Monetary and Fiscal Policy in the World Economy: Coordination Before and After the Financial Crisis

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Abstract
The aim of this article is to evaluate the conduct of monetary and fiscal policies for a panel data of 113 advanced and emerging/developing economies, before and after the recent international financial crisis. For the whole sample, ranging from 2001 to 2012, the results from the system GMM dynamic panel data models show that monetary policy seems to be counter-cyclical, while fiscal policy behaves in a procyclical way. The interest rate smoothing mechanism plays an important role in the design of monetary policy around the world and, as expected, overall interest rates declined worldwide in the period after 2008. When we break the sample to analyze the periods before and after the global financial crisis, advanced countries appear to smooth short-term interest rates much more than emerging countries, mainly after the intensification of the crisis. Emerging economies appear to have become more lenient to inflation after the crisis, while inflation targeters seem to have lowered interest rates more strongly than others have. As for fiscal policy, advanced economies appear to be relying even more heavily on this instrument. As previously, before the outburst of the economic crisis, government spending was not stabilizing. However, we were not able to find a significant relationship for the fiscal multiplier for the period after the crisis.

Key Words: Monetary Policy, Fiscal Policy, Panel Data Analysis
JEL Classification: C33, E52, E62, E63

Resumo
O objetivo deste artigo é avaliar a condução das políticas monetária e fiscal para um conjunto de 113 economias avançadas e emergentes/em desenvolvimento, antes e depois da recente crise financeira internacional. Para o período entre 2001 e 2012, os resultados dos modelos GMM System para dados em painel dinâmico mostram uma política monetária contra-cíclica, enquanto a política fiscal se comporta de forma pró-cíclica. A suavização da taxa de juros tem desempenhado papel importante na condução da política monetária ao redor do mundo e, como esperado, as taxas de juros caíram em todo o mundo após 2008. Quando a amostra é dividida entre antes e depois da crise, países avançados parecem suavizar as taxas de juros de curto prazo mais do que os emergentes, principalmente após a intensificação da crise. As economias emergentes parecem mais tolerantes com a inflação depois da crise, enquanto aqueles que adotam as metas para a inflação parecem ter baixado as taxas de juros mais fortemente que outros. Quanto à política fiscal, as economias avançadas parecem estar apoiando cada vez mais neste instrumento. Como antes, o período anterior à eclosão da crise econômica, os gastos do governo se mostram desestabilizadores. No entanto, não foi possível encontrar qualquer efeito multiplicador no exame do período pós-crise.

Palavras-Chave: Política Monetária, Política Fiscal, Análise de Dados em Painel
Classificação JEL: C33, E52, E62, E63

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1. Introduction

The conduct of monetary policy has fueled ongoing debates and research throughout the world, given its importance and ability to influence the economy of a country and the world economy as a whole. There is no doubt that the adoption of some type of monetary policy rule has collaborated to lowering inflation rates, increasing the degree of commitment and accountability of monetary authorities and reducing inflationary bias and inflation expectations. These discussions were further deepened with the advent of the inflation targeting regime as a nominal anchor of the economy, which is a framework adopted by several countries and even those who do not adopt explicitly make it so implicitly.

On the other hand, fiscal sustainability is necessary to strengthen actions taken by monetary authorities. In fact, until a short time ago, from a theoretical and empirical standpoint, fiscal policy was given a secondary role, in favor of monetary policy. Fiscal requirements were taken as irrelevant in research articles related to the conduct of monetary policy. It means that theoretical models typically analyze monetary stabilization policies without being taking into account government budget and public debt dynamics. This was perfectly acceptable when the solvency of government finances was not challenged (Benigno & Woodford, 2006).

According to Blanchard et. alii. (2010) the emphasis on monetary policy was due to several reasons, such as: i) monetary policy itself was capable of maintaining a stable output gap; ii) domestic bond market in emerging economics was incipient, limiting the use of fiscal countercyclical policy; iii) a mixture of short recessions and lags in the implementation of fiscal policy, meant that possible countercyclical measures could arrive too late; iv) a mixture of short recessions.

