAP expanded to include agency-related securities and longer term Treasury securities of up to \$1.75 trillion, which is twice the magnitude of the Fed's assets prior to 2008 (Gagnon et al, 2010, p. 3). In mid-2013, the Fed announced gradual tapering of QE policies, contingent upon positive economic data and likely hikes in interest rates, starting with a reduction of \$10 billion a month in January 2014. The announcement was followed by a hike in Treasury yields and substantial effects on risky asset prices and cross-border capital flows (Rajan, 2013, p. 10). In March 2014, the Fed confirmed it would maintain a constant rock-bottom target for funds rate, ranging from 0 to .25 percent, for a 'considerable period' after QE ends, presumably in late-2014 or early 2015.

On the fiscal front, automatic stabilizers operated fully and the policymakers launched discretionary stimulus actions that were supportive of aggregate demand. In effect, the US policy mix evolved from predominantly monetary (that was perceived as 'the only game in town' prior to the crisis) to fiscal, with the crisis response becoming highly politicized. Initially, the fiscal programs dealt with mortgages and other troubled assets deemed necessary for market stability. However, almost immediately after TARP's inception in October 2008, the US Treasury's plan shifted from purchasing mortgages to delivering capital injections into the largest financial institutions. Moreover, it has been observed that the allocation of TARP funds put the Treasury in position to pick winners and losers because it did not disclose its selection criteria and especially since weaker institutions did not receive capital injections and were thus forced to be acquired by the firms that were granted an access to TARP funds (Barth, Li, Lu, Phumiwasana & Yago, 2009, p. 260). To be specific, the Treasury issued new regulation after Lehman bankruptcy that allowed banks to acquire other banks to offset their profits with losses from the loan portfolio of the acquired bank (Barth et al, 2009, p. 268). Since this offered considerable tax breaks, healthier institutions were incentivized to acquire troubled institutions. Furthermore, the Treasury refused to adopt the requirements for banks to report on how they were using TARP funds until April 2010, well after the largest banks had already repaid their loans. Disagreements were also voiced regarding the use of the received TARP funds since the banks did not increase lending as intended and failed to prevent foreclosures in the ongoing housing crisis. This led to TARP being aptly described as 'unprecedented trillion-dollar playground for fraud and self-dealings' (Barofsky, 2013, p. 132). By 2009, financial rescue proved to be successful as major financial institutions survived (and banks became significantly bigger). However, credit growth had not recovered to support the aggregate consumption of goods and services on a permanent basis and there was insufficient investment and restructuring on the aggregate supply side. This was partially addressed with the 2009 *ARRA Act* that comprised one-third tax cuts and two-thirds increased public expenditure and was also a subject of great debate. It was perceived as inadequate to counter the economic downturn, while the political limitations of its inception as well as the inability of the fiscal authority to grasp the severity of the crisis reinforced the electorate's belief that government spending is practically inefficient (Krugman, 2012, p. 75). Other minor fiscal stimulus programs were provided, resulting in the increase of the public debt-to-GDP ratio from 62.2 percent of GDP in 2007 to 92.1 percent of GDP in 2010. Major legislation was also passed during Obama's administration that aimed to limit banks' ability to gamble with their capital in proprietary trading. However, despite good intentions, the new legislation did not change the banks' too big to fail status - instead, it cemented it.

In parallel, severe current account deficits, heavy dependence on capital inflows and markedly overvalued real exchange rates for European peripheral countries added to vulnerabilities to potential disturbances in the international financial markets that might provoke capital flight. The financial instability and banking distress added to fears of European sovereign debt crisis in mid-2009, as a sufficient amount of now-unsustainable debt in peripheral countries was held in a few major European banks. To illustrate, Greek and German debt-to-GDP ratios in 2010 were 142.8 percent and 58 percent, respectively, while their government deficits were at 10.4 percent of GDP and 3.3 percent, respectively. Moreover, total exposure of non-Greek European banks to Greek debt was \$43 billion (with German and French banks representing around 75 percent of this) and that of non-European banks only \$2 billion (Barth, Li & Prabhavivadhana, 2011, p. 7). This, in turn, caused disruptions to the credit system and increased uncertainty among banks about the creditworthiness of their counterparts, resulting in near closure of the interbank market, soaring risk premiums on interbank loans and their inability to rollover short-term debt as well as loss of investor confidence. Consequently, private consumption and investment were depressed and unemployment increased, which led to falling tax revenues and unsustainable debt-to-GDP ratios that raised the cost of borrowing and fed the instability circle (Attinasi et al, 2009, p. 35). It is worth noting the causes for the crisis in peripheral countries were different, ranging from lack of fiscal discipline (Greece), financial instability (Ireland) and weakened international competitiveness (Portugal) that ultimately led to Europe-wide contagion in 2011. In all cases, government borrowing in peripheral countries became extremely costly and eventually impossible, putting an end to their debt-fueled growth.

The first bailout package for Greece in May 2010 led to panic in the markets while the initial sovereign crisis developed into a banking crisis, reaching systemic proportions by August 2011. This led to the breakdown of the monetary transmission mechanism and posed risks of single currency break-up (de Molina, 2013, p. 37). As contagion spread to core countries and debts, large bank recapitalizations were required. As a result, economic growth in the US, euro area and the UK fell around 5.6 percent from peak to trough while unemployment rose by 5 percent on average during the financial crisis (Midthjell, 2011, p. 26). In response, most EMU countries increased deposit insurance, extended bank liability guarantees and provided liquidity and rescue intervention. Examples of bank liability guarantees include the UK's *Credit Guarantee Scheme*, Canada's *Lenders Assurance Facility* and German's *Soffin* that were all launched to guarantee debt of short maturity, buy assets and recapitalize firms. On the other hand, among the many post-Lehman euro area bank interventions are the French/Belgian Dexia recapitalization, the

UK's HBOS/Lloyds and RBS, the Swiss UBS, the German Commerzbank AG and the Italian Banco Popolare. In effect, the cost of bailouts proved to be substantial - not only for some euro area countries that were required to implement drastic fiscal changes dictated by the Troika but also for non-euro countries like Iceland that was one of the first to suffer from the impacts of the global crisis. Moreover, short-term stimuli resulted in higher public debt and large budget deficits that, in turn, weight on the prospects of permanent recovery and necessitate tightening measures (Midthjell, 2011, p. 33). Sizeable austerity plans were implemented in a number of countries, including core countries like Germany and France. While no timing and composition of fiscal tightening has been announced in the US, the accumulated gross debt obligation of European countries are more than twice as large as those of the US (Midthjell, 2011, p. 32). At the same time, the proponents of the 'confidence fairy' - the belief that austerity in time of depression would be expansionary solely because of confidence - faced severe criticism by Keynesians (like Krugman or Blanchard) who proposed higher inflation targets instead. To be specific, inflation around 4 percent makes conventional monetary instruments more efficient, allowing bigger cuts (in real terms) during recession. It would also facilitate restoration of cost-competitiveness through real drop of wages in depressed industries and eroding values of debt in financial instruments with fixed interest rates (like bonds and mortgages) and increase nominal GDP (thus decreasing the debt-to-GDP ratio that troubles many countries). Despite this, both the Fed and the ECB publicly rejected accepting higher inflation targets.

Since the Treaty prohibits the ECB from operating as the lender of last resort to individual governments, the crisis resolution was put in hands of the Member States' governments that committed to €1.6 trillion during 2008-11 (that is, 13 percent of EU's annual GDP). Many crisis-management tools were implemented, trying to enhance banking supervision, strengthen the inadequate institutional architecture of the euro area, reduce fiscal and macroeconomic imbalances and improve current account positions. It is worth noting that in the case of the euro area, the ECB was the only one with the means for immediate intervention and prevention of sovereign defaults. Indeed, in all instances, ECB actions were seen to have immediate soothing effects on the markets, but its actions were only intended as a means of buying extra time for the Member States to find a more systemic solution. However, because of fragmented financial markets in the euro area, monetary stimuli did not pass through in equal measure to all member countries while at the same time the ECB's actions created moral hazard incentives for governments to postpone resolving the crisis (De Molina, 2013, p. 38). The ECB reduced its main refinancing rate (by a total of 325 basis points within a period of six months until May

2009 when it reached 1 percent) and also reduced its reserve ratio (from 2 to 1 percent). These measures contained the funding costs of banks, provided an abundance of cheap loans (to maintain money flows between banks) and gave financial institutions access to lender-of-last-resort facilities. The ECB also implemented some of the previously-unused (and therefore non-standard) measures to avoid massive bank deleveraging and credit contraction. Examples include the *Covered Bond Purchase Program*; *Securities Markets Programme*; *Long-Term Refinancing Operations*; and the *Outright Monetary Transactions*. However, contrary to the Fed and the BOE, the ECB did not implement QE. De Molina (2013, p. 42) notes the ECB's unique status prevents it from undertaking QE operations since they involve 'directly assuming the mutualization of risk and the possibility of making income transfers between such countries, without the acceptance or approval of their respective parliaments.' Furthermore, the ECB also sterilized its asset purchases while the Fed and BOE abstained since their interest rates were already at ZLB, making conventional monetary policy ineffective. In turn, loose monetary measures stabilized the money and financial markets but were ineffective as regards aggregate demand, reflected in low inflation rates (Mortensen & Alicidi, 2012, p. 2). For this reason one could expect the ECB to employ other unconventional measures in the near future. Indeed, the ECB introduced negative deposit facility rates in June 2014 (as the first among the largest central banks); lowered its key MRO rate to unprecedented 0.05 percent in September 2014 as well as announced an asset purchase program to buy asset-back securities and covered bonds, but not government bonds. However, at time of this writing, QE speculations persist.

As regards the UK, the government implemented a sizeable bank rescue package and a stimulus in 2008-9, followed by a severe deficit reduction plan in 2010, combining tax increases and spending cuts, which hampered recovery. On the monetary side, the BOE cut the bank rate to 0.5 percent in March 2009, the lowest since its founding in 1694 (Joyce, Tong & Woods, 2011a, p. 113). It had also been the only one among key central banks to implement bank reserves policy (Bean, 2011, p. 3). On a side note, the Fed and the ECB also increased bank reserves but this was only a simple by-product of operations on the assets side (Borio & Disyatat, 2009, p. 11). However, contrary to the Fed, Bank of Canada or *Sveriges Riskbank* that provided explicit guidance on the likely path of future policy rates, the BOE left market participants to draw own judgment from their public communications until mid-2013 when both the BOE as well as the ECB adopted forward guidance (De Molina, 2013, p. 41). Since initial attempts to enhance liquidity (like the *Discount Window Facility* and the *Asset Purchase Facility*) proved insufficient and additional measures were deemed necessary to boost spending and meet the 2 percent CPI

inflation target in the medium term, additional monetary easing took form in QE in March 2009 and entailed predominantly the purchases of UK government securities, the gilts.

Finally, as regards Japan, the economy initially appeared unscathed by the financial crisis. However, the appreciation of yen and anemic export growth resulted in weak domestic demand, especially business investment, and decline of wages (Sommer, 2009, p. 4). In response, the BOJ cut the call rate to 0.1 percent in December 2008 and initiated the *Comprehensive Monetary Easing* policy in October 2010 to ensure the stability of financial markets and facilitate corporate financing. Moreover, a \$275 billion stimulus package was announced by the Government to boost domestic consumption. Nevertheless, the measures proved to be ineffective. The subsequent reform program (popularly known as Abenomics) in 2012 aimed to revive the sluggish Japanese economy and was founded on 'three arrows'. **First**, aggressive monetary policy (i.e. negative interest rates; inflation targeting at 2 percent annual rate through truly radical QE; corrections of excessive yen appreciation); **second**, fiscal stimulus (increase in public investment and worker productivity) and **third**, structural reforms (such as addressing the country's aging population). Consequently, Japan's public debt reached incredible highs, becoming more than twice the annual GDP in 2013. Furthermore, the BOJ introduced an open-ended *Asset Purchase Program* in April 2013 and announced an unprecedented and bold monetary stimulus of injecting around \$1.4 trillion into the economy in less than two years and doubling the monetary base by the end of 2014. As a result, the yen depreciated heavily in 2013 (making Japanese goods more competitive and strengthening the economy through higher exports), inflation reached a five-year peak and bond yields reached record lows, reflecting yet another attempt to boost growth as well as lifting inflation expectations (Shinohara, 2014).

3 TRANSMISSION MECHANISMS FROM ADVANCED ECONOMIES ON EMERGING MARKET ECONOMIES AND THEIR POLICY RESPONSE

For purposes of clarity, crisis aftermath is divided into the three stages: the **first** is characterized by credit crunch, capital flight, weakening commodity prices and substantial currency devaluation in emerging market economies (hereinafter: EMEs) in late-2008; the **second** coincided with the implementation of unconventional monetary policies (hereinafter: UMP) in advanced economies (hereinafter: AEs) and resulted in rapid capital inflows and strong upward pressures on currency and asset prices in capital-receiving countries during 2010-2; and the **third**

followed the US Fed's tapering announcement in mid-2013, as many EMEs tightened their monetary stance consequent to increased market volatility and their financial markets tumbled. For Figures, please refer to Appendix H.

3.1 Channels through which the Emerging Economies are Affected

As the crisis spread to EMEs in late-2008, external shocks travelled through two main channels and affected EMEs to different degrees, depending on their openness to trade; short-term external debts; current account deficits and foreign currency debts. **First**, a slump in global demand travelled through the *trade channel* and had mixed effects. It resulted in collapsed exports from EMEs and incurred a sharp drop in terms of trade for commodity exporters (like Brazil and Russia) while a drop in commodity prices helped commodity importers (notably in Asia) and calmed pre-crisis inflation fears in some EMEs. **Second**, as investors sought safe havens like US equity and bond funds, their actions triggered substantial rebalancing in global portfolios with investors shifting out of EMEs, thereby incurring the appreciation of the US dollar. The sharp increase in capital outflows travelled through the *financial channel*³ and affected banking sectors, capital markets and commercial borrowing in EMEs (Blanchard et al, 2010b, p. 266). This resulted in lower bond yields and falling currencies of EMEs (Fratzscher, Lo Duca & Straub, 2013, p. 26). At the same time, the decreased net imports of capital necessitated a cut in spending while many EMEs faced a shortage of US dollars (as was the case in Russia where the banks' overseas liabilities exceeded their foreign assets).

Generally speaking, the banking sectors of EMEs had limited exposure to (toxic or otherwise) complex financial instruments, thanks to EMEs strengthening their banks' capital levels after suffering severe crises throughout the 1990s. In late-2008, financial indicators like ROE and ROA fell while non-performing loans ratios increased. However, this was not the case in all countries: for instance, Brazil and Russia were badly hit but not India and China, indicating the latter two had a more sound (albeit more closed) financial system which might be attributed to their regulation policies (Banerjee & Vashisht, 2010, p. 10). As investor confidence subsided, asset prices declined, foreign-bank lending decreased and credit growth stopped, strong current account surplus countries (like China and some Gulf Arab States) resumed functioning as creditors to AEs since helping to bailout rich banks in AEs would limit the global credit squeeze.

³ Financial linkages are both direct (cross-border debt and equity portfolio holdings) and indirect (international co-movement in asset risk premia; International Monetary Fund, 2013a: 17).

There was also a decline in short-term credit (with Russia and Brazil being hit particularly hard), marking a stop in the growth of foreign direct investment (hereinafter: FDI). Strong reversal of foreign institutional investments (hereinafter: FII) was observed in Brazil, Russia and India but it recovered in mid-2009, while stock market indices generally fell, leading to a drop in market capitalization in EMEs. In the exchange market there were strong depreciation pressures on the currencies of EMEs against the US dollar. On the other hand, net capital inflows of private capital to EMEs increased significantly in two decades prior to the crisis. In contrast to AEs, total net inflows in EMEs were found mildly procyclical with domestic GDP growth (Bluedorn, Duttagupta, Guajardo & Topalova, 2011, p. 23). The biggest increase in the ratio of portfolio equity liabilities to GDP during 1996-2007 was seen in Russia (increasing by a factor of 19), Brazil, China and Korea (Schmitz, 2012, p. 8). However, it stopped and turned sharply negative (that is, to net outflows) at the onset of the crisis but recovered in late-2009 and 2010 (followed by net inflows drying up again in mid-2011). Generally, it is considered both global liquidity conditions (the so-called *push factors*, including the US interest rates and global risk aversion measures like the VIX) and domestic factors (the *pull factors*, like GDP growth, inflation and other EMEs' performance variables) affect capital flows to EMEs (International Monetary Fund, 2013a, p. 47). However, empirical research found the push factors (that is, factors relating to AEs) were the stronger drivers of capital flows to EMEs than the domestic (pull) factors.

Out of the many unconventional monetary policies implemented in AEs⁴, the US Fed's LSAP program stands out both by its size as well as its likely impact throughout the world. Indeed, compared to the US and Japan, the intensity of UK's monetary easing was moderate, while EMEs have been much more resilient and less severely affected by the 2010-11 European sovereign debt crisis than the flight-to-safety crisis in 2007-8 (Chudnik & Fratzscher, 2012, p. 24). Overall, there are three channels that affected portfolio decisions by investors and asset prices both home and abroad. Within the scope of the *signaling channel* and *the confidence channel*, the Fed and the BOJ (with the ECB and the BOE following later) adopted forward guidance in order to influence market expectations; to alter the risk appetite of investors and thereby flatten out the yield curve (that is, reducing long-term interest rates and raising asset prices). This, in turn, also helped maintain stable inflation. From the perspective of EMEs, long-term interest rates in the US normally also affect long-term interest rates in EMEs. Therefore, within the scope of the *portfolio balance channel*, the central bank's purchases (such as

⁴ This includes programs like TAF, TSLF, PDCF and LSAP programs in the US, the APF program in the UK, the APP program in Japan and the CBPP program in the euro area.

purchases of the Treasury Securities by the US Fed) influenced the available supply of these assets, affecting the security's yield and price in inverse fashion. In other words, *lower* term spreads of the US Treasury bond yield *raise* equity prices (Chen, Filardo, He & Zhu, 2012, p. 230). Specifically, the LSAPs reduced net supply of assets with longer duration to the private sector and increased the supply of short-term, risk-free bank reserves held by the private sector. In turn, the reduced supply of the riskier longer-term assets reduced the risk premiums required to hold them, thereby reducing their yields. It also added to rebalancing of investment portfolios towards assets that are imperfect substitutes of those purchased by central banks. These effects not only reduced longer-term yields on the assets being purchased by the central banks but also spill into yields on other assets (Gagnon et al, 2010, p. 7).

From the perspective of EMEs, currencies and asset prices faced an upward pressure as stock markets in AEs rebounded and commodity prices and financial assets recovered in mid-2009. Monetary expansion and LSAP programs created a 'wall of liquidity' (Roubini & Mihm, 2010, p. 193), leading investors in AEs to act exactly as economic theory predicts: they moved from lower-yielding government bonds in favor of foreign bonds, pushing up the prices of those foreign bonds and reducing their yields. As negative real interest rates hamper savings and transfer funds to investments, saving institutions (like mutual and pension funds) sought higher returns in risky assets, which resulted in over-leveraging and excessive lending (Sánchez, 2013, p. 2). Along with reducing Treasury and corporate bond yields and CDS spreads, the investors' actions put downward pressure on the spot value of the dollar (Neely, 2010, p. 27). This prompted carry trades in US dollar, or in other words, borrowing dollars at near-zero interest rates in AEs and investing in EMEs, where asset price increases would allow the investors to make a tidy profit (Roubini & Mihm, 2010, p. 193). In the case of a floating exchange rate, a fall in foreign interest rate normally leads to an appreciation of domestic currency. Consequently, this raised concerns that liquidity could overwhelm EMEs, drive up asset prices and set off credit booms. Indeed, researchers found debt issuance in EMEs expanded massively in five years leading up to the tapering announcement in 2013. However, at the same time, it is worth noting that lax monetary policy in AEs was not the only factor that affected capital flows to EMEs since their growth had consistently outpaced AEs and they also recovered quicker (Powell, 2013, p. 5).

Studies suggest the spillover effects of QE1 by the US Fed were more pronounced than those of the later QEs. For example, Takáts and Vela (2014, p. 40) found EMEs policy rates reacted less to monetary policy in AE after 2008, while their long-term interest rates have reacted more to

changes in long-term rates in AEs. Specifically, the US QE1 (11/2008-5/10) alleviated global funding difficulties and stabilized credit markets during severe global recession, marked by poor liquidity and unusually high Treasury yields. In contrast, QE2 (11/10-6/11) was announced as many EMEs were already on the upward growth trend. Some analysts argued that later QEs had negative effect on the market liquidity in AEs, driving major investors out of these markets (Gagnon et al, 2010, p. 13). Indeed, the international spillovers from QE2 induced a portfolio rebalancing in the opposite direction (that is, pushing capital *into* EMEs) and induced a marked depreciation of the US dollar, but did not seem to have lowered sovereign yields (Fratzscher et al, 2013, p. 26).

Investors responded to EMEs' robust economic growth and high interest rate differentials. Through the *portfolio rebalancing channel*, *financial and risk-taking channel*, the *exchange rate channel* and the *trade channel*, the markets showed an increase in liquidity and capital inflows by non-residents to EMEs. To illustrate, the risk-taking factor (that is influenced by the US monetary policy and measured by the VIX index) generally drives exchange rates, bank lending and portfolio flows, thus transmitting monetary policy globally (Takáts & Vela, 2014, p. 34). In turn, eased financial conditions led to a currency appreciation in EMEs (which reduces demand for domestic goods), financial boom in asset classes, marking the recovery of investment and credit markets (as borrowing became easily available and credit boomed); stock market appreciation; upward pressure on asset prices; lowering government and corporate bond yields; loss of competitiveness and significant currency appreciation (following trade gains and large capital inflows while also considering currency speculation activities), fueling the highly-politicized 'currency wars' in the credit-receiving countries. Aggravating the situation, large foreign reserve accumulation by some EMEs could further increase domestic money and credit if not fully sterilized. Ultimately, the easy availability of borrowing increased asset prices and bank capitalization, while reducing perceived leverage and risk perceptions, ultimately feeding back into more credit and actual leverage (Rajan, 2013, p. 11). Empirical research, too, observed QE2 contributed to asset price increases and rising inflation pressures in EMEs, encouraging speculative capital inflows and currency appreciation, further adding to risks of overheating (Chen et al, 2012, p. 233). Both QE2 and QE3 impacted some economies more severely than others. For instance, Brazil, Argentina and Hong Kong were among the most severely hit, as credit in these countries grew rapidly, capital inflows increased, currencies appreciated and inflationary pressures intensified. In turn, their different reactions to the external policy shocks also determined their longer-term development. By mid-2011, capital inflows generally

increased and reached pre-crisis levels, after which they again declined and altered in composition. Specifically, gross portfolio investment outflows declined while flows into fixed-income securities increased as local debt markets expanded (International Monetary Fund, 2013a, p. 46). The decline in capital flows and the change in its composition were considered as reactions to uncertainties felt in the US and Europe, but also to the slowdown in growth of the BRICs themselves, their domestic policies and regulatory uncertainties as well as the reduction in interest rate differentials.

The US Fed's May 2013 announcement of tapering its unconventional monetary policies resulted in sizeable capital outflows from EMEs, precipitating large and sudden currency depreciations. This led pundits to coin a new term, the *fragile five* or *BIITS* (referring to Brazil, India, Indonesia, Turkey and South Africa) whose near-term growth prospects were considered most vulnerable to QE tapering in the US, resulting in large capital outflows during May-September 2013 and early 2014 and currency depreciation. As a response, some EMEs used foreign currency reserves to curb downward pressures in their currencies (like Indonesia and Turkey), others used the exchange rate as the main shock absorber (like South Africa) and some raised key interest rates to curb capital reversals and limit the downward pressure on exchange rates (like Brazil, India, Turkey and South Africa).