Things have changed since the outburst of the financial crisis in the autumn of 2008. Central banks and governments in general had to take several actions in order to prevent economic activity from falling sharply. These included the use of expansionary monetary and fiscal policy, the latter acting as a fiscal multiplier to stimulate aggregate demand, followed by a fiscal consolidation process in several countries. The aim of this article is to evaluate the conduct of monetary and fiscal policies for a panel data of 113 advanced and emerging/developing economies, before and after the recent international financial crisis. For the whole sample, ranging from to 2001 to 2012, the results from the two-step system GMM dynamic panel data models show that monetary policy seems to be counter-cyclical, while fiscal policy behaves in a procyclical way. The interest rate smoothing mechanism has played an important role in the design of monetary policy around the world and, as expected, overall interest rates declined worldwide in the period after 2008. When we break the sample to analyze the periods before and after the global financial crisis, advanced countries appear to smooth short-term interest rates much more than emerging countries, mainly after the
intensification of the crisis. Emerging economies seem to have become more lenient to inflation after the crisis, while inflation targeters seem to have lowered interest rates more strongly than others have. As for fiscal policy, advanced economies seem to be relying even more heavily on this instrument. As previously, before the outburst of the economic crisis, government spending was not stabilizing. However, we were not able to find a significant relationship for the fiscal multiplier for the period after the crisis.

Besides this introduction, this article is structured as follows. Section 2 presents the literature related to the coordination between monetary and fiscal policies. Section 3 brings a discussion of the international financial crisis. Section 4 outlines the econometric methodology and the data. Section 5 reports the estimation results. Section 6 concludes.

2. The Literature

The importance given to a good coordination between monetary and fiscal policies has made researchers analyze this case theoretically and empirically. In fact, Blanchard et. alli. (2010) propose that macroeconomic policy should be rethought in order to put fiscal policy back to the center of discussion as an important policy tool. Firstly, when monetary policy, including credit and quantitative easing, has reached its limits, policymakers must rely on fiscal stimulus as an important policy tool. Secondly, when recession is expected to last long, fiscal policy could be beneficial, in spite of its implementation lags.

Nevertheless, the analysis of a good interaction between monetary and fiscal policies has been a concern of researchers for a long time. Sargent & Wallace (1981) show, in what they call “some unpleasant monetarist arithmetic”, that the coordination of economic policies can be seen from two different regimes. Under a monetary-dominant regime, also called Ricardian Regime, monetary policy plays the main role and it’s the nominal anchor for the economy. Therefore, Ricardian Equivalence holds, meaning that a fiscal expansion does not affect private consumption once consumers take the government’s action into account. Then, the government must guarantee fiscal solvency at any time (Canzoneri, Cumby & Diba, 2001). Under a fiscal-dominant regime, also called Non-Ricardian Regime, fiscal policy is the nominal anchor for the economy and monetary policy is not able to control the variability of prices. Under this regime, fiscal policy follows an arbitrary process and the price level has to be adjusted in order to account for the government’s lack of fiscal discipline.

The theoretical literature on the coordination between monetary and fiscal policies has grown considerably in recent years. Benigno & Woodford (2003); Persson, Persson & Svensson (2006) and Schmitt-Grohe & Uribe (2004a, 2004b, 2006) are some examples of models with features New-
Keynesian which explain the role of an optimal coordination of fiscal and monetary authorities. If such arrangement is observed, both policies are under the same objective function and, therefore, they face the budget constraint of the public sector.

Some authors (Leeper, 1991; Sims, 1994; Woodford, 1994, 1995, 1999, 2003; and Cochrane, 1998, 2001; among others) emphasize the role of fiscal policy in determination of the price level, creating what is commonly known as the Fiscal Theory of the Price Level. This theory is described as non-Ricardian since the intertemporal budget constraint is satisfied only at a certain price level, although it is possible to have multiple price levels consistent with a given equality between supply and demand for money, and also with a given nominal money supply (Walsh, 2003). In other words, if primary deficits are arbitrary, then fiscal solvency determine the equilibrium path of prices (Canzoneri, Cumby & Diba, 2001).

Sims (2005) argues that when a country does not have a sound fiscal policy, the conduct of monetary policy under an inflation targeting system can be counterproductive. This is because a proper coordination between monetary and fiscal policies is a prerequisite for inflation control. On this issue, Benigno & Woodford (2006) argue that some inflation targeters have found it difficult to control their fiscal imbalances. Consequently, this lack of control raises a number of issues and concerns regarding the usefulness of the inflation targeting framework in some countries. The authors analyze a New-Keynesian theoretical model that considers the consequences of driving monetary policy to government budget on a series of assumptions about the nature of the fiscal regime. Thus, the model makes clear that the conduct of monetary policy under an inflation targeting regime is applicable to different types of fiscal regimes.