3.2 Policy Responses Available to Emerging Market Economies

The flight-to-safety episode in late 2008 resulted in slump in global demand, increased cost of external financing for EMEs, sharp decline in output and currency depreciation, aggravated by a sudden stop of capital flows that normally tends to precipitate a more prolonged crisis than sudden stop episodes of domestic origin (Ozkan & Unsal, 2012, p. 29). Since the crisis originated outside EMEs, the countries could not make use of the beneficial export channel via depreciation of the domestic currency (as they would have done had the crisis originated in domestic economy) due also to the high inflation levels in some EMEs. This increased real debt burden for leveraged households and led to a decrease in consumption and investment.

The incurred *trade deficit* could be financed either through net capital inflows or a decrease in reserves. Moreover, the *credit crunch* and *currency depreciation* could be addressed by either using foreign reserves to support the currency or using access to credit in foreign currency (in form of swap lines with other central banks or foreign credit such as loans from the IMF). If the

country fails to take either of the two steps, it would be forced to accept substantial depreciation which - in case the country's domestic liabilities are denominated in foreign currency (as was the case in many EMEs) - could lead to further substantial burdens on the debtors (Blanchard, 2009, p. 14). In this respect, the policy responses of EMEs differed, as some implemented only foreign exchange (FX) measures to support their currencies; others both FX and domestic liquidity measures; and the third no measures at all (Yehoue, 2009, p. 4). In practice, despite having floating exchange rate regimes, it is common for central banks to respond to exchange rate movements due to concerns about macroeconomic stability in the short run (for instance, currency depreciation could increase inflation). Most EMEs fought the *decline in output* by relying on some form of discretionary fiscal expansion and monetary easing. Cecchetti, King & Yetman (2011, p. 13) report the average monetary policy rate fell by 2.75 percentage points from end-2007 to end-2009, while some monetary easing was also provided though exchange rate depreciation (on average by -2.4 percent against the dollar). The biggest declines were seen in Korea and Turkey (-27 and -25 percent, respectively) while appreciation was seen in Japan (+21 percent), Switzerland (+11 percent) and China (+8 percent). Also, the discretionary fiscal stimuli increased fiscal deficits, which, in turn, could be financed through domestic or external borrowing or by printing money. Excessive domestic borrowing (via increasing taxes or issuing bonds) may put an upward pressure on interest rates and directly influence monetary policy that may compromise its independence, especially if central bank is trying to boost aggregate demand, while external borrowing may potentially result in external debt crisis. Moreover, printing money would lead to higher inflation rate (whereas inflation rate was already high in a number of EMEs). All three options thus have setbacks but at the same time the absence of an exit strategy would put pressure on tightening monetary policy, adversely impacting private investment (Kumar & Soumya, 2010, p. 685).

In early 2009 - amidst high global liquidity, commodity price volatility and EMEs commencing their upward growth trend - investors were discouraged by low returns due to UMP in major AEs and began putting sizeable sums abroad. This led to tensions in EMEs between the objectives of monetary policy and financial stability. Specifically, large capital inflows normally respond to higher interest rates and tend to boost inflation in the capital-receiving country, as well as create rapid credit expansion and lead to rising asset prices, making the pursuit of macroeconomic policy mix considerably more difficult. *To manage increased capital inflows*, the policymakers ordinarily have three options (Soares Sales & Barata Riberio Blanco Barroso, 2012, p. 19). **First**, they can allow its currency to appreciate and **second**, they can accumulate international reserves

to support its currency. **Lastly**, they can adjust its macro-policy mix - that is, make use of increased reserve requirements and non-monetary policy instruments like macroprudential measures (such as capital controls and foreign exchange interventions) directed at areas facing the greatest risks (like the banking sector). It is considered reserve requirements can result in credit expansion slowing down and reducing banks' short positions in foreign currency and were therefore occasionally used as instrument to sterilize exchange intervention. On the other hand, controls on capital inflows and outflows (introduced for instance in Brazil, Indonesia, Korea and Thailand) were found to reduce speculative capital inflows but also impaired access to external finance, whereas macroprudential measures affected capital inflows and/or reduce credit growth in some cases, but nevertheless failed to restrain asset price inflation (Gadanecz, Miyajima & Urban, 2014, p. 55).

Many central banks in EMEs found themselves in a predicament since it was unclear whether the monetary policy of the capital-receiving country should be tightened (to attract more inflows) or accommodative (to fuel credit boom). At the same time, policy rate seemed to be the most important channel for countries with fixed exchange rates with free capital mobility (like Hong Kong, Saudi Arabia and UAE) and their link to AEs was found to be largely direct and automatic (Takáts & Vela, 2014, p. 27). Conversely, many flexible exchange rate countries (who had adopted inflation targeting in the two decades prior to the 2008 crisis) used the exchange rate as the main response mechanism. Generally speaking, *if a central bank raises its policy rate and allows the currency to appreciate*, the country's exports would lose international competitiveness which, in turn, could hurt exports and growth potential. Moreover, currency appreciation is an option if aggregate demand is strong and inflation is on the rise. However, *if a country postpones monetary tightening to deter inflows (or resist currency appreciation through FX intervention)* monetary policy becomes compromised, possibly resulting in excessive liquidity and overheating. Lastly, *if a country implements capital controls*, these may not be efficient and may distort long-term economic activity. Ahmed and Zlate (2013, p. 5) show capital controls are more effective in altering the composition of inflows rather than changing the aggregate volume in the longer run. Furthermore, *if a central bank decides not to intervene in foreign exchange market* the domestic currency would appreciate relative to the dollar (effectively making dollar borrowing even more appealing and thus boosting capital inflows) and *if it does intervene (by buying foreign currencies)* the accumulated foreign reserves could inflate asset bubbles in the domestic economy (Roubini & Mihm, 2010, p. 193).

Correspondingly, the case of currency appreciation could increase appreciation expectations and further boost capital inflows and inflation. This, in turn, could be fought off with *one big currency appreciation* that would render further appreciation impossible but which might prove to be politically unfeasible. Also, even if currencies were allowed to appreciate and discourage speculative capital inflows, this is unlikely to steer investors away from taking risks. The second option is *implementing price controls* that would ease inflationary pressures; and the third is *tightening fiscal policy* which would lower domestic demand and spending and would not need a rise in interest rates, whereas it would boost domestic savings and contribute to current account surpluses, which could have adverse effects for AEs like the US. To be specific, fiscal policy can reduce appreciation over the long-term through the increase in public savings (that is, a stronger structural fiscal position) and also through a change in the structure of government spending through increases in public investment (Moreno Badia & Segura-Ubiergo, 2014, p. 17). Tighter fiscal policy is the standard textbook solution to contain aggregate demand. Since capital flows encourage domestic spending (most notably on interest-rate sensitive activities), fiscal contraction would work to dampen this spending response and limit the incurred upward pressure on asset prices as well as counter inflationary pressure (in effect narrowing the interest rate differential and dampening capital inflows). However, as noted by both Rajan (2013, p. 11) and Eichengreen (2013a, p. 4), a more austere fiscal policy would be politically difficult to implement at a time when the revenues are booming (and booms normally mask weaknesses).

In practice, EMEs employed a mixture of the above-mentioned responses during the recent crisis. Some did not allow the nominal exchange rate to function as a shock absorber and others delayed monetary tightening out of fear of disruptive consequences of massive capital inflows. Consequently, these economies started to overheat, marking an increase in inflation and volatility in commodity prices (Soares Sales et al, 2012, p. 17). On the other hand, some EMEs allowed partial currency appreciation which resulted in less monetary stimulus that would have occurred under a fixed exchange rate regime. However, even in the case of these countries, they did not allow complete adjustment but rather stepped up their interventions through sales of domestic currency in the foreign exchange markets (to curb appreciation pressures), thus accumulating international reserves (Ahmed & Zlate, 2013, p. 5). At the same time, their interventions also hampered the workings of independent monetary policies. Some economies also introduced capital controls and macroprudential measures, aiming to slow capital inflows and appreciation pressures. In commenting these various outcomes, many policymakers in AEs claim the vulnerabilities experienced by EMEs were the outcomes of their 'misplaced conscious

embrace of financial globalization: there was no domestic compulsion forcing the major EMEs to woo foreign capital as they did in recent years' (Mohan & Kapur, 2014, p. 7).

One final important aspect with regards to EMEs worth addressing is inflation. In fact, inflation was seen as the most common weakness among EMEs prior to the crisis. Namely, when the economy overheats (as was the case for many EMEs before the crisis) it is advocated to let the domestic currency appreciate, which allows to contain inflation and reduce import prices (albeit reducing competitiveness), thereby creating more room for the necessary monetary measures. However, in 2008, monetary policies faced additional challenge since the most viable monetary instrument (the policy rate) became questionable. On the one hand, monetary policy needed to stimulate economic growth but on the other it also needed to control inflation levels. What is more, at the same time, the US Fed (and other key central banks in AEs) cut key interest rates and put pressures on EMEs to do the same and reduce their interest rates, which, in turn, could prevent the capital inflows from pushing up their exchange rates. However, this action is in stark contrast with what the BRICs *should* be doing (that is, raise interest rates in face of rising inflation, thereby setting global average rates more appropriately) but what most ultimately nevertheless failed to do. The vicious cycle was then complete as demand in the BRICs increased and raised commodity prices, thereby reducing the spending power of the US which, in turn, incentivized the Fed to cut rates even further. In a similar fashion, after the Fed's announcement of gradually reducing its QE programs, Paul Krugman (Aug 22, 2013) noted that the biggest threat at a time when currencies of EMEs depreciated (due to capital flow reversals) was that their policies would overreact, 'that their central banks would raise interest rates sharply in an attempt to prop up their currencies, which is not what they or the rest of the world need right now'.

4 CASE STUDIES OF POLICY RESPONSES BY THE BRIC COUNTRIES

4.1 BRICs Case Studies

4.1.1 Federative Republic of Brazil: When Samba Stops

Brazil's inward-oriented development model of the 1970s as well as high inflation, low growth rates and increased external indebtedness of the 1980s ultimately led to trade liberalization, structural reforms and extensive privatization during the 1990s. The spill-over effects of the

turbulences felt in financial markets (such as the crisis in Mexico in 1994, Asia in 1997 and Russia in 1998) resulted in the so-called samba effect, namely severe devaluation of the Brazilian *real*, decrease in inflation, rise in borrowing cost and wider budget deficit. In turn, these events casted doubts on Brazil's pegged exchange rate. As the sky-high interest rates, spending cuts and tax increases precipitated a currency crisis in 1999, Brazil's central bank (*Banco Central do Brasil*, hereinafter: BCB) replaced exchange rate targeting with inflation-targeting framework. Meanwhile, fiscal policy was strengthened through the adoption of the 2000 Fiscal Responsibility Law that specified limits on debt and certain types of public expenditures relative to revenues; set transparency requirements for all governmental operations and prohibited intergovernmental bailouts; tightened controls and required the setting of three-year targets for the primary surplus (Mourougane, 2011a, p. 13).

Despite persisting problems with fiscal consolidation and adverse supply shocks (like geopolitical risks, slowdown of world economy in 2001-2 and the 1998-2002 Argentine depression) that prevented the BCB from reaching its inflation targets, Brazil marked a decrease in public debt-to-GDP ratio since 2003. It also brought inflation within the tolerance band in 2005 and managed its vulnerability to exchange rate risks. Although real interest rates were low from historical perspective, they were still considerably high compared to other EMEs, averaging around 9.3 percent during 2000-9 (Segura-Ubiergo, 2012, p. 4). Moreover, strong global demand for food and raw materials; increase in commodity prices since mid-2002⁵; penetration in new markets, including China; and global endeavors to stabilize Earth's climate (along with Brazil's development of biofuel industry) increased Brazil's foreign currency reserves (which surged by 200 percent during 2003-7) and contributed to Brazil's export-led recovery (OECD, 2001, p. 69). Moreover, trade in goods and services jumped from 16 percent of Brazil's GDP in 2000 to roughly 28 percent in 2005. Inward and outward foreign investments grew as well, with outward FDI surpassing inward flows for the first time in 2006. From 2003 onwards, Brazil reduced trade negotiations with the US and the EU, seeing them as potential source of vulnerability. Instead, it focused the highly politicized South-South trade agreements with countries in the region (notably through the *Mercosul* program) as well as India, Nigeria, Algeria and South Africa (Brainard & Martinez-Diaz, 2009, p. 125). In 2008, Brazil became a net external creditor and two leading ratings agencies promoted the country's sovereign debt to investment grade,

⁵ Brazil faced the rise in food prices by increasing target expenditure, establishing new lines of credit for producers and reducing import tariffs and other taxes. Consequently, producers were given an opportunity to increase production in response to rising food prices (Jones & Kwiecinski, 2010, p. 6)

followed by a rise in foreign inflows (Saraiva Leon, 2014, p. 7). Inflation averaged around 6 percent and was the lowest among the BRIC economies (Mourougane, 2011a, p. 13). Moreover, the macroeconomic consolidation positively affected growth outcomes and during 2004-8, annual GDP grew at an average 4.7 percent - up from less than 2 percent during the previous five years (OECD, 2009a, p. 20). The increased oil production since 2003 led to the formation of Brazil's *Sovereign Wealth Fund* (*Fundo Soberano do Brasil*, hereinafter: FSB) in end-2008 that was intended to work as a counter-cyclical instrument, smoothing tax revenues, exchange rate volatility and promoting investment. Small injection was made upon its creation but no injections were made to the fund since 2009 since priority had been given to diminishing public debt and reducing the ratio of central government spending to GDP (OECD, 2011a, p. 50).

Consequent to deteriorating global financial conditions in the second half of 2008, Brazil experienced a downturn in activity, credit, labor market and balance of payments. **First**, declining demand for Brazilian exports (and contracting imports) resulted in deceleration in economic activity, especially in credit-sensitive goods like consumer durables. **Second**, due to global credit crunch, the supply of foreign credit decreased dramatically, causing the domestic borrowing costs to rise. **Third**, unemployment started to increase towards the year-end. **Fourth**, *real* depreciated by around 43 percent from the mid-2008 high to year-end, precipitating a rapid fall in the net debt-to-GDP ratio (Barbosa, 2011, p. 2). Moreover, Brazil's benchmark Ibovespa Index slumped 42 percent from its May 2008 peak. **Fifth**, after nearly five years of current account surpluses, Brazil marked a current account deficit in 2008 that eventually began to shrink as domestic demand subsequently eased and robust FDI inflows increased (OECD, 2009a, p. 21). It is worth noting that from historical perspective, Brazil was much better prepared to withstand financial duress. Thanks to the markedly improved macroeconomic framework (public debt prudently managed and primary surplus targets reached), sizeable international reserves and a relatively sound banking sector - being better capitalized and having better liquidity buffers, Brazilian banks did not suffer from balance sheet imbalances that were at the core of financial distress elsewhere -, Brazil was able to implement a counter-cyclical policy response that was based on monetary easing, fiscal stimulus and credit expansion.

In response to the late-2008 credit crunch in Brazil, monetary policymakers introduced liquidity-enhancing measures and intervened in foreign exchange markets to smooth excessive volatility and build up reserves (with interventions later sterilized through open-market operations). As regards the latter, Brazil was the only one out of the BRICs for whom the spot market was not

the most common market in which interventions took place. Instead of the usual buying and selling of dollars in the spot market, the BCB used currency swaps, which achieved the same result but had no impact on the stock of reserves. The BCB mostly conducted sales of foreign-exchange swaps to support firms and banks in liquidating positions in FX derivatives (especially exchange rate derivatives that hedged against potential depreciation and were adversely affected by sharp depreciation in September-October 2008; OECD, 2009a, p. 26). A swap facility was also set up between the BCB and the US Fed in October 2008, aiming to improve the BCB's ability to provide US dollar liquidity to bank-funding markets. The BCB reduced borrowing costs through the implementation of lower IOF tax (i.e. tax on certain transactions, such as bank loans, foreign exchange transactions, insurance contracts and securities transactions); eased the previously very high compulsory reserve requirements of commercial banks held at the BCB; created credit lines for exporters through the *National Brazilian Development Bank* (hereinafter: BNDES) and incentivized larger financial institutions to purchase loan portfolios of smaller, more severely affected banks, while government-owned or controlled banks were allowed to expand their credit operations, financed partly by federal loans. This enabled the merger of Banco Itaú and Unibanco in February 2009, as the banks protected themselves from losses on derivatives contracts written to corporate clients and the merger nowadays represents the largest financial conglomerate in the Southern Hemisphere (Kregel, 2009, p. 9). Moreover, the BCB also raised the SELIC (overnight) target rate to 13.75 percent in late-2008 and gradually reduced it to 9.25 percent by June 2009. On the fiscal front, policymakers implemented fiscal expansion in form of tax cuts (examples include the industrialized products tax and personal income tax) and other supportive measures like infrastructure development, increase in duration of unemployment insurance and support for housing (OECD, 2009a, p. 32). Ultimately, timely and appropriate response by Brazilian policymakers prevented the negative circle of currency depreciation, credit squeeze, asset deflation, rising unemployment and a fall in effective demand, leading to a rapid V-shaped recovery pattern in 2010, making Brazil one of the first emerging economies to recover.

Following the abundance of liquidity in global markets (due to implementations of LSAP programs in AEs); high equity returns and high interest rates in Brazil; improvements in Brazil's regulatory quality and increases in GDP per capita; capital inflows surged massively since 2009. Most of them had taken form of FDI, despite portfolio investment (especially in equity securities) accounting for most of the flows' volatility. The excessive capital inflows, currency appreciation, stock market price increases and a credit boom (with new credit extended mainly to

households and in lesser extent to industry, commercial and other services, thereby stimulating the economic activity in general) led some analysts to claim the effects of the US QE were the strongest in Brazil. Furthermore, since capital inflows were found to be the most important transmission channel to other domestic variables, there was justification for macroprudential measures. These aimed to stem the large inflow of foreign capital and slow nominal appreciation (Moreno Badia & Segura-Ubiergo, 2014, p. 4) and included higher reserve requirements (limiting short dollar position of banks); capital inflow regulations (notably the IOF tax hikes); foreign exchange interventions and accumulation of international reserves. In fact, no other emerging economy experimented as actively with capital controls as Brazil. The rationale was that capital controls would tame inflation pressures without attracting such short-term capital inflows that would put pressure on exchange rate and thereby hamper competitiveness of Brazilian exporters. However, the measures had only limited success in mitigating currency appreciation (Chamon & Garcia, 2014, p. 24). In 2010, Brazil's GDP growth reached 7.5 percent - the highest since 1986 and fifth-best among G20 countries (Economist, Sept 28, 2013). However, in the following two years, hostile global conditions (Japan's earthquake and nuclear disaster, US fiscal problems, euro area's banking/sovereign debt crisis) as well as domestic macroeconomic problems (rising commodity prices fueling inflationary pressures) led to a slowdown in growth, recording 2.7 percent growth in 2011 and 1 percent in 2012.

The Brazilian *real* has been steadily appreciating since 2003 (apart from the dip following the global crisis in late-2008). Specifically, the bilateral rate against US dollar rose by 157 percent from October 2002 to July 2011, coinciding with the period in which the price of 22 commodities that comprise the Commodity Research Bureau's index increased by 136 percent. This points to the fact that developments in international commodities market - with commodities representing a significant and increasing fraction of Brazilian exports⁶ - can indeed explain the substantive appreciation of the currency (Kohlscheen, 2013, p. 19). Furthermore, during 2008-12, Brazil remained one of the more self-sufficient (and also disconnected) economies, with no more than one-tenth of the value-added of its exports incorporating foreign-made inputs and its exports of goods and services representing less than 13 percent of GDP (Porzecanski, 2014, p. 5). There has been some evidence that foreign capital inflows played a predominant role in explaining short-term developments, while structural factors (such as new discoveries of substantial oil and gas fields in deep waters and huge reserves found under the

⁶ Indeed, soybeans, iron ore, oil and fuel, meat products, sugar and ethanol alone increased their contribution to total export revenues from 24.2 percent in 1999 to 50.8 percent in 2011 (Kohlscheen, 2013, p. 9).

pre-salt layer during 2007-8) have contributed to the appreciation of *real* over the long run (Mourougane, 2011a, p. 10). Notwithstanding the above-mentioned adjustments in the macro-policy mix, the *real* remained overvalued while excess demand put upward pressure both home and abroad, resulting in inflation rate increasing since late 2010. Strong *real* made imports cheaper while on the other hand, the overvalued currency made Brazilian goods and services more expensive compared to other countries (this was popularized as '*custo Brasil*', Brazil cost). In retrospect, Brazilian policymakers were one of the most vocal against loose monetary stance in AEs that were pushing capital towards EMEs. The debate was further politicized with the 'currency war' debate in which Brazilian policymakers claimed appreciation of the *real* hampered domestic industries by diverting consumption towards imports, thereby hurting exports of domestically-produced goods. From the other side of the spectrum, some analysts have pointed to Brazil's easy credit, wasteful public spending and highly unproductive labor. In fact, unemployment reached record low at 5.3 percent in August 2013 but labor productivity accounted for merely 40 percent of Brazil's GDP growth between 1990 and 2012, which is remarkably low compared to 91 percent in China or 67 percent in India (Economist, Apr 19, 2014). All of the above factors led to the loss of credibility, resulting in a ratings downgrade of Brazilian sovereign debt.

On the monetary front, the BCB increased bank reserve requirements (to dampen the transmission of excessive global liquidity to domestic credit market) and capital requirements for specific segments of the credit market (mostly consumer loans; thereby aiming to correct deterioration in the quality of loan origination); while it curbed excessive lending by banks. Specifically, the banking sector expanded significantly since 2005 and credit roughly doubled, although at 54 percent of GDP it was still low in international perspective. On the other hand, household indebtedness has been rising along with housing prices in major metropolitan regions (OECD, 2013a, p. 17). The BCB also intervened on the foreign exchange markets and sterilized liquidity through open market operations in order to prevent adverse effects on domestic money supply. As a result, international reserves rose dramatically. However, despite FX reserves representing 15 percent of 2010 GDP in mid-2011, they were still lower than in other EMEs. For example, Brazil's \$731 billion FX reserves in end-2012 were equivalent to one-seventh of mainland China's international assets and roughly one half of Russia's cross-border assets as of the same date (Porzecanski, 2014, p. 6). Consequently, due to accumulation of foreign exchange reserves and severe restrictions on banks' foreign liabilities, the Brazilian (bank-based) financial system has been much less exposed to external shocks (OECD, 2013a, p. 16).

By the time of the US QE2 in late 2010, the increased capital inflows caused grave concerns. At the same time, easy credit conditions contributed to further appreciation of the *real* against the US dollar, which ultimately resulted in accelerating inflation. To be specific, Brazil marked inflation within the tolerance band since 2005 (although on average it has always exceeded the mid-point) but since mid-2011 many have questioned the BCB's ability to fulfill its inflation-targeting mandate without political interference. As the BCB is not legally independent, Brazilian government has often publicly pressured the monetary authority to keep rates low in order to support Brazil's economy (De Pooter, Robitaille, Walker & Zdinak, 2014, p. 2). To put things into perspective, the BCB raised the SELIC rate from 8.75 percent in January 2010 to 10.75 percent in late-2010 and further to 12.50 percent in July 2011. After that - in contrast to the usual interest rate hikes to curb inflationary pressures and contain excessive credit and liquidity conditions - the BCB began cutting the SELIC rate from 12.50 percent in July 2011 to record low 7.25 percent in October 2012, even as inflation reached 7.1 percent and thus remained above the 4.5 percent target midpoint. As inflation hovered about the ceiling of the tolerance band, the BCB finally initiated a tightening cycle in April 2013, raising the SELIC rate to 7.5 percent, in order to bring inflation back to the 4.5 percent target midpoint and bolster its credibility. With the benefit of hindsight, the SELIC probably had to rise far more than if the BCB had been autonomous from the get-go. Moreover, as the US Fed began hinting at gradual tapering of QE in mid-2013, the *real* plunged against the dollar. This effectively put Brazil in the group of Fragile Five (or BIICS), namely countries perceived as excessively susceptible of QE tapering while their central banks were expected to hike rates in order to counter the plunging currencies. Indeed, the BCB stepped up its interventions in FX forward markets (Garcia & Volpon, 2014, p. 2) and raised the SELIC from 9 percent in August 2013 to 11 percent in April 2014, while annual inflation reached 5.91 percent in end-2013.

On the fiscal side, Brazil's situation deteriorated post-2008 due to tax exemptions aggravating the fall in government revenue, which came about as a result to reduced economic activity (due to effects of the external crisis) as well as growth of public spending (which jumped from 23.08 percent in 2008 to 26.08 percent in 2010). These two factors, in turn, led to sizeable reduction of the primary surplus of the public sector and increase in the debt-to-GDP ratio (Fontes Tourinho, Macedo Reis Mercês & Goulart Costa, 2013, p. 234). Fiscal policymakers addressed the bubble formation in financial markets and excessive appreciation of the *real* by increasing taxes on forms of capital inflows (such as the IOF tax) that aimed to discourage inflows. Countercyclical fiscal measures were also put in place to counteract the increased domestic demand and

inflationary pressures, thereby increasing public savings. The latter aimed to minimize the potential risk of erratic capital flows, whereas lower budget financing needs eased inflationary pressures and aided the monetary authority. As a result, the composition of total debt changed since the share of foreign currency debt was reduced. Moreover, as capital flows waned in 2012, some capital controls began to be dismantled in late-2012 to again attract capital inflows (Chamon & Garcia, 2014, p. 8). In August 2012, fiscal policymakers introduced a new industrial policy plan (*Plano Brasil Maior*) which consisted mainly of tax breaks and aimed to improve the competitiveness of Brazilian companies. Specifically, its targets included raising total investment share of GDP by 3 percent from 2010 to 2014, enhancing human capital and fostering innovation activities (Mourougane, 2011a, p. 15).

In 2013, growth amounted to modest 2.3 percent and government finances deteriorated sharply (due to failed attempts to boost economy with tax cuts). This led to cuts in the 2014 budget, while the already-high taxes - which already take up 38 percent of GDP and are the highest alongside Argentina - are being pushed upwards by persistent inflation of nearly 6 percent a year. Furthermore, Brazil's exports decreased and the 2013 current account deficit was the widest since 1995. Following the Fed's tapering announcement in mid-2013, the *real* depreciated by about 18 percent but the BCB remained reluctant to allow a faster depreciation out of fear of it increasing inflation. The Ibovespa Index suffered a 22 percent loss in the first six months of 2013, marking the worst drop since 2008. Moreover, in June 2013, the proposed rise in public-transit fares precipitated the greatest social unrest Brazil had seen in two decades, with Brazilians protesting over high living costs, poor quality of public services as well as corruptive and ineffectual government. On the upside, the country seems to be guarded from currency turmoil as its FX reserves stand at \$375 billion in 2013, compared to mere \$35 billion in 2001. However, with two consecutive quarters of falling output, home-grown problems and investment rates dropping, Brazil fell into recession in mid-2014. For the purpose of brevity, Brazil's future outlook is presented in Appendix J.

4.1.2 The Russian Federation: Double-Headed Eagle

From the 1998 devaluation crisis⁷ to the 2008 global crisis, Russia's real GDP grew at an annual average rate of 7 percent, with GDP nearly doubling in the span of a decade (OECD, 2009b, p. 21). Russia's remarkable growth can be attributed to expanding exports, internal economic reforms and favorable external circumstances. **First**, booming exports of natural resources and the 350 percent surge in commodity prices during 2001-7 (especially energy and raw material prices) facilitated the expansion of trade and finance. This, in turn, helped create strong current account surpluses that averaged more than 10 percent of GDP during 1999-2008 (Gaddy & Ickes, 2010, p. 288) and drove the steady real appreciation of the Russian *ruble*. Given the absence of capital controls, the central bank used FX interventions in the domestic market to fight the appreciation of *ruble*, resulting in increase of FX reserves (Central Bank of the Russian Federation, 2014, p. 300). As a result, international reserves accumulated at an average rate of almost 50 percent *a year*, rising from \$25 billion in 2000 to staggering \$598 billion in 2008 (behind only China and Japan), amounting to around 25 percent of total GDP in 2008 (Desai & Goldberg, 2008, p. vii). Moreover, a string of government budget surpluses enabled the country to pay down the majority of external and domestic public debt. In 2008, the Russian government's reserve fund held \$140 billion and the *National Welfare Fund* held another \$30 billion, while both funds were created to partly offset depreciation pressures and protect the non-oil economy in events of potential oil price decline. **Second**, internal reforms also boosted growth following the enforced fiscal discipline after the 1998 crisis. These entail the 2001 tax reform (which improved incentives to work, decreased tax evasion and made Russia the first large country to adopt a flat tax); simplification of procedures and reduction of red tape associated with entry regulation and regulation of existing businesses (thereby boosting growth of small businesses and leading to a decline in state-owned businesses); and introduction of macroeconomic and financial sector policy reforms lowered interest rates and fueled investments and consumption (Aslund, Guriev & Kuchins, 2010, p. 15). During 2000-8, Russia's sovereign credit rating was upgraded seven times by all three leading credit agencies which not only lowered the cost of access to global capital markets but also signaled optimism regarding Russia's economic outlook. **Finally**, favorable global financial environment that prevailed through early 2000s facilitated access to cheap and abundant credit in international capital

⁷ The 1998 crisis was a result of unstable public finances in Russia and capital outflows from emerging countries. The Central Bank of Russia then abandoned fixed exchange rate peg, allowing *ruble* to depreciate sharply, and transitioned to a managed floating exchange rate regime (Ponomarenko, Vasilieva & Schobert, 2012, p. 6).

markets, since interest rates in AEs and spreads on emerging market Eurobonds fell while capital inflows increased, mainly originating from the rise of oil and gas prices (OECD, 2011b, p. 18).

Since 2003, the Central Bank of Russia (hereinafter: the CBR) committed to a target of real exchange rate appreciation as well as an inflation target, while in 2005 it introduced a bi-currency basket consisting of US dollar and euro (with currency weights of 0.55 and 0.45, respectively) as an operational target (Ponomarenko et al, 2012, p. 6). Since the cost for Russian foreign currency borrowers was at unprecedentedly low levels, Russian banks and companies began borrowing abroad at increasing rate. This, in turn, boosted domestic demand and increased private sector debt, adding to inflationary pressures and fueling expectations of further *ruble* appreciation. At the same time, despite ensuring nominal exchange rate stability, rapid money supply growth led to higher inflation rates. To illustrate, inflation fell from 85 percent in late-1998 to single digits by mid-2007 when the combination of surging food and energy prices and rapid money supply growth pushed inflation back to 15 percent in early-2008 before it fell to 13.8 percent in November 2008 (OECD, 2009b, p. 11). As a result, the CBR conducted substantial foreign exchange interventions that turned into an important liquidity-providing factor. Russia's real GDP growth was increasingly driven by domestic demand while the government budget became increasingly reliant on oil and gas. In fact, the share of oil and gas exports in Russia's GDP increased from 12.7 percent in 1999 to 31.6 percent in 2007, while natural resources accounted for 80 percent of exports (Economist, Feb 28, 2008). This fact points to the extreme vulnerability of Russia's current account to the unexpected downturns in prices of its main exports and the possible reversals of capital flows. It is worth noting that Russia's growth decade was achieved despite relatively low investment rates (compared to other catching-up economies); low foreign direct investments (which had doubled only after the 2007-8 electricity sector privatization and amounted to USD 27.8 billion in 2008, that is 2.2 percent of GDP) while inward FDI came mainly from known havens for Russian flight capital, such as Cyprus (OECD, 2009b, p. 21). The effects of explosive growth trickled down to both middle class and the poor, with real incomes increasing by a factor of 2.5, real wages more than tripling, and poverty and unemployment rates more than halving (Aslund et al, 2010, p. 12). Nevertheless, growth was far below Russia's potential and 'Putinomics' did not succeed in conquering inflation (which was the highest among the G20 economies) nor in diminishing corruption and inequality or diversifying the economy away from natural resources, while the population borrowed recklessly and used the money for higher living standards.

In the unfolding of the US subprime crisis in 2007, Russia suffered a double blow in the form of oil price collapsing and credit crunch. Initially, Russian financial system seemed to be weathering the worsening of international conditions rather well since Russian banks had low direct exposures to troubled US assets and did not engage in complex lending practices (OECD, 2009b, p. 114). However, the external shocks put a sudden end to a decade of remarkable growth. The subsequent upturn in borrowing spreads and deterioration of net capital flows led to deceleration of economic activity that was far greater than in any other G20 economy (Aslund et al, 2010, p. 17). Specifically, Russia experienced a sharp recession from Q3 2008 to Q2 2009 and its GDP contracted by 7.8 percent in 2009. The recession in Russia was deep but brief, thanks to low levels of sovereign debt and substantial accumulated resources that allowed the policymakers to adopt the adequate macroeconomic policies in the first wave of the crisis. These measures supported the financial sector, defended the *ruble* and allowed implementation of fiscal expansion, thus preventing serious affliction. At the same time, the sharp increase of inflation rate since late-2007 complicated the banking stabilization policies of the CBR, who took the middle course between the two opposing goals of monetary policy and bank soundness (Barisitz, Ebner, Lahnsteiner & Pann, 2009, p. 134). All in all, the macroeconomic response was rapid and unusually large as the quantifiable measures in late-2008 amounted to around 13 percent of GDP.

The initial effects of decreased commodities prices and the turmoil on international financial markets presented themselves in the securities market. The Russian Trading System (hereinafter: RTS) stock market index plunged almost 89 percent from May to October 2008, followed by suspended trading in Russia's most liquid stock exchange (the Moscow Interbank Currency Exchange, hereinafter: MICEX). Along with the decline in commodity prices and decreased world demand, the disruption of EMEs' access to international capital markets led to capital flow reversal, increased financial costs, a decrease in interbank lending and liquidity shortages. Before the crisis, many Russian financial institutions raised substantial loans from foreign banks. In September 2008, the price of exports fell and the oil spot price broke the \$100 mark, plummeting at \$33.87/barrel on December 21, 2008 (less than one-fourth of the August 2008 peak price) and did not recover till 2009 (Aslund et al, 2010, p. 20). Confidence deteriorated - due both to minor (non-systemic) bank failures as well as increased political risks (like the 2008 Georgia conflict and the TNK-BP saga) -, leading to the biggest deposit withdrawals than anywhere else. This situation was further exacerbated the banks' liquidity problems and increased the ratio of non-performing loans (OECD, 2009b, p. 110). Financial institutions experienced difficulties

servicing their debt, resulting either in default on their obligations or by being acquired via state support (Service, 2009, p. 563). The combination of the above-mentioned factors caused a sharp depreciation of the *ruble* against the bi-currency and considerably increased the burden of foreign currency corporate debt.

The initial emphasis of the policymakers was to support the banking system and financial markets since these were the hardest-hit areas at the outset. As the crisis spread through the real economy, the approach was broadened. On the monetary front, the CBR reduced key interest rate and responded to the accelerating capital outflows by aggressively intervening in the foreign exchange market in defense of the falling *ruble*, leading to reduction of the money stock and foreign reserves, with the latter shrinking from \$600 billion in August 2008 to \$485 billion by end-October 2008 (Barisitz et al, 2009, p. 136). The CBR also raised ceilings on insured deposits; provided additional liquidity by temporary cutting reserve requirements; increased its repo operations; facilitated the access to the CBR's refinancing facilities; auctioned government deposits; extended unsecured loans from the CBR to banks with a minimum credit rating and guarantees by the CBR of interbank loans. The CBR also targeted the banking sector through recapitalization of banks; liquidity provision; as well as provided safety nets and bank resolution powers. As a result, there were no major bank failures. It is interesting to note that Russia did not conduct any major nationalization of private companies: instead, it offered high-interest loans and did not engage in massive equity buyouts at fire-sale prices (Aslund et al, 2010, p. 21). Specifically, the Russian government and the CBR recapitalized three state-owned banks (Vnesheconombank [hereinafter: VEB], Vneshtorgbank [VTB] and Sberbank), which were then used as a vehicle for acquiring other banks (examples include banks like Globex, Kit Finance, Sobinbank, Svyaz) or for recapitalizing them (like the agricultural bank Roselkhozbank and fifteen others). Sizeable capital injections were put into the Deposit Insurance Agency (hereinafter: DIA) and the State Mortgage Agency (hereinafter: AHML) to purchase mortgage portfolios from banks. These measures supported the mortgage market while the government announced sizeable amount of guarantees of bank loans to key non-financial corporations. In return, the CBR and DIA were authorized to deal with failing banks and were funded by grants from the Government and loans from the CBR (International Monetary Fund, 2011, p. 5).

As the *ruble* depreciated by around 20 percent against the US dollar from September 2008 to April 2009 and foreign currency reserves declined, the expectations of further *ruble* depreciation encouraged massive capital outflows (OECD, 2009b, p. 98). This, in turn, led to an increase in

foreign currency deposits (mainly in US dollars) which forced banks to accumulate foreign currency assets to avoid currency mismatches on their balance sheets. As a result, the CBR introduced monetary tightening, raised its interest rates steadily and implemented several restrictive measures. The CBR's move to allow the exchange rate to adjust only in small steps (initially 1 percent per week and later 2-3 percent per week) incurred substantial costs for Russia. From September 2008 to January 2009, the CBR spent a quarter of its reserves defending the *ruble* while the rebound of oil prices since February 2009 has undoubtedly been an important catalyst for the reduction in implied depreciation. However, simultaneously defending the *ruble* and providing liquidity for the banks proved to be conflicting goals, as *ruble* liquidity encouraged dollarization and fueled demand for foreign currency as well as put additional pressure on *ruble*. On the fiscal front, the accumulation of reserves prior to the crisis and the funds from the sovereign wealth funds allowed the implementation of a substantial fiscal stimulus, which aimed to address the external shock to Russian aggregate demand and help hard-hit sectors (Ponomarenko et al, 2012, p. 19). Automatic stabilizers were enhanced (including unemployment insurance benefits, support for sectors and regions) while the government postponed the planned increase of social taxes (that is, taxes on labor, which was planned to finance an increase in pensions) and reduced the Corporate Profit Tax in 2009 (Aslund et al, 2010, p. 21). It also moved deposits from the CBR to commercial banks (on an auction basis) and, as already mentioned, boosted capital of major government-owned banks by drawing funds from the National Welfare Fund and injecting them into VEB.

By mid-2009, oil prices recovered, current and capital accounts rebounded and the *ruble* strengthened. Modest capital flows also resumed and inflation pressures subsided. At the same time, the CBR announced a gradual transition to a flexible exchange rate regime, which allowed for increased *ruble* volatility in 2010, while re-appreciation and persisting output gap led to CPI inflation reaching 5.5 percent in July 2010 (Barisitz & Lahnsteiner, 2010, p. 77). As if the severe impact of the crisis had already been forgotten, Russian policymakers quickly returned to their pre-crisis mentality by overly relying on oil and capital inflows. Furthermore, although commodity prices recovered and interest rates in AEs remained low, net inflows to Russia have not resumed like in other BRICs, partly because of domestic firms being cautious about rebuilding external debt as well as other uncertainties that have reduced appetite for Russian assets (OECD, 2011b, p. 18). The robust upswing in domestic demand; strong deposit growth and lending growth accelerated substantially throughout 2011 and fuelled economic growth, reaching its climax in mid-2012 (Barisitz, 2013, p. 86). The growth rate was also slower than

during the pre-crisis boom: 4.5 percent in 2010 (despite droughts and bad harvest, boosted by a commodity prices boom); 4.3 percent in 2011, 3.4 percent in 2012 and mere 1.5 percent in 2013.

Several factors can explain the slowdown that added to the above-mentioned uncertainty and depressed investment activity. They range from the prolonged recession in the EU (Russia's most important trading partner), stagnation of oil prices since 2013 as well as geopolitical uncertainties, especially in neighboring Ukraine. In turn, this led to capital flight, the MIXEC index falling and inflation soaring to 7.8 percent in June 2014, far above the CBR's 5-percent target (which in turn increased Russia's cost of living by making imported goods more expensive). Consequently, the CBR raised its benchmark interest rate to cap inflation in April 2014 while the S&P rating agency downgraded Russia's sovereign debt credit rating (for the first time in six years) to one notch above junk (Bloomberg, Apr 25, 2014). For the purpose of brevity, Russia's future outlook is presented in Appendix J.

4.1.3 Republic of India: Tiger, transformed into Elephant

The market-oriented reforms that began in the mid-1980s and continued throughout the 1990s included privatization, removal of the *License Raj* system, financial deregulation and reduction of trade barriers. They helped transform all aspects of the previously-autarkic economic policy. During 2003-8, India's average GDP growth amounted to 8.8 percent and was second only to China among large emerging economies, while in 2006 India replaced Japan as the third largest economy in the world (OECD, 2011c, p. 22).

Among the dominant factors behind India's growth were relative political stability (despite tensions with neighboring Pakistan and Bangladesh) and favorable international conditions while its labor productivity growth surpassed all OECD countries except Korea in 2005 (but was lower than in China). While the manufacturing sector continued to outperform, the service sector marked exceptional growth, particularly in areas where government regulation had been eased, like in the IT services, communications and insurance. To illustrate, services amounted to 53.7 percent share of GDP during 2004-9, compared to the average of 7.9 during 1998-2004 (OECD, 2011c, p. 23). Despite the combined value of imports and exports reaching 49 percent of India's GDP in 2006 (compared to mere 13 percent in 1985), India's growth was *not* driven by exports, foreign savings or FDI, but by domestic consumption and domestic investment, which is in stark contrast to other EMEs. Even compared to the regional average of over 50 percent, Indian

exports represented only 20.9 percent of India's GDP during 2004-9. On the other hand, private consumption amounted to 58.6 percent and fixed capital formation to 31.7 percent (OECD, 2011c, p. 23). Liberalization and high private savings (which increased from 28 percent of GDP in 2003/4 to 35.5 percent in 2008) steadily boosted private investment since 2004, which in turn supported growth. FDI inflows averaged 2.5 percent of GDP during 2001-6, but were nevertheless modest compared to other developing countries (OECD, 2007, p. 112). Indian companies have been involved in substantial external commercial borrowings (hereinafter: ECBs) overseas in order to finance investments and acquisitions at home and abroad with the money than returning to India, boosting capital inflows. Furthermore, the Indian *rupee* appreciated steadily and marked a nine-year high against the US dollar in April 2007. It also appreciated against other major currencies, following the flood of foreign-exchange inflows (both FDI and remittances sent by Indian expatriates) and built up India's foreign exchange holdings. To be specific, the *rupee* appreciated against the US dollar, British pound, euro and yen by 10, 8, 6.9 and 11.2 percent, respectively. Furthermore, during 2005-6, 86 percent of Indian exports and 89 percent of imports were invoiced in US dollars, making its strong currency an 'enviable problem to have' (Economist, Jun 27 2007). Gross capital inflows to GDP ratio increased more than fivefold (that is, from 7.2 percent in 1990/91 to 36.6 percent in 2007/8) and were partly offset by capital outflows (which increased from 5 percent of GDP in 1990/1 to 27.4 percent in 2007/8), largely on account of foreign institutional investors' (FII) portfolio investment transactions, Indian investment abroad and repayment of external borrowings (Mohan, 2008, p. 237). Unlike many countries in the region (including China), India is more dependent on short-term portfolio capital inflows than longer-term FDIs, which makes India particularly vulnerable to rising interest rates in case foreign investors should lose appetite for risk. The quantum of FII money in Indian stock markets significantly influences the exchange rate and prior to the crisis, the *rupee* rose (despite the trade deficit) mainly due to surge in FII inflows in the country (Singh, 2009, p. 153).

On the other hand, high degree of macroeconomic stability before the 2008 crisis partly reflected the (seemingly benign) economic conditions that prevailed in AEs but was also the result of fiscal consolidation efforts by the Indian government. As fiscal policy became unsustainable in the early 2000s, policymakers sought to improve fiscal discipline by implementing the *Fiscal Responsibility and Budget Management Act*⁸ in 2003. By 2007, the revenue deficit had been

⁸ It set medium-term target of balancing current revenue and current spending (zero-revenue deficit) and limit the overall fiscal deficit of central government to 3 percent of GDP (OECD, 2007, p. 50).

reduced to near-zero while the fiscal deficit had been reduced from its average of 8.6 percent of GDP during 1998-2004 to 4.1 percent in 2004 (OECD, 2011c, p. 23). The annual inflation rate, as measured the point-to-point change in wholesale prices, increased to 6.1 percent in January 2007 (and surpassed the central bank's new stricter inflation target range of 4.5-5 percent in 2007/8). Moreover, as large and sustained capital inflows boosted growth, the hawkish Reserve Bank of India (hereinafter: the RBI) stemmed *rupee* appreciation by easing limits on firms' overseas investment and restricting inflows (that is, making it more difficult for firms to borrow in foreign currency). Although the exchange rate system in India is supposed to be full float, the RBI intervenes whenever the *rupee* exhibits signs of extreme volatility, marking a managed float (Singh, 2009, p. 157). By 2008, the economy showed signs of overheating as demand outpaced supply; asset price bubble formed; credit boomed and current account deficit widened from 1 percent of GDP in 2006 to 2.4 percent in 2008 (OECD, 2011c, p. 23). The Bombay Stock Exchange (hereinafter: BSE) Sensex Index peaked in early-2008 and inflation developed into a persistent problem. It increased from 4.2 percent in 2006 to 6.1 percent in January 2007 and reached 7 percent in April 2008, far above the RBI limit. Extra upward pressure was also felt due to higher prices for fuel, food and metals (Viswanathan, 2010, p. 49). In response, the RBI maintained a tight monetary stance until September 2008 by raising its policy repo rate (while leaving the reverse repo rate unchanged) and tightening capital controls as an alternative to intervention when capital inflows rose (Islam & Rajan, 2009, p. 10). Fiscal policy at the time was expansionary and the government increased spending in early 2008 by hiking public sector salaries and offering write-offs to small farmers and increased subsidies.

Initially, India was relatively insulated from the global crisis due to its manageable foreign debt and sound banking system. The latter - financed predominantly by deposits and largely state-owned - was well-capitalized, faced no bad-loans crisis and had only marginally been exposed to overseas credit markets. India's top private lender, the ICICI Bank, was the only major bank to suffer more than 70 points share drop due to rumors it had been overexposed to toxic US and UK assets. It survived thanks to its strong balance sheet and timely actions by the government that basically guaranteed its deposits (Kumar & Vashisht, 2011, p. 4). However, the downturn of international trade was one of the main transmission mechanisms of global slowdown which effected Indian exports and capital markets and widened the current account deficit. At the same time, the sharp fall in commodity prices (especially oil) and slowing domestic demand helped cool inflation. Specifically, headline WPI inflation decreased to 10.7 percent in October 2008 from its 12.5 percent peak in July 2008 (Subbarao, 2009, p. 11). Moreover, net inflows into

Indian capital market by foreign institutional investors (FII) decreased dramatically, from \$20.3 billion inflows in 2007-8 to \$14.1 billion outflows (Mehrotra, 2010, p. 10). The global downturn was also transmitted through the financial channel as Indian financial markets suffered a blow in September 2008. The stock markets were hit particularly hard, with the BSE Sensex Index losing more than 60 percent of its value from early-2008 peak to late-2008. As liquidity-constrained agents in AEs reduced foreign asset holdings to shore up their balance sheets (with a substantial equity outflow marked from FIIs), the sudden reversal of capital led to a severe shortage of dollar liquidity and an increase in borrowing costs. Correspondingly, firms cut investments (but investment rates weakened far less than in most AEs). It is worth noting that contrary to portfolio investment, FDI was resilient throughout the downturn, with net inward flows staying positive, which attests to investors' confidence regarding the prospects of Indian economy (OECD, 2011c, p. 25). Furthermore, as Indian corporate sector relies heavily on external capital and it was no longer able to raise capital abroad, it sought more credit from the domestic market. This, in turn, put additional pressures on the financial markets, causing the overnight interbank call rate to rise above 20 percent in October 2008, while firms exchanged rupees for dollars to finance their foreign operations (Mehrotra, 2010, p. 10). Lastly, consequent to the global liquidity shortage, decrease in capital inflows, decline in ECB and increased demand for dollars, *rupee* depreciated by around 20 percent from January 2008 to October 2008, marking its lowest point in more than six years (Singh, 2009, p. 149).