From an empirical point of view, Muscatelli, Tirelli & Trecroci (2004) build a New-Keynesian model for the American case, showing that the strategic coordination between monetary and fiscal policies depends on the types of shocks observed by the economy. The authors show that a counter-cyclical fiscal policy may reduce welfare if it is not well coordinated with monetary policy.

As for the analysis of the coordination of economic policies during the 200 financial crisis, Mitreska et alli. (2010) show that there have been diverse policy responses to fight the effects of the crisis, mainly monetary and fiscal stimulus. According to the authors, such responses might have implied possible changes in the reactions of monetary and fiscal policies. In fact, their results show that the magnitude of the reaction has been much stronger during the crisis, and that advanced economies seem to be more aggressive in stabilizing output during the crisis, compared to emerging economies.

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1 This theory has received several criticisms. See McCallum (1997) and Buiter (2002).
2 More recently, some papers have analyzed the Fiscal Theory of the Price Level in conjunction with regime switching. For example, Canzoneri, Cumby & Diba (2001), Favero & Monacelli (2003), Semmler & Zhang (2004).
3. The International Financial Crisis

The goal of this section is to summarize some of the main empirical lessons from the recent international financial crisis of 2007-08 based on a literature investigating its causes and consequences, some of them focusing on historical issues in a comparative perspective and others trying to understand specific elements of this crisis in a globalized world.\(^3\) We do not have the intention to cover all the issues, since this would be an impossible task, but to develop a general framework pinpointing the major elements associated to the new international financial crisis, with special attention to the use of monetary and fiscal policies since these are the two crucial themes of our work.

In fact, in order to understand the origins of the recent financial crisis one should consider that during the period of 2002-2004 the U.S. had very low interest rates. Besides that, it should be emphasized that within the last two decades, the world economy faced an enormous increase in asset values relative to GDP for most advanced and emerging economies and such assets are collateral for the credit allocation. On the other hand, a significant decrease in asset prices throughout the period when the crises is more severe generally results in bank collapse, followed by credit reduction. This sequence of events ends up shifting a financial crisis into a real economy crisis with significant implications in terms of job loss and a mismatch between supply and demand. In this situation, there is an increase in the risk for credit institutions and the outcome is a period of credit shortage for firms and consumers. This happens regardless of government policies such as a reduction in compulsory deposits, even though such policy measures should be in place during the initial and most critical period of the crisis in order to minimize the chances of a complete credit collapse.

Reinhart & Rogoff (2011) draw some empirical lessons in an extensive work on the history of financial crises: \(i\) the most significant financial crises originates from the financial centers and the transmission mechanism is associated with interest rate shocks (downward) and a reduction in commodity prices; \(ii\) periods characterized by an expansion in the degree of capital mobility are frequently followed by the occurrence of banking crises; \(iii\) significant increases in commodity prices are a rule prior to financial crises; \(iv\) the probability of default depends on total debt (external and domestic) relative to GDP; \(v\) central bank interventions are crucial to minimize the contagion effect; \(vi\) existence of a temporal mismatch between financial innovation that can be part of the financial crises and the regulatory measures to prevent the crises; \(vii\) coordinated decrease in interest rates by the central economies and followed by an expansion in public expenditure; \(viii\) globalization has

increased the frequency and the level of contagion of the financial crises without necessarily resulting in a higher degree of severity.

Lane & Milesi-Ferretti (2012) show that the period before the crisis was characterized by an increase in current account imbalances, which has been reduced after the crisis (2008-2010). The authors also address the role of real exchange rates, domestic demand and domestic output in the external adjustment controlling for differences in exchange rate regimes. The results indicate that the adjustment for countries with current account deficit relies primarily on reducing the demand and not on expenditure switching policies. There is also evidence that changes in investment flows are relevant for the financial account adjustment based on official external assistance and liquidity provision by the monetary authority (European Central Bank) in order to allow private capital flows. Finally, the work also highlights that large output losses for countries with higher current account deficits underlines the risk of excessive deficits.