On the monetary side, the RBI aimed to do three things: **first**, provide liquidity in domestic market; **second**, provide dollar liquidity for business financing in external markets; and **three**, ensure flow of credit to productive industry sectors. This marked a reversal in RBI's policy stance as it switched from monetary tightening prior to the crisis (fighting inflationary pressures) to monetary easing (in response to easing inflationary pressures and slower growth) in August 2008. In order to infuse liquidity in the financial system and prevent the GDP growth rate from falling too drastically, the key interest rates - that is, repo and reverse repo rates (that is, rate at which the RBI injects/sucks rupee liquidity into/from the banking system) were reduced aggressively and rapidly. Specifically, the repo rate was reduced from 9 percent to 4.75 percent and the reverse repo rate from 6 percent to 3.5 percent (Mehrotra, 2010, p. 14). In order to ease pressure in credit markets, the cash reserve ratio (that is, the minimum reserves each bank must hold to customer deposits and notes) was reduced from 9 percent to 5 percent and the statutory liquidity ratio (that is, the proportion of total demand and time liability that the bank must hold with the RBI) was also cut. Also, to address capital reversal, the RBI eased capital controls and

increased interest on foreign currency deposits in order to tackle the depletion of foreign exchange reserves. Furthermore, a special window was initiated for banks that enabled them to lend to mutual funds, non-banking finance companies and housing companies, while the ECB regulations had also been eased to allow access to foreign borrowing. The RBI also adopted unconventional measures like the rupee-dollar swap facility for Indian banks in managing their short-term foreign funding requirements. It allowed the *rupee* to depreciate in September 2008 but as further depreciation would worsen the balance sheet positions of corporations that borrowed in foreign currency on an unhedged basis (and corporations sold locally raised funds to repay external loans in foreign currency that were due and could not roll them over), the RBI shifted to currency intervention by leaning against the wind. In other words, to stop the currency from falling too sharply, the RBI intervened in the FX market by selling dollars, using its accumulated foreign-exchange reserves and then performing repo operations in order to inject funds back into the market. In this sense, the RBI sold \$18.7 billion in foreign exchange market in October 2008 alone (Patnaik & Shah, 2010, p. 3) while foreign currency reserves decreased from \$315 billion in May 2008 to \$261 billion by June 2009 (Mehrotra, 2010, p. 13). All in all, monetary measures and provision of liquidity amounted to around 9 percent of India's GDP from mid-September 2008 to March 2009 (Shahidul Islam & Rajan, 2009, p. 11). On the fiscal front, the government launched four fiscal stimulus packages in the space of seven months (that is, from December 2008 to June 2009). They included additional public spending (notably capital expenditure), government guaranteed funds for infrastructure spending, cuts in indirect taxes and support for exporters⁹ (Subbarao, 2009, p. 9). Furthermore, the government also removed its year-old restrictions of participatory notes (that is, offshore derivative instruments that allow unregistered foreign investors to invest in Indian stock markets) and liberalized external commercial borrowing rules, raising the cap on overseas borrowing for some sectors. Thus, the countercyclical fiscal measures reversed the earlier efforts of fiscal consolidation and the fiscal deficit (that is, central and states combined) widened from 5.4 percent in 2007/8 to 11.4 percent in 2008/9 (Mehrotra, 2010, p. 14).

Thanks to expansionary macroeconomic policies, India experienced a relatively mild and short-lived slowdown. It was among the fastest growing countries in 2009 (second only to China), despite the severe drought of 2009 that hit the agricultural sector and pushed food prices and inflation upwards, while the country's growth was yet again led by strong domestic demand.

⁹ The impact of declining exports on employment was greatly debated, as key export-oriented sectors (including mining, textile, metals, autos, transport, IT) contributed 60 percent to GDP in 2007-8 (Mehrotra, 2010, p. 12).

While the adopted crisis measures eased pressures and helped avoid depression, some considered the RBI did not lower policy rates fast enough since it was fighting high commodity price-induced inflation before the crisis (Shahidul Islam & Rajan, 2009, p. 16). Moreover, due to fiscal space limitation - which was in stark contrast to China and other East Asian countries - proper and timely monetary actions were especially crucial. Namely, fiscal policy faced limited maneuverability to begin with due to high fiscal deficits pre-crisis. It was also often claimed the fiscal response after late-2008 was not as large as required (Kumar & Vashisht, 2009, p. 24). On the other hand, it is worth noting that increased fiscal deficit could trigger a strong response from the credit rating agencies, which could lower India's sovereign credit rate and thus potentially seriously threaten India's capital inflows. Moreover, this could also lead to an increase in government borrowing, which would, in turn, put pressure on interest rates, erode some of the efficacy of monetary transmission as well as adversely affect private investments (Subbarao, 2010, p. 11). Further still, since large deficits tend to hamper national saving, high public spending would fuel inflation and effectively limit the central bank's room of cutting the key interest rate. Consequently, if the high borrowing costs would deter private investment and national savings, this could slow investments (resulting in lower investment rate) which, in turn, would hamper growth.

Criticism notwithstanding, fiscal deficit indeed expanded beyond the originally targeted level (due to loan waivers, issue of oil and fertilizer bonds and higher levels of food subsidy). As government borrowing grew and debt-to-GDP ratio increased from 69 percent pre-crisis to 73 percent in 2010, national savings were constrained and private investments (which were considered crucial for continued growth and recovery) were crowded out. Furthermore, the situation indeed exerted a simultaneous upward pressure on interest rates as well as on inflation. In effect, 'fiscal dominance' of monetary policy remained a concern post-crisis due to the severe medium-term inflation problem. As such, the RBI faced challenges in meeting the public borrowing requirements without disrupting the markets at times of uncertainty and heightened risk aversion among investors (Gandhi, 2012, p. 195). On the one hand, it needed to hold down interest rate (to stimulate private investment demand) but also restrain any excessive inflationary tendencies. As a result, the RBI decided to hold its key interest rate at 4.75 percent in October 2009, despite inflationary pressures, which only confirms it did not want to attract even more money from foreign investors that are hungry for higher yields. Later, the RBI shifted policy focus and exited accommodative monetary policy, increasing the two key policy rates as well as

the cash reserve ratio, while fiscal tightening and consolidation efforts were also in center of economic focus (Chakrabarty, 2014, p. 138).

Post-crisis, many considered India having advantage over China in the long run because of its young population, democracy and its individualistic capitalism (compared to China's ageing population and socialist market economy). Because of its growth prospects, India quickly reemerged as an attractive investment choice and the BSE Sensex index increased almost 100 percent from March to October 2009, while the spreads between interest rates in India and most AEs widened. Strong net inflows helped India's current account deficit while currency appreciation also helped contain inflationary pressures. However, the volatility of these capital flows further challenged the effectiveness of monetary policy. If the RBI would *not* intervene in foreign exchange market, currency would appreciate and possibly hurt international competitiveness of Indian exports. However, if the RBI *would* intervene to prevent appreciation it would face additional systemic liquidity and inflationary pressures. Finally, if it would sterilize the newly-emerged liquidity, it would face the risk of pushing up interest rates which could hurt its growth prospects (Subbarao, 2010, p. 2).

India's headline inflation accelerated throughout 2009 and in response, the RBI further raised the repo rate and the cash reserve ratio, while the *ex post* real interest rates remained negative. On the fiscal side, consolidation efforts have come to a halt since high inflation created pressure to increase spending on subsidies (OECD, 2011c, p. 29). In 2011, India's growth deteriorated due to decline in investment (from \$27 billion in 2009 to \$21 billion in 2010, while it grew elsewhere in the region), consequent to persistently high inflation, general investor pessimism about global events and extreme political weakness within India itself, arising from the conflicting interests and lack of leadership among its politicians. Indeed, high inflation and uncertainty about the future generally discourage investments and savings. Further adding to claims that India's poor performance post-2010 is largely self-inflicted were also the strong doubts regarding the commitment by the Indian government to implement further economic reforms. Indeed, the problem was highly politicized since despite good efforts from liberal politicians such as India's then-PM Manmohan Singh (also one of those to be credited for India's remarkable growth in the preceding two decades) and who faced severe opposition by the ruling Congress party and skeptics about his proposed reforms. In November 2011, the *rupee* fell to an all-time low against US dollar, reflecting the conditions in global markets and drying-up of capital inflows. While a fall in currency boosted exports and limited imports (thereby narrowing the external deficit), it is

considered fatal since India borrowed in other currencies and already had high inflation rates. As a response, the RBI repeatedly tightened its monetary policy to bring inflation under control and to stabilize the *rupee* - which in 2012 has lost a fifth of its value against the dollar in 2011 and only added to fears of inflation and adverse effects it might have on firms with foreign-currency debt. On the fiscal side, the government announced additional reforms and measures for deficit reduction (like raising the ceiling on FIIs in Indian corporate debt). It also loosened the rules for sovereign wealth funds and other long-term investors in buying Indian government bonds; as well as eased restriction for Indian manufacturing and infrastructure firms seeking funds abroad.

The 2012/3 macroeconomic conditions in India were weak and growth fell to 4.7 percent in 2012 and 4.4 in 2013, the lowest since 2003/4. Moreover, current account deficit expanded to its highest level at 4.7 percent of GDP and the gross fiscal deficit of central government amounted to 4.9 percent of GDP with inflation hovering in double digits (Mohanty, 2014, p. 6). The mounting macroeconomic imbalances contributed to the shift of capital away from India, triggering further depreciation of the *rupee*. As a result, the RBI yet again tightened its monetary policy and increased the policy interest rate to 7.25 percent. Following the May 2013 announcement of Fed's QE tapering, India was put in the group of Fragile Five (or the BIICS), characterized by currency depreciation and troublesome current account deficits that left these countries vulnerable to capital outflows. Specifically, the *rupee* depreciated by about 20 percent against the US dollar from March to August 2013 and incurred a sharp decline in stock prices as well as a liquidity crunch. The RBI intervened in the foreign exchange market by selling dollars; implemented monetary tightening measures to stem speculations; raised the cash reserve ratio; opened foreign exchange swap window to meet the daily US dollar requirements; imposed interest rate ceiling on foreign currency deposit (with capital controls limiting the ability of individuals and firms to take money out of the country) and imposed limit for overseas direct investment (Mohanty, 2014, p. 9). To illustrate, India's ODI has jumped 35-fold from 2003 to 2013, amounting \$241 billion in 2013 (Garcia-Herrero & Deorukhkar, 2014, p. 2). In 2014, the RBI continued to raise its policy rate and in the first half of the year, there was slight improvement in India's economic performance due both to the reduction of current account deficit (which was helped by a ban on gold imports and allowing the *rupee* to fall, thus encouraging exports) and a wave of optimism that followed the election of Narendra Modi, India's new prime minister. Consequently, this resulted in a rise in stock market, a surge of inbound capital flows and currency stabilization. For the purpose of brevity, India's future outlook is presented in Appendix J.

4.1.4 People's Republic of China: Great New Wheel of Global Growth

The changes in agricultural, industrial and service sector that have been introduced by Deng Xiaoping since 1978¹⁰ have enabled China to develop into a socialist market economy in which market forces are allowed to influence economic activity under macroeconomic guidance and regulation of the risk-averse government. During 2003-8, China marked rapid and sustained economic expansion with the annual growth rate averaging 11 percent. Moreover, in late-2010, it surpassed Japan as the second largest economy in the world and many commentators believe it will surpass the US in early 2020s (Kawai & Pontines, 2014, p. 4). China opened to world trade (China's share in global GDP increased from 1.8 percent in 1978 to 11.3 percent in 2008), became the world's largest exporter in 2013 (accounting for 14 percent of global exports) and the third largest importer globally (accounting for 12 percent of the global total). It is the second most important FDI destination: despite strict capital controls, China receives the largest share of speculative capital among all EMEs. It is also the holder of the highest foreign exchange reserves (OECD, 2010, p. 23) while in September 2007 the China Investment Corporation (hereinafter: CIC) was established by the Chinese government to make use of accumulated reserves.

The key forces behind the remarkable growth were the strong accumulation of capital - which was financed predominantly by personal sector savings, while the gross savings rate was around half of GDP and one of the highest in the world -, better education and transition of labor from agriculture towards services and manufacturing (OECD, 2005, p. 32). The powerful private sector and high productivity helped create well over half of GDP and contributed to a substantial share of exports, making China's manufacturing sector second largest in the world. However, despite exports of goods being equivalent to 33 percent of GDP in 2008 (compared to 28 percent in Germany or 8 percent in the US), China is not predominantly dependent on exports.¹¹ During 1998-2004, its net exports accounted for only 5 percent of GDP growth (while the remainder came from domestic demand) and since 2005, net exports have contributed to more than 20 percent of the growth due to sharp slowdown in imports. On the other hand, the well-known 'hunger' of the Chinese companies for raw materials set off a global commodity boom while

¹⁰ These include abolishing price controls, allowing foreign trade and investments, turning collective farms to households, creating special economic zones, encouraging self-proprietorships, reducing the size of the state sector, establishing a stock exchange, ending multiple exchange rates, reducing tariffs and abolishing the state export trading monopoly and acceding to the WTO in 2001 (OECD, 2005, p. 29),

¹¹ Specifically, because of exports produced by companies registered under the foreign processing law, these (mostly foreign) firms are able to import goods duty free, provided they are subsequently exported and do not enter the domestic tariff area (OECD, 2010, p. 32).

domestically, this led to the increase of resource-hungry industries, marked by a shift from light manufacturing to heavy industries.

Prior to the crisis, China's fiscal policy has been prudent, implementing counter-cyclical policies when needed and reducing general government deficit to below 1 percent of GDP in 2004 while public debt was stable at around 23.5 percent of GDP (OECD, 2005, p. 177). As regards monetary policy, the People's Bank of China (hereinafter: the PBOC) targets two variables - money aggregates and exchange rates - to implement its policy, while interest rate channel plays a minor role. Furthermore, the PBOC is not independent as it needs the permission of the State Council (China's executive branch) to change policy settings. The government thus sets the benchmark for the short-term interest rates (that is, one-year lending and deposit rates) to ensure state-owned banks have a profitable spread between low deposit rates and higher loan rates. This way, effective capital controls allow the authorities to retain regulated deposit and lending rates, quantitative credit guidance and bond market rationing (McCauley, 2011, p. 41). However, they also limit investment alternatives; hamper privatization and the development of real capital markets, ultimately creating an inefficient financial sector in which investment funds are directed by state-owned banks to primarily state-owned enterprises, thereby breeding corruption and rent-seeking (Dorn, 2013, p. 78).

Since the government wishes to protect its export sector (by keeping the currency undervalued), the PBOC normally buys dollars at the pegged rate with the newly-created *renminbi* (which normally fuels inflation if not sterilized). In turn, the PBOC does not raise its interest rate (as that would attract more capital inflow) but uses two methods to sterilize this inflow. **First**, through open market operations (that is, using repos and open-market operations, namely central bank bills) and **second** (and more frequent), through changes in the required reserve ratios of commercial banks (Körner & Ehnts, 2013, p. 18). Furthermore, economy with high growth rates will likely experience a real exchange rate appreciation in the medium run since rising incomes will push up the prices of non-tradable goods and services. But because of China's relatively fixed exchange rate against the dollar, possible fluctuations have resulted in inflationary or deflationary impulses. While the PBOC managed to maintain low inflation (which hovered around the 2-percent mark during 2000-6) it was also more volatile compared to OECD countries (OECD, 2005, p. 58). In 2005, China responded to international criticism of maintaining an undervalued currency (that contributed to rising current account surpluses and foreign exchange reserves), allowed gradual appreciation of *renminbi*. Specifically, it changed its

arrangement from the conventional USD peg to a slow and well-controlled crawling peg regime, while daily changes never exceeded the 0.3 percent bound. Initially, the PBOC's made substantial purchases of foreign currencies to stop the *renminbi* from rising too quickly and between June 2005 and its peak in September 2008 the nominal *renminbi* appreciated by 17.5 percent against the US dollar. In turn, from early-2007 to mid-2008, around \$386 billion in 'hot money' flowed into the country, mirroring investors' anticipation of continuing appreciating the *renminbi* relative to other majors, especially the US dollar. In January 2008, the PBOC allowed the *renminbi* to appreciate since the cost of preserving its value had risen considerably. By mid-2008 the policymakers decelerated the pace of *renminbi* appreciation and restored the USD peg system, worried about the possible decrease of China's exports.

During 2006-7, the economy started to overheat (and growth rates over this period exceeded 10 percent), the housing sector boomed and inflation increased (Liu, 2014, p. 5). In fact, inflation tripled in 2007 alone (also due to the jump in food and energy prices, caused by supply-side shocks). This prompted the policymakers to tighten price controls on a range of products and impose regulations (examples include credit ceilings and 40 percent down-payment requirement for second mortgages) that aimed to improve China's withstanding of the falling house prices and provided banks with large buffers as house prices fell (thereby also limiting exposure to toxic assets overseas). The policymakers raised reserve ratios and increased the interest rates six times in 2007 alone, effectively reducing liquidity from the financial system and trying to cool down the economy. Meanwhile, savings increased; current account surpluses soared from \$46 billion in 2003 to \$426 in 2008 (that is, from 2.8 percent of GDP to 9.8 percent of GDP, respectively); and the country marked sizeable capital inflows (particularly of FDI). At the same time, long-run capital flows were generally welcomed while both short-term capital inflows and outflows were controlled, focusing more on the regulation on the volatility of cross-border capital flows than their volumes. Also, the restrictions on financial account focused on the management of FDI, control over international portfolio investment as well as foreign debt (Chen, 2011, p. 3). Foreign exchange reserves accumulated at remarkable and sustained pace, passing the 1 trillion USD mark in 2007, turning China into the largest holder of foreign reserves in the world. Specifically, the foreign reserves as share of total PBOC assets have grown from around 40 percent in 2002 to more than 80 percent in 2011, making its balance sheet increasingly sensitive to changes in financial conditions outside China (Liu & Spiegel, 2012, p. 1).

At the outbreak of the crisis, China was affected in three aspects. **First**, it was directly exposed to US assets backed by subprime mortgages (like MBSs and CDOs) while China's four largest commercial banks suffered the total direct loss of \$20 billion (Yongding, 2010, p. 10). However, the impact was less severe since China's financial system is dominated by a large banking system, which in turn is mainly controlled by the four largest state-owned banks.¹² Moreover, banks were better protected from the global credit crunch than their Western counterparts since they are funded predominantly through deposits (rather than the capital markets) while their loans amounted to merely 65 percent of their deposits. In fact, Chinese consumers were far less indebted as total household debt represented only 13 percent of GDP (compared to 100 percent in the US). **Second**, China was also affected through fluctuations in capital flows and global increase in risk aversion. However, thanks to its strict capital control (which also allowed China to maintain an undervalued currency and provide cheap capital to boost its economic growth), the crawling peg regime and substantial foreign exchange reserves, the *renminbi* was not subject to erratic changes. **Third**, the slowdown of world trade marked by far the most serious impact of the global crisis. Specifically, global demand for durable and investment goods decreased and Chinese exports to the US fell (while they increased to other EMEs and grew by more than 60 percent to other three BRICs). Also, the cost of materials increased as did unemployment, while current account surplus declined as well as inflation rates (namely, from 8.7 percent in February 2008 to 4.9 in August 2008) due to lower food prices and slower growth in money supply.

The policy mix during 2003-7 before the onset of the global financial turbulence consisted of a proactive (expansionary) fiscal policy and prudent (tight) monetary policy. In 2008, Chinese policymakers adopted an overall expansionary policy mix (that is, a proactive fiscal policy and loose monetary policy). With the crisis, China's policymakers reacted decisively, making use of the country's sound external-debt-to-GDP ratio, substantial current account surplus and strong fiscal position (low public debt and high budget surplus). This, in turn, allowed the implementation of a fairly aggressive and massive fiscal package that dwarfs other fiscal responses in advanced economies. Specifically, the RMB 4 trillion (\$575 billion) two-year fiscal stimulus package (the equivalent to 13 percent of GDP) was announced in November 2008 and was funded by the central government, local government banks and state-owned enterprises. It

¹² Two domestic stock exchanges (the Shanghai and the Shenzhen Stock Exchange) rank sixth and sixteenth largest in the world in terms of market capitalization, respectively. However, they cannot compare to the Chinese banking sector neither on scale nor importance as they have not been effective in allocating resources in the economy, in that they remain speculative and driven by insider trading. The Hong Kong Stock Exchange, where many firms from mainland China are listed and are traded, is ranked seventh-largest.

consisted of mostly increased investment in public works (infrastructure projects and post-earthquake reconstruction) as well as spending on social welfare (health care, education, environment protection), tax reforms (lowering corporate-tax burden imposed by VAT) while it also eased lending restrictions imposed during the time when the economy was overheating. The stimulus aimed to diminish domestic savings and boost household consumption, since the share of the latter fell during 2002-7 due to jump in household saving ratio which, in turn, was partially the result of China's lower level of the social safety net.

On the monetary front, the focus shifted from fighting inflation to appropriately easing credit controls. It was not until October 2010 when the macroeconomic policy changed course again. During August 2008-May 2010, the crawling peg regime was abandoned and the conventional US dollar peg regime was restored, whereas in June 2010 China once again implemented a crawling-peg-like regime (Kawai & Pontines. 2014, p. 3). Considering the said refusal of adjusting the *renminbi* upwards, other currencies (such as the Brazilian *real* or South Korean *won*) have appreciated against the *renminbi*, which eroded those countries' competitiveness, with China overtaking the US as their biggest export market. Criticism notwithstanding, some analysts proposed strong *renminbi* would help reduce global imbalances (like the US's trade deficit) and help China regain control of its monetary policy which was too loose for its rapidly growing economy. It would also make the country less dependent on exports while making growth more sustainable. On the other hand, the PBOC raised the M2 growth target to 17 percent and revoked the loan quota constraint. It also gradually cut both the required reserve ratios of commercial banks (from 17.5 percent to 15.5 percent) as well as the policy interest rates to 6.9 percent. Liquidity was further enhanced by lowering the share of sterilization of capital inflows so that, in turn, interbank interest rates were lower than regulated deposit rate (OECD, 2010, p. 34). As a result, the accommodative monetary policy helped lift domestic demand as well as boosted intraregional trade (Bernanke, 2009, p. 18).

Some analysts have noted that the quick rebound by China was also due to the fact the economic slowdown was more self-inflicted than it was the result of the US economic collapse. In 2009, Chinese output stalled but did not fall as growth remained strong due to the surge in investment and bank lending sparked by the government's stimulus measures. Indeed, economic rebound came from the boom in domestic demand, while exports slumped and imports increased, and the current account surplus shrank from 11 percent of GDP in 2008 to 6.1 percent of GDP in 2009 (fiscal deficit, however, remained small since public finances started from a big pre-crisis

surplus). While stock market lost nearly three quarters of its value in the final quarter in 2008, it recovered about one-third of the 2008 losses in the first half of 2009. China's deficit remained low, amounting to RMB 950 billion in 2009 and RMB 1050 billion in 2010 (that is, slightly less than 3 percent of GDP), while the government's debt stood at safe 20 percent of GDP (People's Bank of China, 2012, p. 114). On the other hand, the increase in money supply and credit in early-2009 added to risks of imprudent borrowing and surge in non-performing loans. In addition, sizeable capital outflows have also slowed the pace of accumulation of foreign reserves, but only temporarily. By mid-2009, total reserves already stood at \$2.1 trillion and since such accumulation could adversely affect the domestic money market, the PBOC used open-market operations, bills and reserve requirements changes to drain liquidity from the banking system and sterilize the consequences of foreign reserve inflows onto the domestic monetary market. Moreover, in November 2009, the government tightened the rules on foreign-currency transfers by individual in order to control flows of hot money into the market.

With the benefit of hindsight, the substantial costs of maintaining the exchange rate regime did limit the effects of the crisis, but they also worsened China's structural problems (Wu, 2014, p. 88). The sustainability of the country's growth pattern (that is, its substantial dependence on external demand) has often been disputed, advocating instead for rebalancing the economy toward domestic consumption (Xing & Pradhananga, 2014, p. 16). Following the huge expansion of credit in times of the 2009/10 stimulus package - which forced the transition from investment and exports to mainly investment (and sought to rebalance growth in favor of consumption) -, both state-owned enterprises and real estate (the large share of state-party system) grew, while China marked an economic slowdown since 2010. Furthermore, the decision of re-pegging RMB to USD had also imported Fed's accommodative monetary policy to China. Together with the higher money multiplier (thanks to the expansionary credit policy) domestic consumer inflation again developed into a problem during 2010-11 (Huang, 2012, p. 27). Also, as unconventional monetary policies were introduced in AEs, China was forced to allow the *renminbi* appreciate against the US Dollar since 2010 which in turn affected exporters' competitiveness as well as the danger of increasing unemployment.

Specifically, household debt gradually increased from 21 percent of GDP in end-2008 to 33 percent of GDP in early-2013; contribution of exports diminished since 2008 while fixed asset investment increased for four consecutive years (2009-2012) to 48 percent of GDP (Fabre, 2013, p. 4). Moreover, the imbalances in the international balance of payments severely impacted the

domestic money supply, while the accumulation of foreign exchange reserves (that totaled \$2.85 trillion in end-2010) became the biggest reason for the increase in money supply, fueling the inflation rate. China's stock market has also manifested signs of increased volatility and dipped again in early 2010 due to concerns that the government is trying to cool down the rapidly growing housing market (Zhang, Zhang & Breece, 2011, p. 372). As a result, the PBOC used monetary instruments to tighten the control of money supply. From the start of the US QE2 in 2010 (and up to 2011), the PBOC hiked the required reserve ratio a total of 12 times (from 15.5 percent in 2009 to 20.5 percent in mid-2011), while the interest rate for central bank bill was increased 5 times during the same period (from 1.5 percent in July 2009 to 3.5 percent in 2011; Liu, 2014, p. 2). Along with the appreciation of *renminbi*, the two channels worked well and inflation peaked at 6.5 percent in July 2011 (Huang, 2012, p. 27). As regards the fiscal policy, it remained expansionary even after the crisis.

In 2011, foreign exchange reserves exceeded 3.2 trillion USD and were heavily invested into US Treasury and agency bonds, the global safe haven. In end-2011, China held \$1.2 trillion or 8.4 percent of US gross public debt of \$14.3 trillion, making China the largest creditor to the world's largest economy. The subsequent reduction in US's AAA rating to mere AA+ in August 2011 led to diversification of China's foreign exchange reserves - that is, a decline in US agency securities holdings and significant increase in Japanese government bonds as well as investments into less-developed economies, especially in Africa (Wang & Freeman, 2013, p. 14). Nevertheless, Chinese FX accumulation was interrupted only as investors fled due to their exposure to crisis in AEs, forcing China (and other capital-receiving countries) to choose between currency weakening or diminishing reserves. In 2012, the growth amounted to 'only' 7.5 percent, which is dangerously close of the 7 percent growth that is regarded as minimum in order to avoid painful massive unemployment. The economy marked fast credit growth and modest inflation as the latter hovered around 1.8 percent (and far below the 4 percent official inflation target by the PBOC). To stimulate growth, the PBOC reduced deposit and credit interest rates for the first time since 2008 (to 3 percent and 6 percent, respectively) and also lowered the minimum reserve rates for commercial banks in order to spur competition among them (Fenz, Moder & Silgoner, 2012, p. 8). Facing worst performance by Chinese stock market, the policymakers were trying to attract more foreign money by offering more investing channel for individual investors as well as increasing the overall quota for foreign institutions investing in China. In mid-2014, China faces both inflation and economic downturn (or stagflation), which is in stark contrast to overheated investment demand and insufficient consumption prior to the 2008 crisis (Liu, 2014, p. 11). In

2014, the *renminbi* weakened, house prices declined, FX reserves approached the \$4 trillion mark, exports subsided and the credit-to-GDP ratio reached 200 percent, rising steeply in the last five years. For the purpose of brevity, China's future outlook is presented in Appendix J.

4.2 Summary of BRIC Policy Response

As described above, the four BRICs vary in economic policies, structural characteristics as well as geopolitical importance. Brazil and Russia can be considered as commodity-price dependent economies, open to foreign trade and financial flows with a mixture of state and private sector control of capital markets. On the other hand, India and China are predominantly finished-product export-oriented economies with relatively closed, state-controlled, heavily regulated capital markets with low degree of financial integration.¹³ Furthermore, research shows Brazil and Russia mark higher and more persistent dependency on policy decisions in the US, followed by China and India much less so. On the other hand, the extreme dependence between EMEs was found greater in bullish rather than in bearish markets, which might indicate low probability of simultaneous crashes (Aloui, Ben Aissa & Khuong Nguyen, 2010, p. 24).

While the aggressive response by AEs was unsurprising during the recent crisis, the quick and substantial reaction of EMEs was far more unanticipated (Eichengreen, 2010, p. 7). In trying to prevent depressions, the BRICs resorted to Keynesian stimulus measures (see Table below) that were possible not only because the crisis occurred at the time that was 'most prosperous' for them but also due to substantial decline in their fiscal deficits and public debts. Indeed, many EMEs that faced crisis in the two decades leading up to the 2008 crisis had 'kept their powder dry', maintaining strong fiscal positions, low foreign-denominated debt and short-term debt, high FDI levels and high export-to-GDP ratios (Frank & Hesse, 2009, p. 9). Substantial foreign currency reserves thus made it possible to increase public spending (without incurring fears for fiscal sustainability), support their currency and thus reduce currency mismatches (alleviating the pressure of currency devaluation threatening the financial stability) and provide dollar funding when needed. On the monetary side, central banks in BRICs managed to build credibility in the years leading up to the crisis so cutting interest rates did not automatically excite fears of inflation. The two aspects combined allowed the implementation of countercyclical policies and

¹³ Brazil and Russia are more dependent on export revenues of fuel and mining products (20 percent and 73 percent of their respective economies' total exports) while China and India depend greatly on exports of manufactured goods (93 percent and 63 percent; respectively) (Aloui et al, 2010, p. 23).

the BRICs rebounded to pre-crisis rates of growth in two years' time. Comparatively, Brazil and Russia were more severely impacted than China and India. The latter two are considered among the least financially open economies and during the recent crisis, their activity did not contract, while they did see their economic growth rates plunge to around half their pre-crisis peaks (Goldstein & Xie, 2009, p. 42). China's growth is nowadays considered the source of global growth while its slowdown since 2012 has not only affected AEs but also the other BRICs, since China is among their largest trading partners.

The implemented fiscal stimuli by the BRICs focused either on infrastructure development through public investment projects (as was the case for India and China) or tax rebates to boost private demand (as was the case in Brazil and Russia). Banerjee and Vashisht (2010, p. 22) report the size of the aggregate global fiscal stimulus was around \$1957.97 billion (that is, roughly 3.16 percent of world GDP), with the US and the Chinese response representing astounding 40 percent and 30 percent, respectively. In the case of the other three BRICs, Brazil pledged 0.3 percent, Russia 2 percent and India 0.3 percent of the world total. However, their monetary responses were more uniform as all four central banks pumped credit and tried to spur aggregate demand, reducing key interest rates and the required reserve ratios. Somewhat ironically, it was Russia who implemented perhaps the most liberal monetary regime. Post-crisis, the BRICs preserved exports and inward FDI as their main engines of growth, complementing them with boosted internal demand (spurred by high level of remittances from abroad), outward FDI and infrastructure developments. With the benefit of hindsight, capital inflows from AEs did not result in widespread financial imbalances in the BRICs while some *did* witness overheating and price bubbles (notably Brazil). Most EMEs maintained stable public sector debt and total external debt, while significant FX exposures, excess credit and signs of overheating could incur financial difficulties in the future.

Before the 2008 crisis, Brazil's status in the BRICs group was questioned because of its sluggish growth rate but it is nowadays enjoying an advantage thanks to its democracy, growth prospects and no serious disputes with its surrounding countries, essentially being the 'only BRIC without a nuclear bomb,' as the Economist has aptly put it. It is second only to China among the BRICs in terms of GDP as well as FDI. Currently, Russia seems to be the odd one out due to its shrinking population, geopolitical tensions and its troubled petro-economy. In comparison, India seems to be on an upward growth trajectory, thanks to the new-found optimism after Modi's election, while China's state-guided economy proved to be nothing short of impressive,

revitalizing the long-standing debate about the role of government in managing an economy. For summation of BRICs policy responses, please refer to Table 2 below. For Figures, please refer to Appendix I. For future outlooks for the BRICs and for a side-by-side comparison of BRICs' macroeconomic indicators, please refer to Appendices J and K, respectively.

Table 2. BRICs Policy Responses

	Policy mix during the global crisis	During LSAPs (response to 2010-2 capital inflows)	Resilience following the post-tapering announcement
Brazil (6 month recession: Q4-2008 until Q1-2009)			
	<ul style="list-style-type: none"> • loose monetary policy: cut in key interest rate and lower reserve requirements • FX interventions (not on spot market) • swap facility with the US Fed • fiscal expansion in the form of tax cuts and infrastructure development) 	<ul style="list-style-type: none"> • FX interventions • prudential measures like increased bank reserve requirements and wide use of capital flow management measures (relaxed since late-2011) • raising taxes on form of capital inflows 	<ul style="list-style-type: none"> • Brazilian long-term interest rates are historically sensitive to US monetary policy shocks and to global financial conditions • among the <i>Fragile Five</i> • although banking and capital sectors are not dependent on foreign funding; flow reversals could complicate Brazil's current account funding
Russia (12 month recession: Q3 2008 – Q2 2009)			
	<ul style="list-style-type: none"> • loose monetary policy: cut in key interest rate, reserve requirements • Bank recapitalization • FX interventions • fiscal stimulus (funds drawn from sovereign wealth funds) • support of the banking system and financial markets • automatic stabilizers enhanced 	<ul style="list-style-type: none"> • no response due to capital outflows 	<ul style="list-style-type: none"> • Russian long-term rates are historically not significantly related to US monetary shocks • substantial geopolitical factors • should commodity prices be affected by US tapering, Russia faces significant risks • low public and external debt levels, policymakers have space to operate in case of outflows

(table continues)

(continued)

	Policy mix during the global crisis	During LSAPs (response to 2010-2 capital inflows)	Resilience following the post-tapering announcement
India (no recession)			
	<ul style="list-style-type: none"> • loose monetary policy: cut in key interest rates, cash reserve ratio and statutory liquidity ratio • eased capital controls, hiked interest on foreign currency deposits, easing ECB regulations <ul style="list-style-type: none"> • FX interventions • proactive fiscal policy • four fiscal stimulus packages 	<ul style="list-style-type: none"> • policymakers support capital inflows • capital account liberalized to attract FDI and portfolio investment (relaxed restrictions on external commercial borrowing and on FDI) • floating <i>rupee</i> acted as a shock absorber 	<ul style="list-style-type: none"> • Indian long-term bond yields are historically not sensitive to US monetary shocks (however, India is more equity than bond destination) <ul style="list-style-type: none"> • among the <i>Fragile Five</i> • due to <i>rupee</i> depreciation, money market liquidity was tightened • <i>rupee</i> vulnerable to capital flows fluctuations • monetary policy limited due to high interest rates, while fiscal policy is limited due to high public deficits
China (no recession)			
	<ul style="list-style-type: none"> • loose monetary policy • US\$ peg restored (8/2008-5/10) • less sterilization, easing credit controls, cutting policy rates and reserve ratios • proactive fiscal policy • substantial fiscal stimulus of RMB 4 tn (US\$ 575 bn) or 13% of China's GDP 	<ul style="list-style-type: none"> • reserve requirements, higher interest rates, tighter prudential measures, administrative limits and currency interventions 	<ul style="list-style-type: none"> • Chinese long-term rates are historically not significantly related to US monetary shocks • low dependence on foreign funding will shield from external shocks • ample FX reserves, stimulus might be used to support 7.5 percent target growth

CONCLUSION

History may not repeat itself but it sure does rhyme. The recent crisis was by no means an unpredictable black swan. Much like past crises, easy money and lax regulation were at fault both in the US subprime mortgage and the euro area banking/sovereign debt crisis. To put the blame on animal spirits, irrational exuberance, deregulation or the savings glut of developing economies (which was generated by the swollen US trade deficit in the first place) or even to say a 'few bad apples' somehow infected an otherwise healthy financial system, is wrong and credulous. With the benefit of hindsight, one can rightfully claim new consensus macroeconomics failed while a holistic macroeconomic theory, purged of neoclassical ideals at odds with reality, needs to shape the new economic paradigm.

Early responses in AEs were halting and often confused, indicating the policymakers had severely misjudged both the severity of the shock and its economic implications. AEs generally

employed special liquidity programs and aimed to enhance financial stability through raising deposit guarantees and recapitalizing banks. As policy rates hit zero lower bound, unconventional monetary measures were applied, challenging the sustainability of the laissez-faire capitalism and requiring unprecedented level of intervention. There are several distinguishing features worth mentioning here. **First**, central banks in AEs actively used their balance sheet to directly affect market prices and conditions beyond the typical overnight interest rate. These policies have aptly been labeled as 'balance sheet policies' to separate them from 'interest rate policies'. **Second**, key central banks (that were previously reluctant to directly reveal their views on future policy actions) cooperated and provided direct signals regarding future policy path. This seemed unnecessary prior to the crisis since one central bank's choice regarding the policy rule supposedly had little impact on output and price stability in other economies. **Third**, in a garden-variety crisis (and in the beginning of the 2008 crisis), central banks assumed their typical lender-of-last-resort tasks as banks suffered short-term shortage of liquid assets despite being solvent in the long run. As the crisis escalated, central banks intervened even as financial institutions faced solvency problems, thus incurring long-term financial cost to the public sector. **Fourth**, the unprecedented responsibilities the central banks had taken on increased the possibility of their overburdening, which could diminish their independence, credibility and their effectiveness in reaching their primary objective (that is, price stability). **Fifth**, one of the key post-crisis lessons was also that financial stability should be also pursued as a policy objective by central banks, trying to limit systemic or system-wide financial risk and disruptions of the real economy. **Finally**, by being the dealers of last resort, central banks hinted the zero lower bound will no longer be seen to render monetary policy ineffective. Moreover, the absence of unconventional monetary measures would result in far more severe crisis in AEs, which would have even worse effects on EMEs.

At ZLB high-powered money and risk-free short-term government debt become indistinguishable, making monetary and fiscal policies blurred (Orphanides, 2013, p. 12). Together with unresolved fiscal issues, one cannot avoid the fiscal implications on the future monetary stance of central banks. Since AEs responded with unprecedented monetary and fiscal easing, their actions increased government budget deficits. Interestingly, countries that were expected to experience the sharpest slowdown implemented the largest stimulus packages and the greatest interest rates cuts. Such examples include the US and China whose stimulus packages were larger than can be accounted for their downturns. Conversely, stimulus packages for the UK and some euro area countries were too small and the real exchange rates depreciated

in most AEs, precipitating a fall in output, crowding in exports, other things equal (Eichengreen, 2010, p. 8).

The events that followed after the US subprime crisis and the Leman collapse speak volumes and confirm the crisis exposed underlying shortcomings in several countries. Among these is the lack of political consensus in the US that allowed egregious misconduct. If the banks were too big to jail in 2008, they became too big to jail post-crisis. Another example is the frailty of the euro area's institutional foundations that allowed the initial banking crisis to be transformed into a sovereign debt crisis, while the lacking banking and fiscal union pushed member states to issue debt in a currency they do not control. Going even further still, as the euro area crisis transformed from a typical balance sheet crisis into a deflationary depression with an evident paradox of thrift, Europe seems to be repeating the lesson the Americans learned during the 1930s in that the policy mix should be coordinated to overcome the depression. The two policies in the euro area are not pursuing the same objective of economic recovery and monetary policy alone is a poor substitute for other policies that are needed to restore economic balance (such as structural and labor market policies). The euro area would need Abenomics-like program but political and institutional setting is not favorable since the fiscal advocates of the confidence fairy (to borrow the term from Krugman) are counteracting monetary policy with their austerity measures, thereby hampering credit growth and recovery. The crisis had left enormous burden of debt that now weighs on the prospects of permanent recovery. Many European countries that have debt-to-GDP ratios of 80 percent or over have experienced the reduced market price of their debt and will likely undergo a process of deleveraging, which could be restricted to either the public or private sector or both simultaneously. Considering all these aspects, it will likely take the euro area longer to recover. As exiting of the US and the UK monetary policies commence in late-2014/early-2015, the US dollar and British Pound will likely appreciate against the euro, making its exports more competitive and thus stimulating growth. But since political will is in such short supply, it is unlikely the growth will be swift as Germany fails to choose between the 'lead or leave' alternatives, that were suggested by Soros (2014, p. 94), neither to support Eurobonds.

With the benefit of hindsight, it is easy to be critical but hard to determine what exactly should be done differently and whether governments should exercise more or less restraint in applying fiscal stimulus. Moreover, although unconventional monetary policies in AEs resulted in buoyant financial markets and boosted growth, its impact on the real economy is highly debatable. In

contrast to Keynes (who considered employment stabilization as the principal objective of fiscal policy achieved through public works), the traditional policy approach now seems to be implemented in reverse. Instead of allowing growth to be a by-product of new job creations, policymakers hope growth (through stabilizing incomes, consumption and investment) would generate the desired employment results. Indeed, in comparing real GDP for the US, the Euro area, the UK and Japan to a trend fitted over a decade ending in Q4 2007, none of these economies came even close to retracing the prosperous trend growth line prevailing before the crisis (see Orphanides, 2013, p. 5).

Both academic literature and international financial institutions increasingly recognize that the monetary stance in AEs *did* have spillover effects on EMEs. The initial phase of the crisis in late-2008 - characterized by capital flight, credit crunch, weakening commodity prices and substantial currency devaluation in EMEs – marked two key differences: **first**, the source of capital inflow reductions was the severe liquidity squeeze in *developed* (not developing) financial markets, and **second**, the consequent fall in global demand prevented EMEs to export their way out of crisis despite substantial currency devaluation (Ozkan & Unsal, 2012, p. 4). As such, one of the main channels of vulnerability for EMEs as well as the BRICs remains the cyclicity of global capital flows and the consequent upward pressure on asset prices and exchange rates during an upswing (and the opposite occurring during a downswing). During the implementation of LSAP programs, EMEs were not affected symmetrically like AEs that experienced deflationary pressures and some currency depreciation. Indeed, the surge in capital inflows added to concerns regarding inflation, currency appreciation, higher asset prices and in some cases too strong growth rates. Also contrary to AEs where fiscal policy tended to be procyclical (expanding in booms, contracting in recessions), the BRIC policymakers acted mostly countercyclical, responding with fiscal expansion to mend the economic downturn. During the implementation of unconventional monetary policies in AEs, the closely connected transmission channels included the portfolio flows, exchange rate, policy rate, long-term interest rates and international bank lending. In turn, the LSAPs lowered the BRICs' short-term policy rates and their long-term rates. They also influenced global asset allocation and the cross-border capital flows, impacting the BRICs' capital markets, boosting fluctuations in exchange rates and foreign reserves and incurring substantial currency mismatches (while many EMEs accumulated more local currency assets and more foreign currency liabilities).

Rajan (2013, p. 12) rightfully points out that policymakers in AEs usually expect the capital-receiving countries to follow textbook reactions to capital inflows, without acknowledging these may be politically difficult to implement. Indeed, when discussing the implications of unconventional monetary policies in AEs, there are two prevailing views. *First*, typically held by policymakers in AEs, sees no major impact. In their opinion, QE spurs domestic growth and increases demand for exports by EMEs, bringing benefits to the global economy. The *second view*, held predominantly by EMEs (including the BRICs), underlines the adverse effects of the procyclical effects of the QE policies, including a depreciation of currencies in AEs and boosting the already significant risk-adjusted interest rate differentials, thereby leading to large capital inflows, credit growth and inflation pressures. Indeed, empirical research found the effects of QE tended to be larger in EMEs than in the domestic markets of AEs (see Chen et al, 2012, p. 232, and Chudnik & Fratzscher, 2012, p. 24). At the same time, some claim there were no statistically significant effects of UMP on total net inflows of capital into EMEs, such policies only having affected the composition of flows toward higher proportion of portfolio flows (Ahmed & Zlate, 2013, p. 24). In either case, the events confirm that the accommodative monetary policy in AEs and the fiscal tightening in EMEs would be more efficient had international coordination been in place. Lastly, the final phase in the crisis aftermath coincided with the mid-2013 tapering announcement by the US Fed. In turn, EMEs with better fundamentals and deeper financial markets proved more resilient to the adverse shock, while Brazil and India proved exceptionally susceptible. As of late, the BRICs marked lower economic growth, mirroring the deceleration of financial and economic activity as well as perhaps the increased perception of political risks in these countries. It might also be the case that investors have already moved on to search for new BRICs-like economies. Indeed, an alphabet soup of acronyms (BRICK, BRMIC, BRICA, MINT, CIVETS, BRICET and CEMENT) has recently come forth and is subject to increasing interest. Nevertheless, ending unconventional monetary policies in AEs will require all countries to prepare adequate supplies of liquidity. As this exiting remains an aspect we know very little about, it is unknown whether the tapering will be successful or if reentering will be possible at all (should the consequences of exit prove to be too grave).

The recent crisis shows monetary policy is hardly the only game in town. The pre-crisis orthodoxy that central banks should be one-objective one-instrument institutions has been challenged, increasing the need to focus on financial stability as well as for further Basel accords and permanent dollar swap facilities. All things considered, crisis and credit instability *are* inherent to capitalistic system. Moreover, the recent events also confirm that in a globalized

world, decoupling does not work. Indeed, empirical research found interest rates and asset prices to be increasingly correlated globally during the unconventional monetary policies. Consequently, as global capital markets become increasingly integrated, more cooperation and regulations to limit moral hazard are necessary. However, at the same time, although monetary coordination seems logical, it is highly unlikely. As such, the current state of affairs is neither intelligent nor beautiful, neither just nor virtuous. 'In short we dislike it, and we are beginning to despise it. But when we wonder what to put in its place, we are extremely perplexed,' is a notion Keynes might have uttered had he been alive today. This, in turn, leads at least one to believe that in the long run, Keynes's ideas are still very much alive.