Gorton & Metrick (2012) summarize 16 documents (academic papers and reports from regulatory and international agencies) and draw some important lessons from the history of financial crises. One aspect that is similar in the history of crises is a system-wide leverage increase in the years prior to the crisis indicating that it is a strong predictor of crises for the past two centuries. Another common characteristic of major crises since the World War II is the increase in housing prices. The international financial crisis of 2008 was also characterized by significant banking runs, especially for short-term debt where the novelty is that such runs took place in the shadow banking system (money-market mutual funds, commercial paper, securitized bonds, and repurchase agreements), introducing a new source of systemic vulnerability. The challenge for policymakers is to understand how this has ultimately affected the real side of the economy.

Schularick & Taylor (2012) examine the international financial crisis focusing on money and credit fluctuations using a dataset for 14 countries, from 1870 to 2008. The empirical evidence suggests that the second half of the twentieth century experienced a significant increase in credit relative to output and money and monetary policy responses to financial crises have been more aggressive. There is also evidence that credit growth is a good predictor of financial crises.4

Berkmen et al. (2012) investigate the different effects of the financial crisis of 2007-08 for a set of developing and emerging economies based on growth revisions before and after the crisis. The empirical results suggest that countries with financial systems with a higher level of leverage and credit growth are the ones with higher downward revisions for the GDP growth rates and a bigger impact on reducing their trade volume. There is also evidence that: i) a more flexible exchange rate

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4 Reinhart & Rogoff (2011) and Schularick & Taylor (2012) found evidence that debt increases as a key antecedent to banking crises.
regime helps diminish the effect of the international financial crisis; ii) countries with a stronger fiscal position prior to the crisis seem to have suffered less from the crisis.

Aizenman & Noy (2013) examine the impact of the history of crises on macroeconomic performance. Their main empirical findings are: i) there is no learning process from past banking crises and the depth of the crisis is not associated with previous experiences; ii) for middle income countries there is evidence that a higher degree of capital account openness is associated with a lower probability of banking crisis and a lower ratio of nonperforming loans during the crisis; iii) savings rate has a positive relation with past crisis experience for countries with higher levels of political risk and instability. The authors also examine what is called the differential adjustment hypothesis regarding the choice of adjustment (postponing or not) faced by the U.S. and the Euro Zone since the outburst of the global crisis of 2008. The adjustment patterns suggest that households have adjusted faster than the public sector and regulators. The main question to be answered is to what extent this postponing option might be associated with historical episodes such as a lost decade of growth (Latin America in the 1980s) and with a higher likelihood of future crises.

The international financial crisis of 2008 had a major impact on the Euro Zone with significant reduction in growth rates, higher unemployment and an increase in public spending associated with fiscal disequilibrium. Obstfeld (2013) analyzes the main issues associated to the original architecture of the Euro Zone guided by safeguards to control inflation and excessive government deficits and ultimately to guarantee macroeconomic stability. The author shows that this has been challenged over the years with an increasing financial fragility in the Euro Zone and the requirement of a reform of its institutions. It is clear that the Euro Area should face what the author calls, a financial/fiscal trilemma, meaning that countries will have to compromise at least one of the three issues: financial integration with other member states, financial stability, and fiscal independence. The reason for this trilemma is that the costs associated with banking rescues are too high compared to the fiscal capacities of many Euro economies. The future of the Euro Zone must rely in combining centralized supervision and fiscal limits for resources allocated to finance bank insolvency.5

The lessons to be learned from the previous literature review on the recent international financial crisis suggest that its consequences are still an ongoing process with different repercussions throughout a wide range of economies since these are characterized by specific macroeconomic structures and distinct options of adjustment policies. The common grounds across countries in the period after the global financial crisis, regardless of the differences in magnitudes and time of implementation, are associated with lower economic growth rates; higher fiscal imbalances due to

5 See Bordo & James (2013) for an additional discussion on the European Crisis.
increasing public spending and debt; a decrease in credit growth and leverage levels; and expansionary monetary and fiscal policies.

4. The Empirical Strategy

The empirical analysis involves the estimation of a series of dynamic panel data models, via system GMM (two-step). Not only does this method take into account the time series dimension of the data and treats all explanatory variables as endogenous, but it also deals with non-observable country specific effects.