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APPENDIXES

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Appendix A. Abstract / Povzetek

ABSTRACT

The purpose of my Master's Thesis is to study macroeconomic policies employed during the recent crisis by advanced economies and their effect on BRIC countries. First, I review the development of the macroeconomic policy mix concept and discuss changes in the policy mix of advanced economies before and after the Lehman Brothers investment bank collapse in September 2008. This is followed by an overview of the transmission channels of spillovers on emerging market economies and their possible policy responses in countering the crisis that has taken the form of exogenous shock. In the main part, I present the case studies of four economies, collectively known as the BRICs (that is, Brazil, Russia, India, China), with respect to increased capital inflows that coincided with the implementation of unconventional monetary policies in advanced economies. In the conclusion, I present my findings.

POVZETEK

Namen pričujoče magistrske naloge je preučiti makroekonomske politike, ki so jih v času nedavne gospodarske krize vpeljale razvite države ter njihov vpliv na države BRIK. Na začetku opišem razvoj koncepta makroekonomskih politik in obravnavam spremembe v razvitih gospodarstvih pred in po zlomu investicijske banke Lehman Brothers septembra 2008. Nato obravnavam kanale, po katerih potujejo vplivi nestandardnih politik razvitih gospodarstev na razvijajoča se gospodarstva ter nabor razpoložljivih makroekonomskih orodij, s katerimi se lahko slednje zoperstavijo krizi, ki nastopa kot eksogen šok. V osrednjem delu magistrske naloge podrobneje predstavim primere štirih držav, ki so poznane pod akronimom BRIK (tj. Brazilija, Rusija, Indija in Kitajska), in sicer v oziru povečanega pritoka kapitala, ki je nastopil v času implementacije nestandardnih monetarnih politik v razvitih državah. V zaključku podam svoja opažanja.

Appendix B. List of Abbreviations

AEs	Advanced Economies
APP	Asset Purchase Program
APF	Asset Purchase Facility
ABS	Asset-Back Securities
BCB	Brazil's central bank (<i>Banco Central do Brasil</i>)
BOE	Bank of England
BOJ	Bank of Japan
BRIC	Grouping acronym for B razil, R ussia, I ndia and C hina
BRL	Brazilian <i>real</i>
CBPP	Covered Bond Purchase Program
CBR	Central Bank of Russia
CDS	Credit Default Swaps
CNY	Chinese <i>yuan renminbi</i>
ECB	European Central Bank
EFSF	European Financial Stability Facility
EFSM	European Financial Stabilization Mechanism
EMEs	Emerging Market Economies
EMU	Economic and Monetary Union
EU	European Union
EUR	Euro
FDI	Foreign Direct Investment
FII	Foreign Institutional Investment
Fed	United States Federal Reserve
FOMC	Federal Open Market Committee
GDP	Gross Domestic Product
IMF	International Monetary Fund
INR	Indian <i>rupee</i>
LSAP	Large Scale Asset Purchase
LTROs	Long-Term Refinancing Operations
MRO	Main Refinancing Rate
MBS	Mortgage-Backed Securities
NPL	Non-performing Loans
PDCF	Primary Dealer Credit Facility
PBOC	People's Bank of China
RBI	Reserve Bank of India
RMB	Chinese <i>renminbi</i>
RUB	Russian <i>ruble</i>
QE	Quantitative Easing
TAF	Term Auction Facility
TALF	Term Asset Backed Securities Loan Facility
TARP	Troubled Asset Relief Program
TSLF	Term Securities Lending Facility
UMP	Unconventional Monetary Policies
USD	US dollar
ZLB	Zero Lower Bound

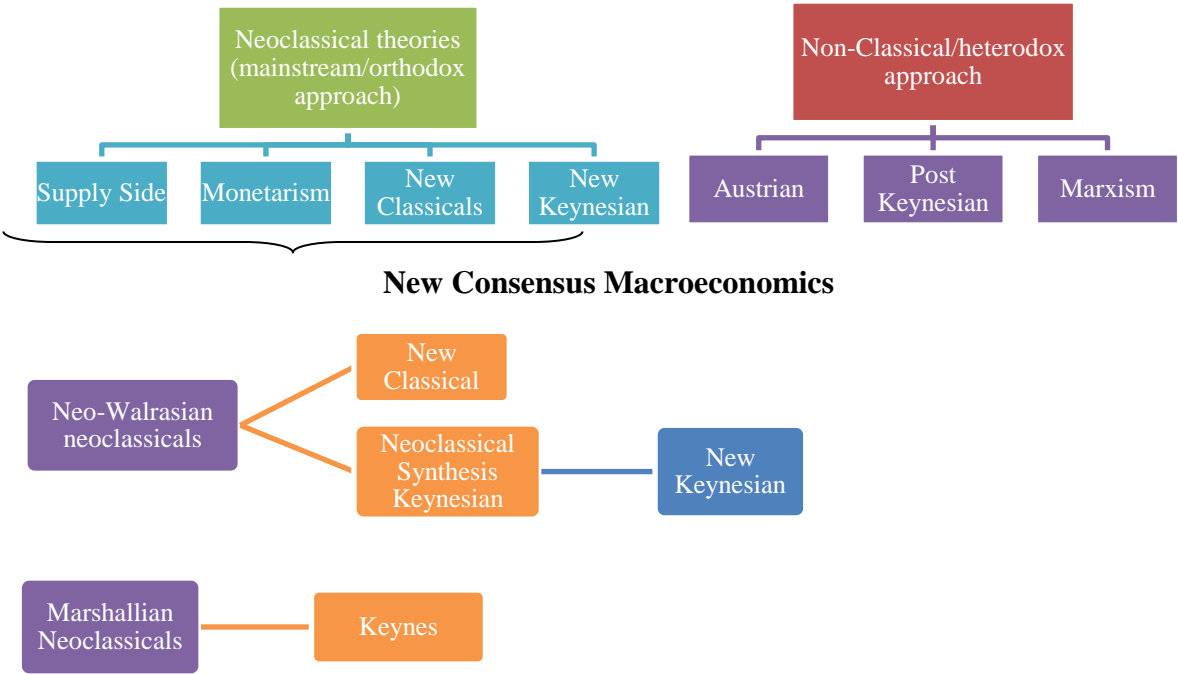
Appendix C. Systematic Comparison of Federal Reserve System (Fed), European Central Bank (ECB), Bank of England (BOE) and Bank of Japan (BOJ)

Table 3. Comparison of Key Central Banks

	Fed (estd. 1913)	ECB (estd. 1998)	BOE (estd. 1694)	BOJ (estd. 1882)
Chairperson (from 2008 onwards)	Ben Bernanke (2006-14), Janet Yellen (2014)	Jean-Claude Trichet (2003-11), Mario Draghi (2011)	Sir Mervyn King (2003-13), Mark Carney (2013)	Masaaki Shirakawa (2008-13), Haruhiko Kuroda (2013)
Monetary policy decision-making body	Federal Open Market Committee [consists of 7 members of the Board of Governors and 12 regional bank presidents].	Governing Council [comprising 6 members of the ECB Executive Board and 18 governors of national central banks of the Eurosystem].	Monetary Policy Committee [consists of 9 members].	Policy Board [comprising 9 members: the Governor, 2 Deputy Governors and 6 appointed members].
Independence from Political Influence	"independent within the government"	✓	Serves as an arm to HM Treasury and answers to UK's ruling party.	✓
Monetary policy objective(s)	Maximum employment and stable prices ('dual mandate'), moderate long-term interest rates.	Price stability within the Eurozone, supporting general economic policies.	Price stability (low inflation), supporting the Government's economic policies.	Sound development of the economy through the pursuit of price stability.
Quantification of goals	No official figure on stable price environment. Changing preferred inflation measure.	HICP inflation below, but close to, 2 percent over the medium term in the euro area.	Inflation target of 2 percent (in contrast to other central banks, inflation target is by the Treasury).	Approximately 0-2 percent CPI inflation in the medium- to long- term (optimal inflation is deemed endogenous and depends on past 'habits')
Monetary Policy Strategy	No published strategy. Focus on multiple indicators (risk management approach).	Two pillar strategy in guiding Governing Council's decisions (that is, economic and monetary analysis).	Inflation targeting.	Quantitative Easing in early 2000s; a 'two- perspective' approach later on.
Monetary Policy Implementation	Decentralized (operations conducted by the NY Fed).	Decentralized (operations conducted by the Eurosystem).	Implemented by the BOE's Monetary Operations.	Centralized.

Appendix D. Main school of economics

Figure 1. Main Schools of Economic Thought



Appendix E. Timeline of US Fiscal and Monetary Policy Actions¹⁴

Table 1: Timeline of US Fiscal and Monetary Policy Actions

8/2007	<p><i>FHA Secure Plan</i></p> <p>The Congress and White House expand mortgage lending authority of the Federal Housing Authority (FHA) and initiate the <i>FHA Secure Plan</i> which allowed certain borrowers in default to qualify for refinancing (Barth et al, 2009, p. 249).</p>
10/2007	<p><i>Hope Now and Master Liquidity Enhancement Conduit (MLEC)</i></p> <p>The <i>Hope Now</i> program sought to keep mortgage rates temporarily frozen but with no change in terms. However, the number of foreclosures still rose (Barth et al, 2009, p. 224). The <i>MLEC</i> was a 'Super SIV' rescue plan that was later canceled altogether (Shiller, 2008, p. 20).</p>
12/2007	<p><i>Term Auction Facility (TAF)</i></p> <p>It enabled the New York Fed to make up to \$200 billion of nonrecourse loans with a term up to five years to hedge funds, financial institutions and other qualified investors (Barofsky, 2012, p. 80). Specifically, institutions bid for short-term funds by putting up a wide range of securities as collateral (Barth et al, 2009, p. 234).</p>
2/2008	<p><i>Economic Stimulus Plan</i></p> <p>The \$152 billion Act (the equivalent of 1.06 percent of 2008 GDP) offered tax rebates for low- and middle-income taxpayers; tax incentives to stimulate business investment; and an increase in the limits imposed on mortgages that are eligible for purchase by Fannie Mae and Freddie Mac (Barth et al, 2009, p. 250).</p>
3/2008	<p><i>Term Securities Lending Facility (TSLF) and Primary Dealers Credit Facility (PDCF)</i></p> <p>The former allowed primary dealers to exchange less-liquid MBS for more-liquid Treasury securities, whereas the latter extended overnight borrowing from the Fed to primary dealers (Barth et al, 2009, p. 245).</p> <p>Sale of a controlling stake in Bear Stearns to JP Morgan Chase</p> <p>For just \$2 a share or \$236 million, while agreeing to outsource the management of \$30 billion worth of risky assets (Muolo & Padilla, 2008, p. 274).</p>
7/2008	<p><i>Housing and Economic Recovery Act (HERA)</i></p> <p>The <i>HERA</i> authorized the FHA to offer \$300 billion in new 30-year fixed-rate mortgages for subprime borrowers if lenders voluntarily write down principal loan balances to 90 percent of current appraisal value. This voluntary program was known as <i>Hope for Homeowners</i> (H4H) and lasted from October 2008 to September 2011. It also named the Federal Housing Finance Agency (FHFA) as the single regulator for Fannie Mae, Freddie Mac, and the Federal Home Loan Banks (all GSEs); and provided temporary authority to the Treasury secretary to purchase any obligations (Barth et al, 2009, p. 252).</p>
9/2008	<p>Lehman Brothers bankruptcy, two GSEs put into conservatorship, and temporary help created to money market mutual funds</p> <p>Fannie Mae and Freddie Mac were placed into conservatorship under the FHFA and the Treasury announced its purchase of MBS held by the two GSEs in order to help make loan financing available to home buyers. The Treasury established a new secured lending credit facility, the <i>GSE Credit Facility</i> (GSECF). Funding was provided directly by the Treasury from its general fund held at the New York Fed in exchange for guaranteed MBS issue by Freddie and Fannie or advances made by the Federal Home Loan Banks. Additionally, when a few money market funds started 'breaking the buck' (that is, their net asset value fell below \$1) that same month, the Treasury announced a temporary <i>Guaranty Program for Money Market Mutual Funds</i>.</p>

(table continues)

¹⁴ Shaded areas represent monetary policy actions.

(continued)

15/9/08	<p>\$85 billion loan to American International Group (AIG)</p> <p>The insurance giant suffered a liquidity crisis following its downgrade. It received loan in exchange for equity warrants that would give it a 79 percent ownership stake (essentially nationalizing it); a month later a loan of \$37.8 billion in cash collateral in exchange for investment-grade, fixed-income securities; and in the following two months, another \$20.9 billion loan from the Fed and \$40 billion in capital from the Treasury were offered (Barth et al, 2009, p. 6). Treasury's loans to AIG were fully repaid in January 2011.</p>
9/2008	<p><i>Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF)</i></p> <p>To reduce funding pressures felt by money market mutual funds and borrowers in the commercial paper markets, the Fed established the AMLF which offered non-recourse loans to depository institutions so they could buy asset-backed commercial paper from money market funds.</p>
10/2008	<p>Emergency Economic Stabilization Act (EESA) and TARP</p> <p>EESA authorized the Treasury to use up to \$700 billion to purchase mortgage assets or any other troubled assets deemed necessary for market stability. Within the frameworks of EESA, the <i>Troubled Assets Relief Program</i> (TARP) was also announced. TARP was split into four categories: housing support programs; financial institution support programs; automotive industry support programs, and asset support programs (Barofsky, 2011). The first major outflow came in form of the <i>Capital Purchase Program</i> that acquired \$250 billion of senior preferred shares in financial institutions (following the British example of boosting bank capital in exchange for equity stakes).</p>
10/2008	<p><i>CPFF and MMIFF</i></p> <p>The Fed establishes the <i>Commercial Paper Funding Facility</i> (CPFF) where a SIV would acquire 3-month dollar-denominated commercial paper through the New York Fed's primary dealers. Also, the Fed established the <i>Money Market Investor Funding Facility</i> (MMIFF) which provided liquidity to US money market investors (Barth et al, 2009, p. 246). AMLF and CPFF closed in February 2010, while MMIF closed in October 2009.</p>
11/2008	<p>TALF; the Fed starts buying obligations of GSEs</p> <p>Addressing the shutdown in the markets for asset-backed securities, the Fed created the <i>Term Asset-Backed Securities Loan Facility</i> (TALF) under which the New York Fed made up to \$200 billion of nonrecourse loans with a term up to five years to hedge funds, financial institutions, and other qualified investors (Barofsky, 2012, p. 80). Also, the Fed announced plans to buy direct obligations of housing-related GSEs (Fannie Mae, Freddie Mac, and the Federal Home Loan Banks) and MBSs backed by Fannie Mae, Freddie Mac and Ginnie Mae.</p>
12/2008	<p>FOMC lowers the target for federal funds rate to a range of 0 to 25 basis points (where it has remained since)</p>
11/2008-03/2009 and 3/2009-3/2010	<p>The first round of QE</p> <p>The Fed began purchasing housing-related government-sponsored entities (GSEs) and agency-guaranteed MBS (which represent open-market-operations eligible securities). The scale of QE1 was expanded in March 2009, aiming to improve liquidity at time when financial markets were dysfunctional. In total, QE1 included \$1.25 trillion in agency MBS, \$175 billion in agency debt and \$300 billion in longer-term Treasury securities (Gagnon et al, 2010, p. 11).</p>

(table continues)

(continued)

2/2009	<p><i>Financial Stability Plan (FSP)</i></p> <p>New name for the old TARP. It had four initiatives: first, conduct stress tests for banks; second, initiate a new investment program that combined money from the Fed, the Treasury, and the FDIC with that of private players to purchase up to \$2 trillion of legacy assets, including residential MBS (this became known as the Public-Private Investment Program, PPIP); third, incorporate residential MBS into Fed's TALF; and fourth, initiate a new \$50 billion housing program known as <i>Home Affordable Modification Plan</i>, HAMP (Barofsky, 2012, p. 123).</p>
02/2009	<p><i>The American Recovery and Reinvestment Act (ARRA)</i></p> <p>The primary objective of the \$797 billion ARRA (in the amount of 5.57 percent of 2009 GDP) was creating jobs, providing temporary relief programs and direct spending in infrastructure, education, health, and renewable energy. The approximate cost was estimated to be \$787 billion (at time of this writing, ARRA's official website states \$816.3 billion have been paid out). Shortly after the law was passed, several economists voiced their concerns that the stimulus was not large enough to counter the economic downturn. Krugman (2008, p. 86) criticized the rescue plan for being inadequate in its size, 'designed to give a relatively short-term boost to the economy, not long-term support'; while Roubini voiced concerns it was 'too little, too late' (Schuman, 2009), and Stiglitz believed the stimulus was 'badly designed and not enough (..) It is trying to offset the deficiency in aggregate demand and it is just too small' (Stein, 2009).</p>
	<p><i>Making Home Affordable Program</i></p> <p>Provided relief to families at risk of foreclosure and to help with the recovery of the housing market. The program also incorporated the previously-established <i>HAMP</i> (see above) which seeks to modify the terms of mortgages (in May 2013, the program has been extended through December 31, 2015).</p>
5/2010	<p><i>Volcker Rule</i></p> <p>It was passed under the <i>Restoring American Financial Stability Act</i> and designed to limit banks' ability to gamble with their capital in proprietary trading, implementing broad regulation of the derivatives markets, addressing the ongoing conflicts of interest at the credit rating agencies and settling bank capital requirements (Barofsky, 2012, p. 218).</p>
07/2010	<p><i>Dodd–Frank Wall Street Reform and Consumer Protection Act (known also as the Wall Street Reform)</i></p> <p>It aimed to put a hard cap on the size of banks, calling for higher capital levels that would absorb potential losses, and ultimately limiting the danger of them being too big to fail.</p>
11/2010- 6/2011	<p><i>The second round of QE</i></p> <p>It included reinvesting principal payments on holdings of agency securities in longer-term Treasuries and additional \$600 billion purchase of longer-term Treasuries, but still resulted in anemic growth, high unemployment and accelerated inflation, which in turn increased uncertainties and prevented the Fed from pursuing a new round of QE.</p>
12/2010	<p><i>Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act</i></p>
08/2011	<p><i>The Fed provides direct signals about future policy path</i></p> <p>The Fed announced it would hold short-term interest rates fixed until mid-2013 (allowing the economic agents to factor in this decision).</p>
10/2011- end 2012	<p><i>Operation Twist</i></p> <p>Replaced short-term Treasury bills with long-term government bonds with maturity of 3-30 years in the amount of \$400 billion, aiming to maintain low long-term inter rates.</p>
09/2012 – present	<p><i>The third QE (open-ended)</i></p> <p>Entailed open-ended flow-based bond purchases of \$40 billion of MBS per month and \$45 billion longer-term Treasury securities per month.</p>
12/2012	<p>The Fed switches from specifying the near-zero policy rate time horizon to outcome-based forward guidance, giving thresholds for unemployment and inflation rates.</p>
5/2013	<p><i>Fed's QE Tapering Announcement</i></p>

Appendix F. Timeline of Monetary and Fiscal Policy Actions in Euro Area and UK

Table 1: Timeline of Monetary and Fiscal Policy Actions in Euro Area and UK

12/2007	The C5 (that is, the Fed, ECB, BOE, Swiss National Bank and Bank of Canada) address elevated pressures in short-term funding market. Under US's TAF, ECB and the Fed jointly conduct two US dollar liquidity-providing operations against ECB-eligible collateral.
3/2008	The ECB introduces 6-month longer-term refinancing operations.
10/2008	The key central banks in the US, euro area, the UK, Japan, Switzerland and Sweden make an unprecedented coordinated interest rate cut.
10/2008	The UK: the British government announces the first £500 billion bank rescue package and a supertax on banking bonuses in order to reduce the risk of further banking crisis.
10/2008	Bank of England announces Discount Window Facility It intended to provide short-term liquidity to stressed institutions against a wide range of collateral.
11/2008	European Commission announces the European Economic Recovery Plan It foresees short-term budgetary stimulus package for the EU as a whole amounted to €200 billion (that is, 1.8 percent of 2008 GDP). In comparison, the two-year euro area stimulus was smaller than the five-year ARRA in the US. It amounted to below 2 percent of euro area GDP compared to 5 percent of US GDP (Cwik & Wieland, 2010, p. 10).
1/2009	The UK: The British government announces the second £50 billion bank rescue plan.
1/2009	Bank of England announces the Asset Purchase Facility It entailed purchases of commercial paper and corporate bonds to reduce the liquidity premium that had abnormally wide spreads.
2008-9	UK stimulus package It totaled £31 billion (that is, 2.2 percent of 2009 GDP) and consisted of 75 percent of the VAT reduction, support to construction sector as well as job creation.
3/2009-1/2010	Bank of England implements QE It purchased £200 billion assets, of which £198 billion were UK government securities, the gilts. This amounted to around 14 percent of annual nominal GDP (Joyce et al, 2010b, p. 155).
5/2009	The ECB launches one-year maturity refinancing operations
6/2009-6/2010	The ECB initiates the Covered Bond Purchase Program (CBPP) It purchases covered bonds ¹⁵ denominated in euro and issues in the euro area for a total value of €60 billion, in order to revive covered bond market (the primary source of funding for banks in the large part of the euro area).
1/2010	US dollar/euro swaps program ends (but is reactivated in May 2010)
5/2010	Greece receives first round of economic assistance (€110 billion in tranches from May 2010 to June 2013)
5/2010	The ECB initiates the Securities Markets Programme (SMP) First of the three ECB policies involving government bond purchases, where the ECB directly purchased government debt of distressed countries (the planned amount of purchases was not announced). During the first phase, only bonds of Greece, Ireland and Portugal were purchased. The program was expanded August 2011 to include Italy and Spain. The average maturity of holding is around 4 years.

(table continues)

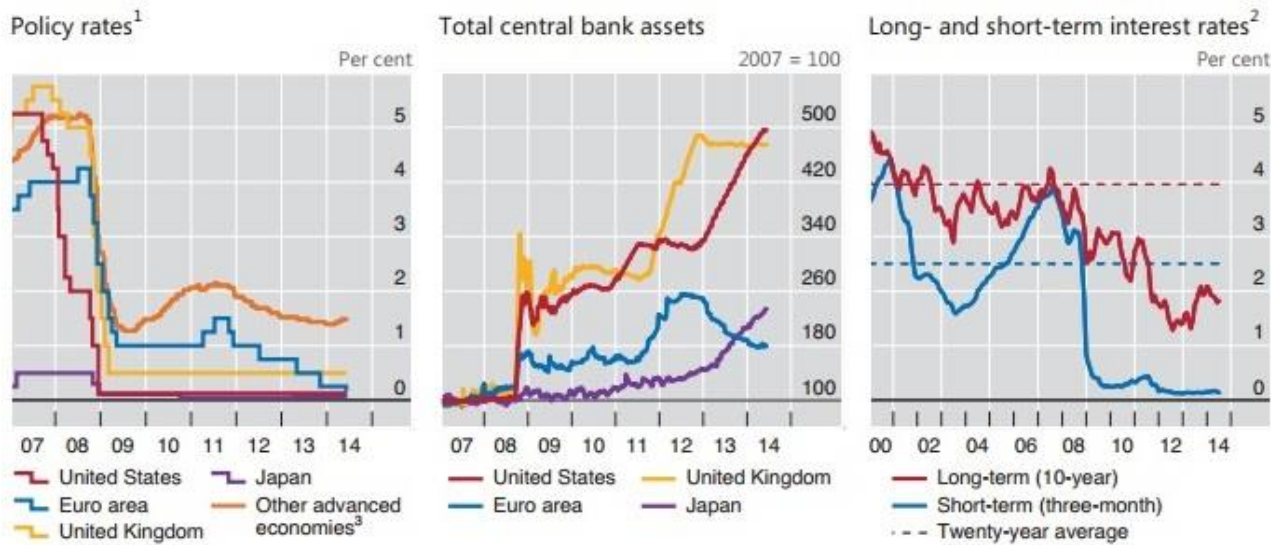
¹⁵ Covered bonds are long-term debt securities that are issued by banks to refinance loans to the public and private sector, often in connection with real estate transactions (Cour-Thimann & Winkler, 2013, p. 12).

(continued)

6/2010	<i>European Financial Stability Facility (EFSF) and the European Financial Stabilization Mechanism (EFSM)</i> are established
11/2010	Ireland receives €85 billion financial aid from the IMF, euro zone, the non-euro member UK, Sweden and Denmark, followed by the collapse of the country's banks as well as government's near-bankruptcy.
12/2010	ECB and BOE agree on swap lines
1/2011	Greek debt is given junk status by Fitch rating agency, after S&P and Moody's
1/2011	<i>The European Banking Authority (EBA); the European Securities and Markets Authority (ESMA); the European Insurance and Occupational Pensions Authority are established</i>
5/2011	Portugal receives €78 billion to finance its budget deficit, reduce government's debt and implement banking reforms and structural reforms.
9/2011	The German appointee at the ECB resigns in protest of the ECB's bond buying program, it was the 'end of the ECB as we know it', referring to an end of the historical influence of the German Bundesbank.
10/2011	<i>European Stability Mechanism (ESM)</i> is fully functional.
10/2011	The ECB increases use of unconventional instruments to stabilize financial markets and announces it would continue providing unlimited liquidity to euro area banks.
12/2011	<i>The ECB initiates two 3-year Long-Term Refinancing Operations (LTRO)</i> The LTROs were an extension to the ECB's main lending to banks (the Main Refinancing Operation, MRO). Under the LTRO (much like under the MRO), banks receive loans against a variety of collateral, subject to a collateral-specific haircut schedule, whereas the loans were at floating interest rate, tied to the ECB's policy rate.
3/2012	Greece receives second round of economic assistance (€164.5 billion)
3/2012	European Fiscal Compact signed (enters into force April 2014) Intergovernmental treaty put in place of the previous Stability and Growth Pact, signed by all EU member states except the Czech Republic and the UK. Among other things, it limits general budget deficit to under 3 percent of GDP and the yearly structural deficit to 1 percent of GDP (if the debt-to-GDP ratio is significantly below 60 percent).
2012	Spain receives €100 billion, following the property bubble that left sizeable amount of non-performing loans.
2012	Bank of England initiates the Funding for Lending Scheme Intended to spur lending directly, it gives banks access to cheap funds (Romer, 2013, p. 16).
9/2012	<i>The ECB initiates the Outright Monetary Transactions (OMTs) program</i> Third ECB policies involving government bond purchases. The programs enables the ECB to participate in the secondary sovereign bond markets by buying bonds of troubled governments that have formally asked for help and also agreed to undergo a macroeconomic adjustment in line with the EFSF/ESM program (Cour-Thimann & Winkler, 2013, p. 17). As of today, no bonds have been purchased under this program.
1/2013	<i>The Treaty on Stability, Coordination and Governance (known also as the European Fiscal Compact)</i> enters into force.
6/2013	Cyprus reaches a long-awaited bailout agreement, which was put in place to restructure its oversized banking sector and rebuild its public finances.
6/2014	First steps into negative interest rate territory, as the ECB cuts depo rate to -0.10 percent, main refinancing rate to 0.15 percent and marginal lending rate to 0.40 percent. The rates are further cut in September 2014.

Appendix G. Figures relating to advanced economies

Figure 1. Accommodative policy holds down bond yields, assets remain high

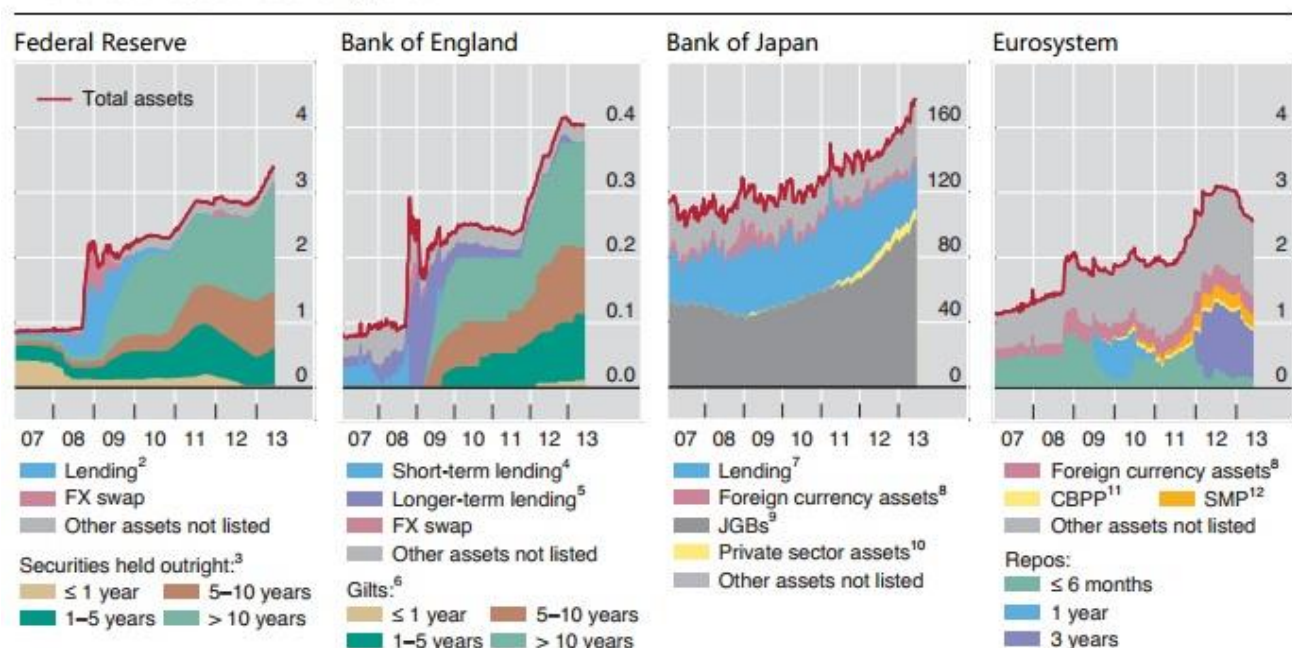


¹ Policy rate or closest alternative; for target ranges, the midpoint of the range. ² Based on monthly averages of daily nominal rates; simple average of the euro area, Japan, the United Kingdom and the United States. ³ Simple average of Australia, Canada, New Zealand, Norway, Sweden and Switzerland.

Source: Bank for International Settlement. *84th Annual Report* (2014, p. 24).

Figure 2. Central bank balance sheet size and comparison

In trillions of respective currency units



¹ Bank of England and Federal Reserve: breakdown by remaining maturity; Eurosystem: breakdown of outstanding repo operations by original maturity. ² Outstanding in repos, term auction facility, other loans and net portfolio holdings of Commercial Paper Funding Facility LLC. ³ US Treasury securities, mortgage-backed securities and agency debt; face value. ⁴ One-week, other maturity within-maintenance period, and fine-tuning repo operations. ⁵ Longer-term repo operations. ⁶ Holdings of the Asset Purchase Facility; proceeds. ⁷ Receivable under resale agreements and loans excluding those to the Deposit Insurance Corporation. ⁸ Includes US dollar liquidity auctions. ⁹ Japanese government bonds. ¹⁰ Commercial paper, corporate bonds, exchange-traded funds and listed real estate investment trust securities. ¹¹ Covered bonds held under the Covered Bond Purchase Programme (CBPP) 1 and the CBPP 2. ¹² Securities held under the Securities Markets Programme (SMP).

Source: Bank for International Settlement. *83th Annual Report* (2013, p. 69).

Figure 3. Annual GDP growth in %

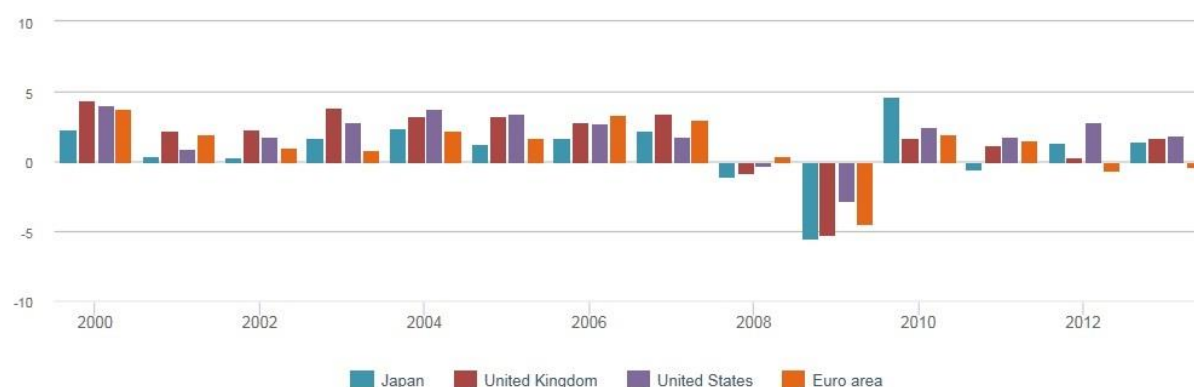
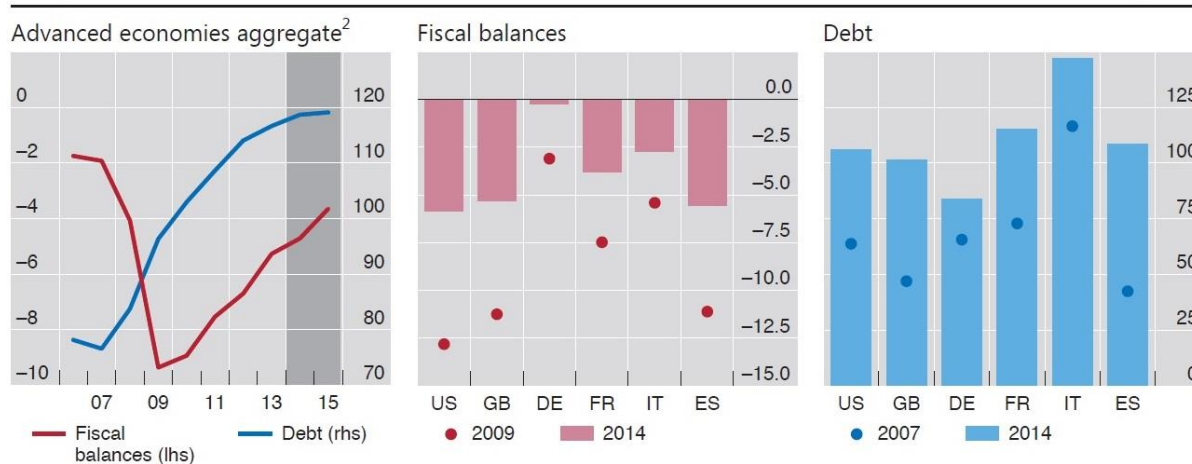


Figure 4. Fiscal consolidation in AEs

As a percentage of GDP

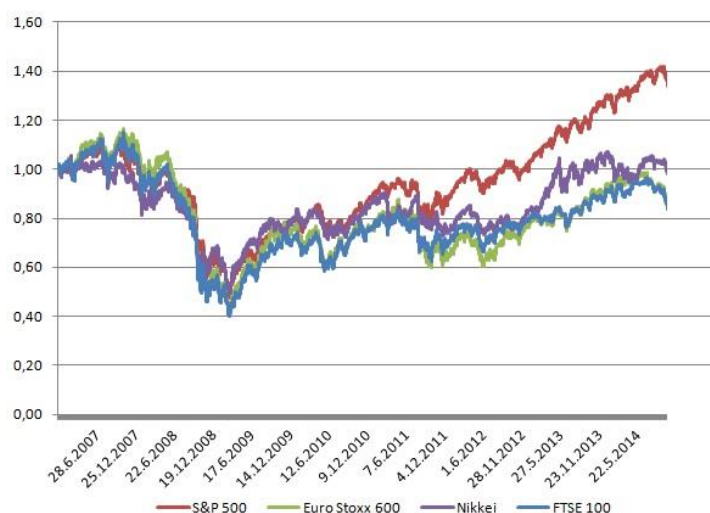


DE = Germany; ES = Spain; FR = France; GB = United Kingdom; IT = Italy; US = United States.

¹ Data refer to the general government sector; debt data are for gross debt. ² Weighted average based on 2005 GDP and PPP exchange rates of Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and the United States. The shaded area refers to projections.

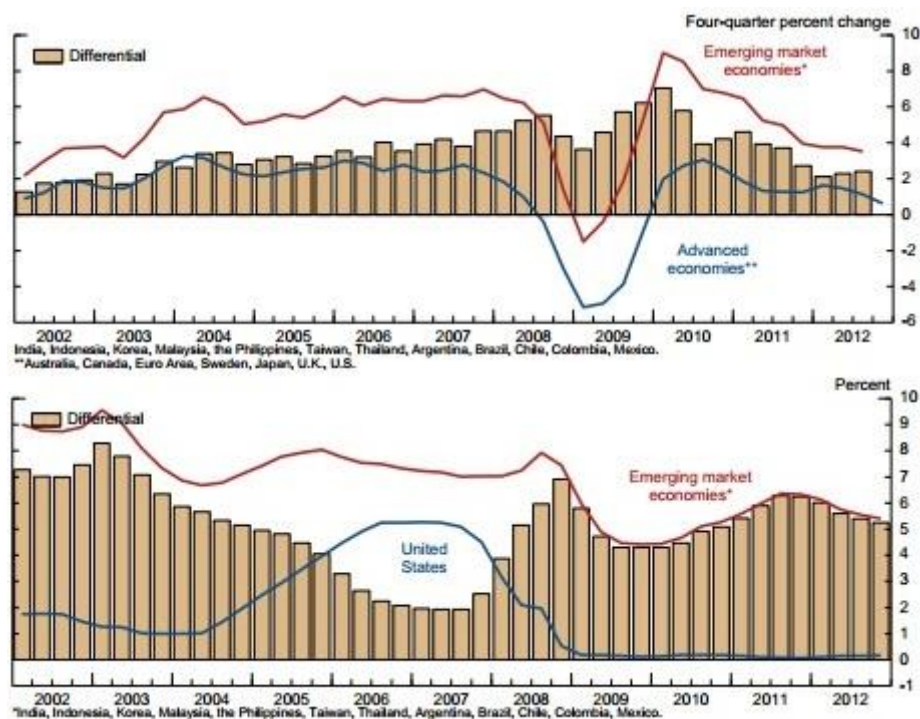
Source: Bank for International Settlement. *84th Annual Report* (2014, p. 47).

Figure 5. Major equity indices (note: 1.1.2007=1,00)



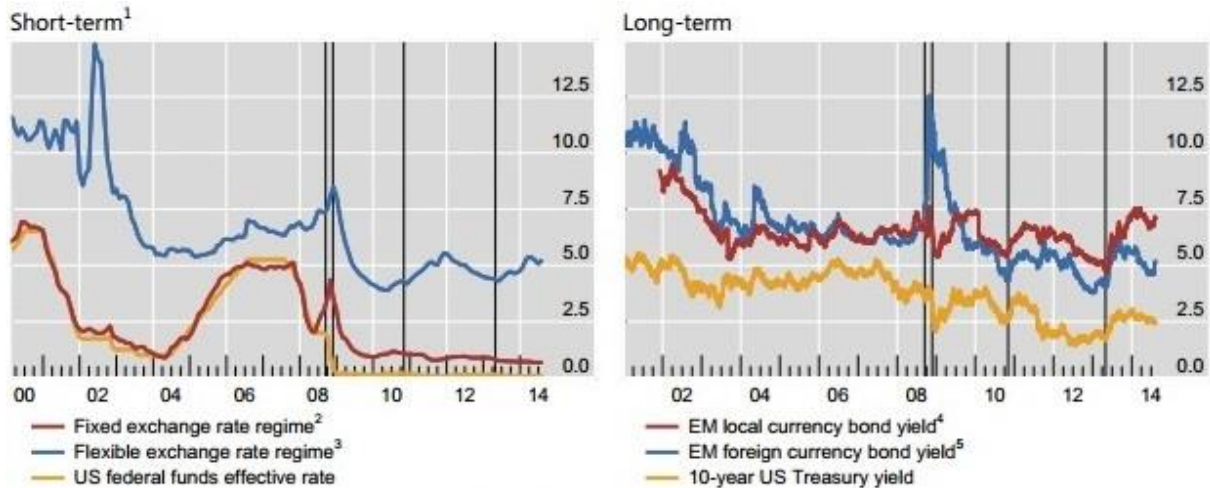
Appendix H. Figures relating to the transmission mechanism of spillovers to EMEs

Figure 1. Some determinants of net inflows to EMEs: left graph shows real GDP, right graph shows policy interest rates



Source: Ahmed & Zlate. (2014). *Capital Flows to Emerging Market Economies: A Brave New World?*, p. 33.

Figure 2. Interest rates (in %)



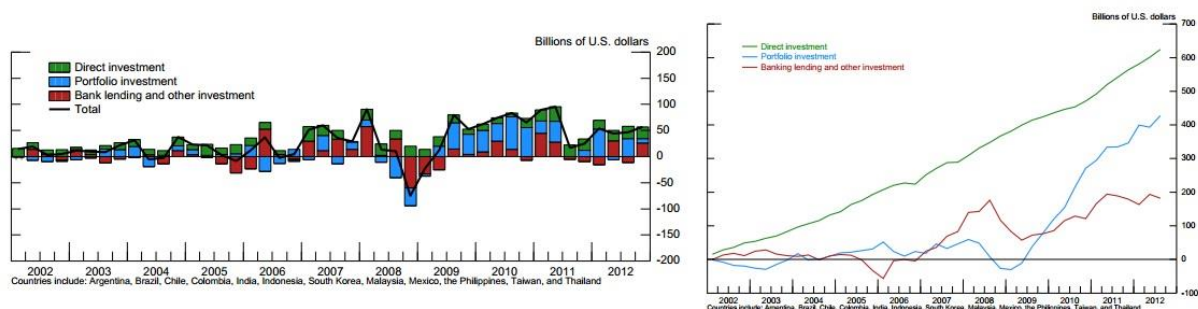
Vertical lines indicate bankruptcy of Lehman Brothers on 15 September 2008, Federal Reserve announcements of quantitative easing on 25 November 2008 and 3 November 2010 and FOMC hint on tapering on 1 May 2013.

¹ Three-month Treasury bill yield for Algeria, three-month interbank rates otherwise. ² Simple average of Hong Kong SAR, Saudi Arabia and the United Arab Emirates. ³ Simple average of Algeria, Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Singapore, South Africa, Thailand and Turkey. ⁴ JPMorgan Government Bond Index – Emerging Markets (GBI-EM), 7–10 years. ⁵ JPMorgan Emerging Market Bond Index (EMBI), 7–10 years.

Left-hand side shows average policy rates with fixed exchange rate economies moved very closely with the US federal funds rate. This tendency is also evident in economies with flexible exchange rate, while their rates only started to diverge post-tapering announcement in May 2013, as many EMEs tightened monetary policy due to increased market volatility.

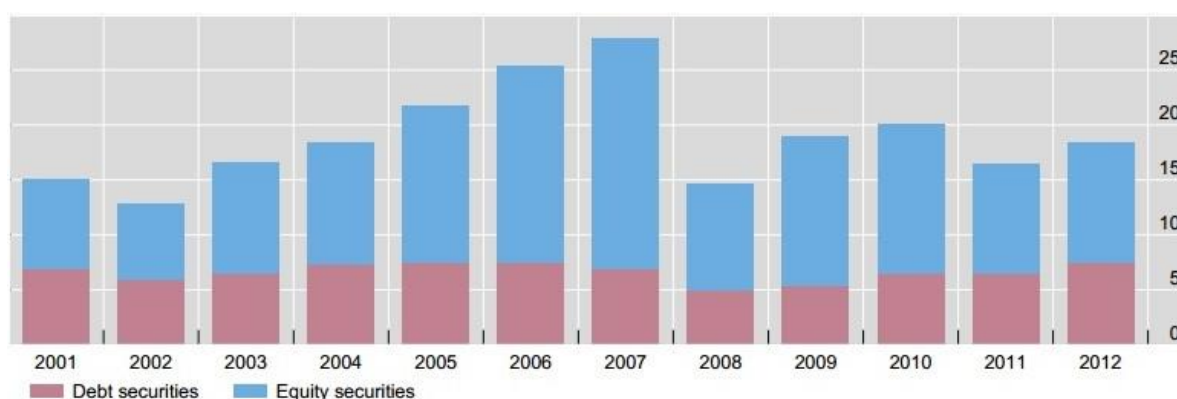
Source: Mohanty. (2014). *Unconventional Monetary Policy and the Indian Economy*, p. 6.

Figure 3. Net flows to EMEs



Source: Ahmed & Zlate. (2013). *Capital Flows to Emerging Market Economies: A Brave New World?*, pp. 30-1.

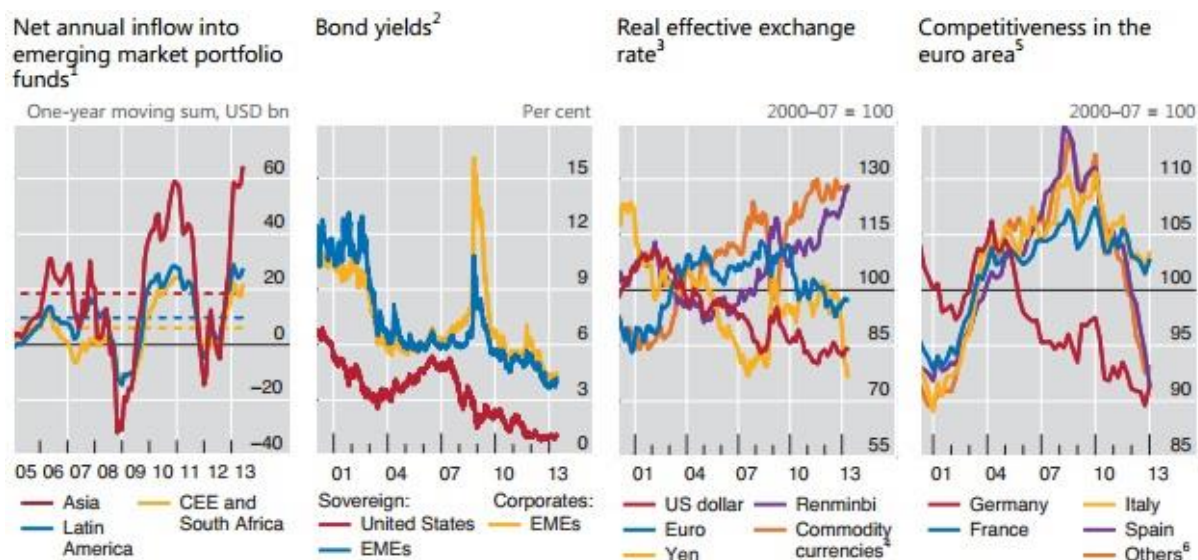
Figure 4: Portfolio Investment in EMEs (as % of domestic credit – that is, bank credit to private and public sector)



¹ Derived portfolio investment liabilities. Emerging market economies: Algeria, Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Saudi Arabia, Singapore, South Africa, Thailand, Turkey, the United Arab Emirates and Venezuela. ² Bank credit to the private and public sector.

Source: Takáts & Vela. (2014). *International monetary policy transmission*, p. 40.

Figure 5: Transmission channels and the global spillover



¹ Sums across equity and bond markets in major economies in each region. Data cover net portfolio flows (adjusted for exchange rate changes) to dedicated funds for individual EMEs and to EME funds for which a country or at least a regional decomposition is available. The dashed lines represent the average over the period shown. CEE = central and eastern Europe. ² Bank of America Merrill Lynch indices: for EME government bonds, Emerging Markets External Debt Sovereign Index; for US government bonds, US Treasury Master Index; for EME corporate bonds, Emerging Markets Corporate Plus Index. ³ In terms of relative consumer prices; an increase indicates an appreciation against a broad basket of currencies. ⁴ Simple average of the Australian dollar and the Canadian dollar. ⁵ ECB real harmonised competitiveness indicator based on the effective exchange rate vis-à-vis major trading partners and other euro area members, deflated by unit labour costs. An increase indicates a decrease in cost competitiveness. ⁶ Simple average of Greece, Ireland and Portugal.