The GMM estimators have one and two-step variants. The two-step is asymptotically more efficient but the reported standard errors tend to be downward biased (Arellano & Bond, 1991; Blundell & Bond, 1998). To deal with this problem, our estimated models use a finite sample correction to the covariance matrix (Windmeijer, 2005) to make two-step robust estimations more efficient.

One of the concerns to be addressed is related to the use of weak instruments and the potential bias and inaccuracy that can arise, especially when applying Difference GMM. In order to reduce this problem, Arellano & Bond (1991), Arellano & Bover (1995) and Blundell & Bond (1998) develop a system of regressions in differences and levels, and this is called System GMM. The instruments for the regression in differences (in levels) are the lagged levels (differences) of the explanatory variables. They can be considered appropriate instruments under the assumption that, despite a possible correlation between the levels of the explanatory variables and the country-specific effect, such correlation does not exist when those variables are in differences.

Another empirical concern is the one related to instrument proliferation in GMM estimations. Roodman (2009a, 2009b) develops a detailed analysis on this issue, emphasizing the symptoms of an excessive use of instruments. The idea is that as the time dimension increases, the number of instruments can be too large compared to the sample size, invalidating some asymptotic results and specification tests. Too many instruments can overfit endogenous variables and fail to expunge their endogenous components, resulting in biased coefficients. Another argument is that the Hansen and Difference-in-Hansen tests can be weak in the presence of overidentification.

Even though we are fully aware that the 2008 financial crisis made governments and central banks use a whole range of instruments, in order to prevent financial markets from bankrupting and economic activity from falling deeply, we focus our analysis on conventional monetary and fiscal

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6 The use of weak instruments is associated with an asymptotical increase in coefficient variance and, in small samples, such coefficients can be biased.

7 Our system GMM estimation deals with instrument proliferation using the LagLimits option in Stata (Tables 1 to 4 but not in Table 5), which forces the use of only certain lags instead of all available lags for instrument.

The general representations for the Monetary Policy Rule (Taylor Rule) and Fiscal Policy Rule can be given by the following equations:

\[ i_{jt} = \beta_0 + \beta_1 i_{jt-1} + \beta_2 \pi_{jt} + \beta_3 e_{jt} + \beta_4 y_{jt} + \varepsilon_{jt} \]  
\[ g_{jt} = \alpha_0 + \alpha_1 g_{jt-1} + \alpha_2 f b_{jt} + \alpha_3 y_{jt} + \mu_{jt} \]

where:

- \( i = \text{DNIR} = \log\) of interest rate (deviation from the mean);
- \( \pi = \text{DLINF} = \log\) of CPI inflation rate (deviation from the mean);
- \( e = \text{DLREER} = \log\) of real effective exchange rate (HP filtered);
- \( y = \text{DLRGDP} = \) output gap - log of real GDP growth rate (HP filtered);
- \( g = \text{DRGOV} = \log\) of government expenditure (HP filtered);
- \( fb = \text{DLBF} = \log\) of the general government net lending/borrowing measure.\(^8\)

The data sources are the IMF International Financial Statistics (IFS) database for all variables, except for government expenditure, which comes from the World Development Indicators (WDI). The data frequency is annual, from 2001 to 2012, for a group of advanced and emerging/developing economies\(^9\). Additional control variables include dummies for advanced and emerging/developing economies (DUDEVELOPED), for inflation targeting countries (DUIT) and for the period after 2008 (DUCRISIS08). As it is commonly used in New-Keynesian models, the variables are expressed in deviations from their steady state. Real variables are HP filtered and nominal variables are demeaned.

We also break the sample into 2 pieces: the period before the financial crisis (2001-2008) and the period after the financial crisis (2009-2012). The aim is to make a deeper analysis of the behavior of the world economy before and after the crisis.

Equation 1 is a Monetary Policy (Taylor) Rule taking into account the interest rate smoothing case, the influence of exchange rate, besides the traditional GDP output gap and inflation rate\(^10\). When the Central Bank chooses the interest rate, it is able to influence aggregate spending through the IS curve. Equation 2 is a backward looking Fiscal Rule. It allows for a response of output gap and also for a response of the lagged government spending, which can be seen as a measure of fiscal persistence, i.e., the degree of dependence of the current government spending from its own past setting. Equation 2 also includes a stabilization mechanism, which is able to capture the impact of the

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\(^8\) As there were negative values in these series, we made use of a log approximation technique.

\(^9\) The list of countries is provided in the Appendix of the paper.

\(^10\) We were not able to construct a forward looking rule as we did not have access to inflation expectations.
lagged budget deficit (as a % of GDP) on current fiscal policy, just like in Muscatelli, Tirelli & Trecroci (2004).

5. The Results: Two Step System GMM Estimations

The empirical strategy is first to estimate monetary and fiscal rules for the whole sample with dummies for advanced countries and also for inflation targeters. After that, we will break our sample into two (before and after the 2008 crisis), in order to see more deeply the behavior of monetary and fiscal policies in advanced and emerging economies.

All estimated models, from Tables 1 to 5, have no problems of second order autocorrelation since we do not reject the null for the AR(2) test. Regarding the Hansen overidentification tests, all instruments are valid with the exception of Model 1 (Table 5) but only at 5% since at the 1% level the final inference is that the instruments are valid for this model. The restrictions to the number of instruments were applied for each model when the number of instruments were significantly larger than the number of countries and also by looking at the probability of the Hansen-Difference statistics. The null hypothesis of the Hansen-Difference test is that the subset of instruments is exogenous.

5.1. Monetary Policy (2001 to 2012)

Table 1 reports the results of the dynamic estimations for the monetary policy rule for the whole period. As expected, the estimated coefficients for the lagged interest rate are positive and statistically significant in all regressions performed. It means that inflation deviations lead to a reaction of monetary policy of the same sign. It also means that the interest rate smoothing mechanism seems to be the case in the design of monetary policy around the world, indicating that there was no abrupt disturbance in the interest rate even during the crisis. As well as that, the interest rate smoothing coefficients are the highest among all others coefficients estimated, showing their importance even in the presence of variables such as GDP and exchange rate.

The inflation rate and output gap coefficients are also statistically significant. The positive signs mean that monetary authorities behave in a counter-cyclical way. When compared to the GDP output, which shows significance as well, we notice the coefficient for the latter doubles the former.

As for the exchange rate, we found no statistical significance in any of the models estimated. This could be an indication that central banks would not be attempting to smooth exchange-rate fluctuations by making use of interest rates, i.e., their main monetary policy instrument. In fact, the influence of the exchange rate in the conduct of monetary policy is a practice often observed in

\[\text{When this statistics converges to one (1.000) there is need to reduce the instruments.}\]
emerging and developing countries, but not so frequently in industrial economies. We will be able to analyze this pattern later on, when we break the series into advanced and emerging/LDC countries.

The dummy variable for advanced economies is not significant, meaning that there was no difference in the conduct of monetary policy between rich and developing countries. On the other hand, the dummy included to check whether there was difference in the conduct of monetary policy, when comparing the period before and after the crisis, shows that overall interest rates declined worldwide in the period after 2008. This means that, as economic activity became very weak with the crisis, central banks decided to decrease interest rates in order to put their economies back in the track again.

Table 1

Monetary (Taylor) Rule: Whole Period

<table>
<thead>
<tr>
<th>Models</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LAGLIMITS (1 1)</td>
<td>LAGLIMITS (1 1)</td>
<td>LAGLIMITS (1 1)</td>
</tr>
<tr>
<td>DNIR t-1</td>
<td>0.280</td>
<td>0.282</td>
<td>0.280</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.052) ***</td>
<td>(0.053) ***</td>
<td>(0.052) ***</td>
</tr>
<tr>
<td>DLINF</td>
<td>0.085</td>
<td>0.085</td>
<td>0.085</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.009) ***</td>
<td>(0.009) ***</td>
<td>(0.009) ***</td>
</tr>
<tr>
<td>DLREER</td>
<td>-0.041</td>
<td>-0.043</td>
<td>-0.041</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.075)</td>
<td>(0.075)</td>
<td>(0.074)</td>
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<tr>
<td>DLRGDP</td>
<td>0.158</td>
<td>0.156</td>
<td>0.160</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.046) ***</td>
<td>(0.045) ***</td>
<td>(0.045) ***</td>
</tr>
<tr>
<td>DUCRISIS 08</td>
<td>-0.005</td>
<td>-0.005</td>
<td>-0.005</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.0007) ***</td>
<td>(0.0008) ***</td>
<td>(0.0007) ***</td>
</tr>
<tr>
<td>DUDEVELOPED</td>
<td>0.001</td>
<td></td>
<td>0.0004</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.0013)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DUIT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robust</td>
<td>(0.0017)</td>
<td></td>
<td></td>
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<tr>
<td>AR(2)</td>
<td>0.192</td>
<td>0.194</td>
<td>0.192</td>
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<tr>
<td>Hansen</td>
<td>0.637</td>
<td>0.566</td>
<td>0.587</td>
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<tr>
<td>Hansen-Difference</td>
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<td>0.995</td>
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<td>81</td>
<td>81</td>
</tr>
<tr>
<td>Number of Instruments</td>
<td>89</td>
<td>89</td>
<td>89</td>
</tr>
</tbody>
</table>