Source: Bank for International Settlement. (2013). *83th Annual Report*, p. 21.

Appendix I. Figures relating to the BRICs

Figure 1. Annual GDP growth rates for BRICs

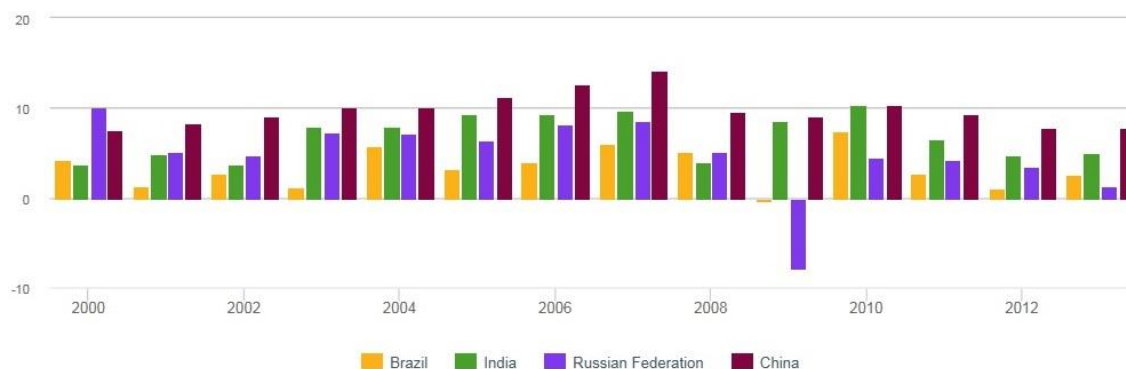


Figure 2. FDI net inflows for BRICs, as percent of GDP

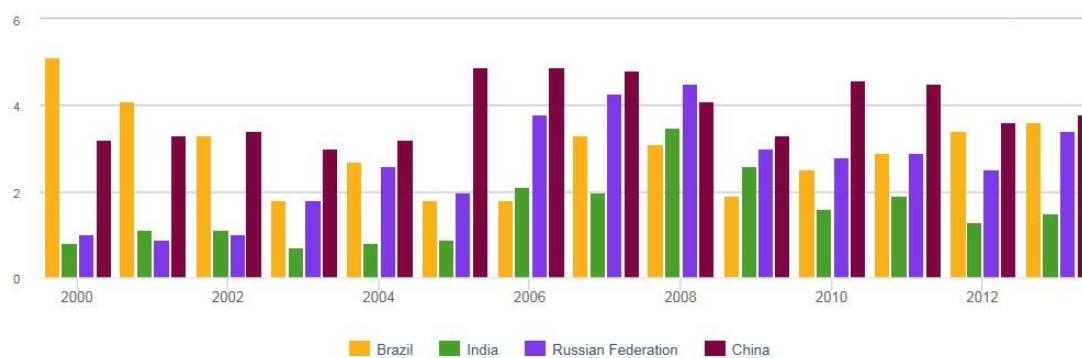
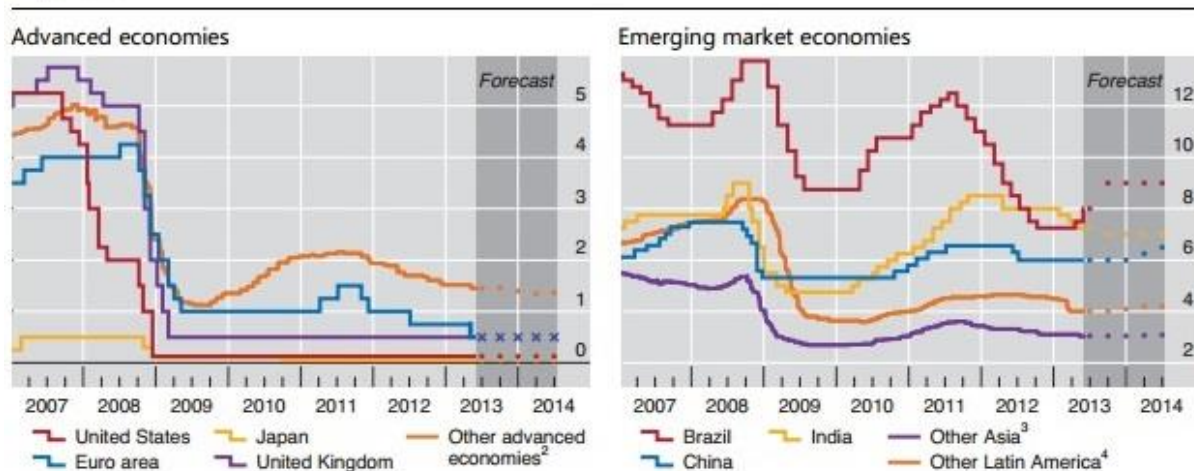


Figure 3. Policy rates: AEs vs. BRICS

Policy rates¹

In per cent

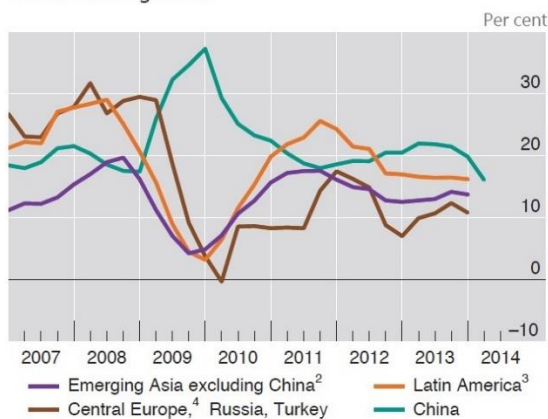


¹ Policy rate or closest alternative; for target ranges, the midpoint of the range. The dots and crosses show the JPMorgan Chase forecast as of 31 May 2013 for the policy rates in June 2013, September 2013, December 2013, March 2014 and June 2014. Median forecast from Bloomberg as of 31 May 2013 for Norway, Sweden and Switzerland. Aggregates are weighted averages based on 2005 GDP and PPP exchange rates. ² Australia, Canada, New Zealand, Norway, Sweden and Switzerland. ³ Chinese Taipei, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines and Thailand. ⁴ Chile, Colombia, Mexico and Peru.

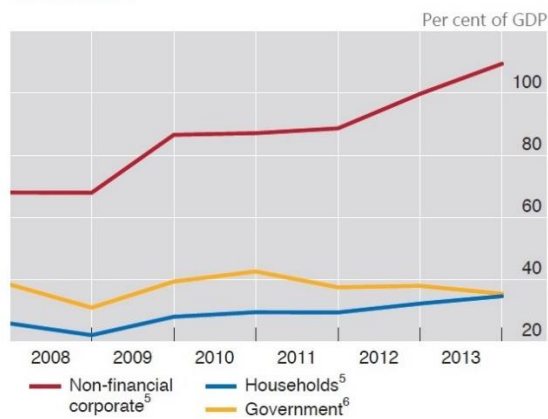
Source: Bank for International Settlement. (2014). *84th Annual Report*, p. 24.

Figure 4. Strong credit growth

Private credit growth¹



Sectoral debt



¹ Simple average of year-on-year percentage changes in total credit to the non-financial private sector. ² Hong Kong SAR, India, Indonesia, Korea, Malaysia, Singapore and Thailand. ³ Argentina, Brazil, Chile and Mexico. ⁴ The Czech Republic, Hungary and Poland. ⁵ China, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Korea, Mexico, Poland, Singapore, Thailand and Turkey. ⁶ Economies listed in footnotes 2-4, China, Russia and Turkey.

Source: Bank for International Settlement. (2014). *84th Annual Report*, p. 43.

Figure 5. US dollar vis-à-vis BRIC currencies

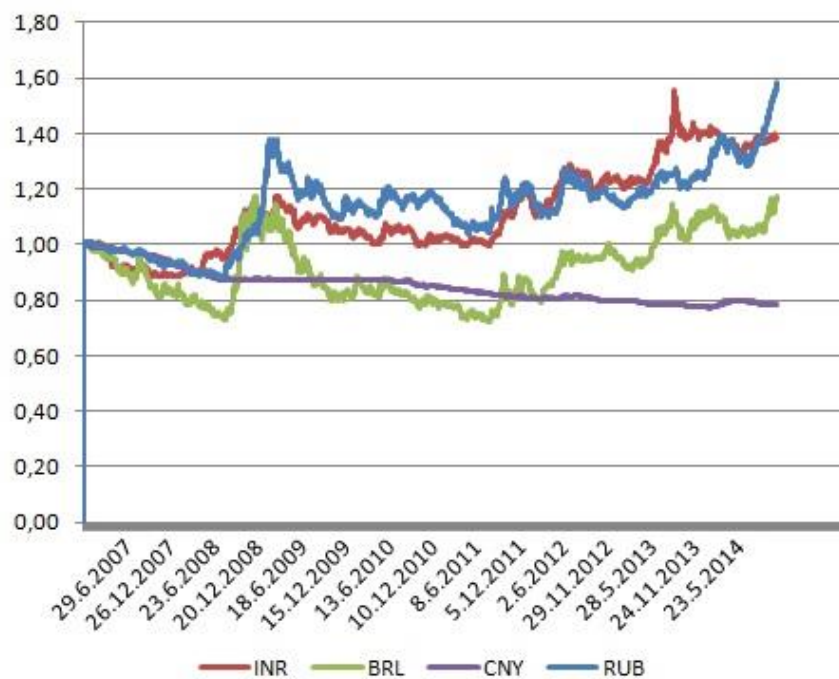
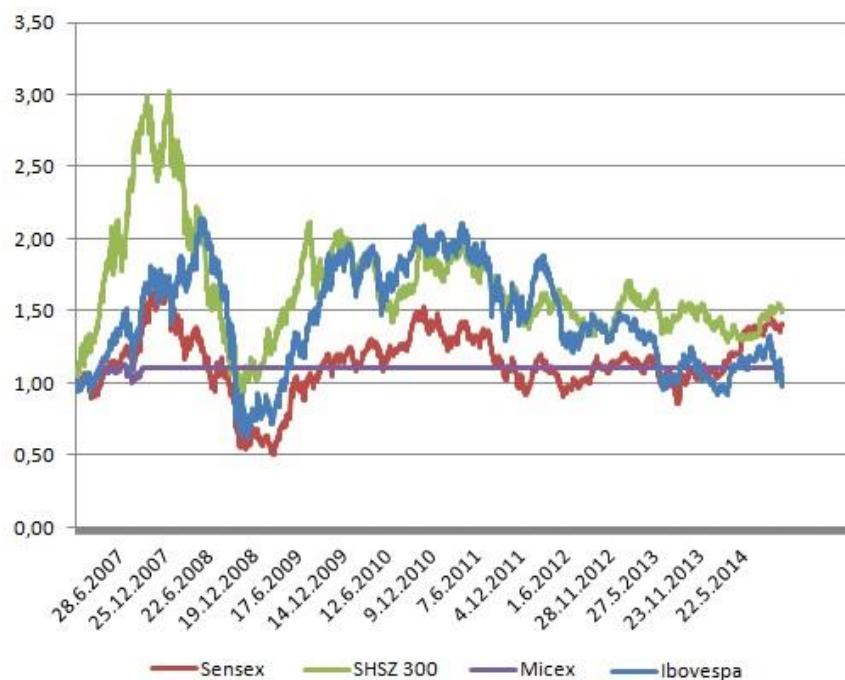


Figure 6. Major equity indices (note: 1.1.2007=1,00)



Appendix J. Future Outlook for the BRICs

BRAZIL

As regards future outlook, attention should be paid to several factors. **First**, due to increased oil production, Brazil will gradually turn into a major oil exporter, which raises concerns whether the country is starting to suffer from the Dutch disease. The effects are visible on the trade side: net exports of manufacturers declined since 2005 while net exports of crude oil grew at rate of more than 30 percent on average per year during 2005-2010 (Mourougane, 2011a, p. 11). While increased oil reserves could raise prosperity (if oil revenues would be shared equitably across regions and generations), Brazil faces the risk of tax revenue volatility, making fiscal policy more pro-cyclical and the economy more prone to uncertainties coming from the outside (OECD, 2011a, p. 11). **Second**, due to rapidly ageing population - the share of population over 65 is expected to more than triple within the next four decades (Mourougane, 2011a, p. 5) -, institutional changes and structural reforms should be implemented swiftly while potential capital accumulation would help counteract the population ageing on potential output growth. Consequently, the relatively low public investment rate (compared to other emerging economies) should be increased, especially in human capital and infrastructure. Currently, Brazil invests only 2.2 percent in its infrastructure, compared to the developing-world average of 5.1 percent (Economist, Apr 19, 2014). This means that in order to catch up, Brazil would have to triple its annual infrastructure spending for the next two decades. This would help mend the *real* appreciation through a compositional shift within the budget (that is, reducing government consumption to increase public investment, rather than via additional public debt). **Finally**, changes are also mandatory in terms of the extremely unequal distribution of income (this is popularized as *Belíndia*¹⁶). Brazilian growth could be enhanced if there were progress on structural reforms (lower import tariffs, changes in education, tax and pension systems) and fiscal consolidation, while a continuously weaker *real* could help boost competitiveness and growth in some sectors (while reducing the current account deficit) but it could also adversely affect Brazil's fiscal position and increase inflation. Indeed, inflation seems to be the most immediate risk for Brazil, next to the possibility of a housing and credit bubble burst. The expected reduction in monetary policy accommodation of AEs reduced the capital flows to Brazil (which had so gravely complicated the tasks of policymakers in recent past) and

¹⁶ The term (combining a small, rich country like Belgium and a large, poor one like India) describes how the rich in Brazil are the only one to capture economic gains.

emphasized the need for domestic reforms. By the same token, policymakers should continue monetary tightening to bring inflation back to the 4.5 percent target. Moreover, global developments could also play a greater role in possible deterioration (especially in China since it became an important destination for Brazil's exports).

RUSSIA

In looking forward, many advocate for a shift toward a more self-sustaining growth model that would be based on innovation, investment, accumulation of human capital and implementation of rule of law, which would steer Russia away from developing into a rentier economy. Generally speaking, parts of Russia's policy mix had been strengthened since the crisis. *First*, as regards the monetary policy, exchange rate interventions have been substantially reduced, allowing it to play its role as a shock absorber. Moreover, inflation targeting and a fully floating exchange rate regime are to be introduced in 2015 (OECD, 2013b, p. 18). *Second*, fiscal rule was introduced in December 2012 in order to limited projected budgetary use of oil revenues, which implies some gradual medium-term fiscal tightening (OECD, 2013b, p. 16). *Third*, as regards structural reforms, the *Innovative Russia 2020 Strategy* that was adopted in 2011 aims to improve the innovativeness of the Russia economy (OECD, 2013b, p. 121). Furthermore, one of Russia's strengths continues to be its sound fiscal policy, with negative net public debt (reflecting prudent policies that saved a large share of oil price windfalls over the past decade) and sizeable budget surpluses; while the monetary policy succeeded in gradually reducing inflation over the past fifteen years. However, potential downturns - like the further escalation of the crisis in Ukraine; additional US/EU sanctions; or potential slowdowns in other emerging markets (particularly China, since the bilateral flows amounted to around \$90 billion in 2013 alone) - could put a downward pressure on oil and gas prices which would, in turn, hurt Russia's budget revenues and cut off Russian companies from international capital markets, all of which could push the country to the brink of another recession. All that being said, the policymakers are likely to delay reforms as long as oil prices are high, causing Russia to suffer from the 'resource curse' which will in turn led to Brezhnev-era economic stagnation and prevent it to catch-up with AEs in the next ten to fifteen years. Moreover, as noted by Guriev and Tsyvinski (in Aslund et al, 2010, p. 9), other policy reforms are also considered crucial, such as enhancing the CBR's transparency and independence (which would enhance Russia's policy mix effectiveness); reduce the number of banks (since concentration might reduce competition, lead to higher profits and make banks more resistant to adverse shocks) while lastly and most importantly, state

involvement should be reduced and business climate improved (especially as regards corruption but also the strengthened rule of law and the removal of overregulation).

INDIA

As regards India's outlook, analysts believe it faces numerous constraints on the supply side (poor infrastructure, rigid labor laws, poor quality of public services, excessive red tape), high inequality rates, chronic poverty and corruption. Many also propose the government should continue fiscal consolidation to reduce large deficit that resulted from the crisis and implement structural reforms (like removing constraints in financial markets and impediments that inhibit India from integrating in international markets fully). On the monetary side, the RBI is to remain active against the risk of high inflation and volatile capital flows, which were in part influenced by the government's lack of reforms and high borrowing.

CHINA

In order for China to avoid future fiscal burdens, many advocate the implementation of reforms regarding the private sector, labor market and rapidly ageing population. Furthermore, consequent to the US dollar liquidity shortage and the global crisis, China made significant efforts of internationalizing the *renminbi*, believing another international currency would add to a more balanced and stable global system. Specifically, Chinese policymakers cited the reduction of exchange rate risks to which Chinese firms are exposed; reduction of transaction costs in trade; improvement of the funding efficiency of Chinese financial institutions, increasing their international competitiveness and expanding its financial services sector; and also no longer needing to hold dollars as a medium of exchange and store of value. At time of this writing, China implemented some capital account liberalization measures and allowed firms to settle merchandise trade in *renminbi*, foreigners to hold offshore deposits and foreigners to issue offshore *renminbi*-denominated *dim sum* bonds as well as initiating bilateral currency swap arrangements with foreign banks (Kawai & Pontines, 2014, p. 5). As some believe the US dollar will devalue further in the future and the US government will use inflation to ease their debt burden by monetizing its budget deficits (as is already the perception of some regarding QE), reduction in dollar-denominated financial assets would enable the Chinese to reduce capital losses on its sizeable FX reserves in the future (Yu, 2012, p. 6). Nevertheless, Cruz, Gao & Song (2014, p. 33) believe China's financial market is still overly reliant on the bank system with the

bond market serving as a mere extension of bank lending activities. In order to further liberalize the economy (and ultimately internationalize the *renminbi*), China can either open its capital account (which offers substantial benefits as the PBOC will no longer need to sterilize purchases of foreign capital inflows, giving it more flexibility); allow the exchange rate to float or both, the last being the best option against foreign interest rate shocks. Specifically, the real appreciation will either take place via higher inflation and stable exchange rate or lower inflation and nominal appreciation of the currency, the latter option being better for the Chinese as well as the world economy.

Appendix K. BRICs Macroeconomic Indicators¹⁷

BRAZIL	2008	2009	2010	2011	2012	2013
Supply and Demand						
Real GDP growth rate (in %)	5.2	-0.3	7.5	2.7	1.0	2.5
Public Finances (in % of GDP)						
Government Revenue*	36.7	35.6	36.8	36.1	38.9	37.2
Government Expenditures*	38.6	38.8	39.6	39.0	39.0	41.6
Gross Public Debt*	57.4	60.9	53.4	54.2	58.7	...
Fiscal Balance^	-1.4	-3.1	-2.7	-2.5	-2.8	-2.6
Balance of Payments (% of GDP, unless otherwise specified)						
Current Account Balance	-1.7	-1.5	-2.2	-2.1	-2.4	-3.6
Trade Balance*	24.8	25.3	20.1	29.8	19.4	...
Reserves (inc. gold, US\$ bn)	193.8	238.5	288.6	253.0	373.2	358.8
FDI net inflows	3.1	1.9	2.5	2.9	3.4	3.6
FDI net outflows	1.6	-0.3	0.8	0.2	0.4	n/a
External Debt*	12.0	12.2	12.0	12.1	14.9	...
Prices and Labor Market (in %)						
Inflation	5.7	4.9	5.0	6.6	5.4	6.2
Unemployment	7.9	8.1	6.7	6.0	5.5	5.4

RUSSIA	2008	2009	2010	2011	2012	2013
Supply and Demand						
Real GDP growth rate (in %)	5.2	-7.8	4.5	4.3	3.4	1.5
Public Finances (in % of GDP)						
Government Revenue^	41.7	35.0	34.6	37.3	37.7	36.1
Government Expenditures^	34.4	41.4	38.0	35.7	37.2	37.3
General Government Debt ^	7.9	11.0	11.0	11.7	10.9	10.4
Fiscal Balance^	4.9	-6.3	-3.4	1.5	0.4	-0.7
Balance of Payments (% of GDP, unless otherwise specified)						
Current Account Balance	6.3	4.1	4.4	5.1	3.5	1.6
Terms of Trade^	...	-23.4	19.2	13.3	1.3	-1.6
Reserves (inc. gold, US\$ bn)	426.3	439.3	379.2	497.4	537.8	509.7
FDI net inflows	4.5	3.0	2.8	2.9	2.5	3.4
FDI net outflows	3.4	3.5	3.5	3.5	2.4	...
External Debt^	...	38.2	32.1	28.6	31.5	34.0
Prices and Labor Market (in %)						
Inflation	14.1	11.7	6.9	8.4	5.1	6.8
Unemployment	6.2	8.3	7.3	6.5	5.5	5.5

¹⁷ Compiled by author using various sources: no mark – data comes from World Bank Database; * - OECD Economic Surveys; ^ - IMF; while (...) marks no data was available.

INDIA	2008	2009	2010	2011	2012	2013
Supply and Demand						
Real GDP growth rate (in %)	3.9	8.5	10.3	6.6	4.7	4.4
Public Finances (in % of GDP)						
Government Revenue*	19.7	18.5	18.8	18.7	19.5	20.0
Government Expenditures*	29.7	28.3	27.2	26.7	26.9	27.3
Gross Public Debt	72.7	70.8	66.3	66.2		
Fiscal Balance^	-8.6	-10.1	-8.7	-8.4	-8.3	-8.3
Balance of Payments (% of GDP, unless otherwise specified)						
Current Account Balance	-2.5	-1.9	-3.2	-3.3	-4.9	-2.0
Trade Balance*						
Reserves (inc. gold, US\$ bn)	257.4	284.7	300.5	298.1	257.4	284.7
FDI net inflows	3.5	2.6	1.6	1.9	1.3	1.5
FDI net outflows	1.6	1.2	0.9	0.7	0.5	...
External Debt*	20.5	18.0	16.9		21	
Prices and Labor Market (in %)						
Inflation	8.4	10.9	12.0	8.9	9.3	10.9
Unemployment	6.8	10.7	10.8	9.8	8.5	8.8

CHINA	2008	2009	2010	2011	2012	2013
Supply and Demand						
Real GDP growth rate (in %)	9.6	9.2	10.5	9.3	7.7	7.6
Public Finances (in % of GDP)						
Government Revenue*	19.7	20.2	21.3	22.6	22.6	22.9
Government Expenditures*	20.4	23.3	22.8	23.9	24.8	24.8
Gross Public Debt*					14.4	
Fiscal Balance^	-0.7	-3.1	-1.5	-1.3	-2.2	-2.1
Balance of Payments (% of GDP, unless otherwise specified)						
Current Account Balance	9.3	4.9	4.0	2.8	2.6	2.3
Trade Balance*						
Reserves (inc. gold, US\$ tn)	1.9	2.5	2.9	3.3	3.4	3.9
FDI net inflows	4.1	3.3	4.6	4.5	3.6	3.8
FDI net outflows	1.6	1.6	1.5	1.4	1.4	
Prices and Labor Market (in %)						
Inflation	5.9	-0.7	3.2	5.5	2.6	2.7
Unemployment	4.2	4.3	4.1	4.1	4.1	4.1