Note: All Estimated Models are System GMM, 2 Step Procedure. Robust Standard Errors
Stata Command using LagLimits (1 1) to control for instrument proliferation
All estimated models include a constant
D = indicates deviation from the period average for nominal variables and the cyclical component from HP Filter for real variables
DU = indicates dummy variable (Crisis of 2008; Developed Countries; Inflation Targeters)
*, ** and *** indicate significance at 10%, 5% and 1%

5.2. Fiscal Policy (2001 to 2012)

Table 2 reports the results related to the two-step system GMM models for the fiscal policy rule for the whole period. The estimated coefficients for the lagged real government expenditure are positive and statistically significant in all regressions performed.
The same can be observed for the GDP output, which is statistically significant with a positive sign, meaning that government spending increases as economic activity does, making fiscal policy procyclical. In other words, government spending responses to the contemporaneous GDP gap “seems not to be” stabilizing.

### Table 2

#### Fiscal Rule: Whole Period

<table>
<thead>
<tr>
<th>Models</th>
<th>Dealing with Instrument Proliferation</th>
<th>LAGLIMITS (1 4)</th>
<th>LAGLIMITS (1 4)</th>
<th>LAGLIMITS (1 4)</th>
<th>LAGLIMITS (1 2)</th>
<th>LAGLIMITS (1 2)</th>
<th>LAGLIMITS (1 2)</th>
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</thead>
<tbody>
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<td>DRGOV t-1</td>
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<td>0.307</td>
<td>0.300</td>
<td>0.283</td>
<td>0.279</td>
<td>0.273</td>
<td></td>
</tr>
<tr>
<td>Robust</td>
<td>(0.043) ***</td>
<td>(0.046) ***</td>
<td>(0.041) ***</td>
<td>(0.049) ***</td>
<td>(0.051) ***</td>
<td>(0.050) ***</td>
<td></td>
</tr>
<tr>
<td>DLRGDP</td>
<td>0.316</td>
<td>0.326</td>
<td>0.355</td>
<td>0.400</td>
<td>0.357</td>
<td>0.401</td>
<td></td>
</tr>
<tr>
<td>Robust</td>
<td>(0.191) *</td>
<td>(0.195) *</td>
<td>(0.195) *</td>
<td>(0.226) *</td>
<td>(0.228)</td>
<td>(0.215) *</td>
<td></td>
</tr>
<tr>
<td>DLBF</td>
<td>0.00001</td>
<td>0.00001</td>
<td>0.00001</td>
<td>0.00001</td>
<td>0.00001</td>
<td>0.00001</td>
<td></td>
</tr>
<tr>
<td>Robust</td>
<td>(1.72e-06) ***</td>
<td>(1.72e-06) ***</td>
<td>(2.63e-06) ***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DUCRISIS 08</td>
<td>0.004</td>
<td>0.004</td>
<td>0.005</td>
<td>0.005</td>
<td>0.004</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>Robust</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td></td>
</tr>
<tr>
<td>DUDEVELOPED</td>
<td>0.012</td>
<td>0.012</td>
<td>0.017</td>
<td>0.017</td>
<td>0.017</td>
<td>0.017</td>
<td></td>
</tr>
<tr>
<td>Robust</td>
<td>(0.012)</td>
<td>(0.012)</td>
<td>(0.012)</td>
<td>(0.012)</td>
<td>(0.012)</td>
<td>(0.012)</td>
<td></td>
</tr>
<tr>
<td>DUT</td>
<td>-0.044</td>
<td>-0.044</td>
<td>-0.044</td>
<td>-0.044</td>
<td>-0.044</td>
<td>-0.044</td>
<td></td>
</tr>
<tr>
<td>Robust</td>
<td>(0.031)</td>
<td>(0.031)</td>
<td>(0.031)</td>
<td>(0.031)</td>
<td>(0.031)</td>
<td>(0.031)</td>
<td></td>
</tr>
<tr>
<td>AR(2)</td>
<td>0.629</td>
<td>0.631</td>
<td>0.618</td>
<td>0.582</td>
<td>0.579</td>
<td>0.566</td>
<td></td>
</tr>
<tr>
<td>Hansen</td>
<td>0.253</td>
<td>0.240</td>
<td>0.259</td>
<td>0.218</td>
<td>0.296</td>
<td>0.248</td>
<td></td>
</tr>
<tr>
<td>Hansen-Difference</td>
<td>0.967</td>
<td>0.944</td>
<td>0.981</td>
<td>0.976</td>
<td>0.995</td>
<td>0.995</td>
<td></td>
</tr>
<tr>
<td>Number of Countries</td>
<td>103</td>
<td>103</td>
<td>103</td>
<td>103</td>
<td>103</td>
<td>103</td>
<td></td>
</tr>
<tr>
<td>Number of Instruments</td>
<td>94</td>
<td>94</td>
<td>94</td>
<td>94</td>
<td>94</td>
<td>94</td>
<td></td>
</tr>
</tbody>
</table>

Note: All Estimated Models are System GMM, 2 Step Procedure. Robust Standard Errors.

Surprisingly, the dummy variable for advanced economies is not statistically significant, meaning that there was no difference in the conduct of fiscal policy between rich and emerging/developing countries. Besides, the dummy included to check whether there was difference in the conduct of fiscal policy before and after the 2008 financial crisis was not significant either.

As mentioned previously, we included a measure of government fiscal balance (general government net lending/borrowing), as in Muscatelli, Tirelli & Trecroci’s (2004). The aim is to have an automatic stabilization mechanism capable of capturing the impact of the lagged budget deficit to GDP ratio on fiscal policy. Even though the coefficient is small, it is positive and statistically significant, meaning that the greater the savings, the greater the spending.

### 5.3. Monetary Policy (Pre and Post-Crisis Period)

We now turn to the results, reported in Table 3, related to the two-step system GMM models for the monetary policy of advanced and emerging/LDC economies for the pre and post financial crisis. Firstly, we notice the difference in the estimated coefficients for the lagged interest rate, the
“interest rate smoothing”, when we compare the behavior of advanced and emerging/LDC countries for the period before and after the crisis. The coefficients are positive and statistically significant in all regressions. However, the coefficient for advanced countries went from 0.445, before the crisis, to 0.340 afterwards, whilst in emerging economies, the coefficient went from 0.285 to 0.122. It means that advanced countries appear to smooth short-term interest rates much more than emerging countries, mainly after the intensification of the global financial crisis in the fall of 2008. In other words, it seems that, because of the consequences of the crisis, emerging/LDC economies cut interest rates much more rapidly than rich economies, searching for a quicker recovery of economic activity.

Table 3

Monetary (Taylor) Rule: Advanced and Emerging Economies (Pre and Post Crisis)

<table>
<thead>
<tr>
<th>Country Sample and Pre and Post Crisis</th>
<th>Advanced Pre Crisis</th>
<th>Emerging / LDC Pre Crisis</th>
<th>Advanced Post Crisis</th>
<th>Emerging / LDC Post Crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dealing with Instrument Proliferation</td>
<td>LAGLIMITS (1 1)</td>
<td>LAGLIMITS (1 2)</td>
<td>LAGLIMITS (1 2)</td>
<td>NO RESTRICTION</td>
</tr>
<tr>
<td>DNIr t-1</td>
<td>0.445</td>
<td>0.285</td>
<td>0.340</td>
<td>0.122</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.044) ***</td>
<td>(0.047) ***</td>
<td>(0.040) ***</td>
<td>(0.116)</td>
</tr>
<tr>
<td>DLINF</td>
<td>0.119</td>
<td>0.221</td>
<td>0.105</td>
<td>0.093</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.047) **</td>
<td>(0.107) **</td>
<td>(0.032) ***</td>
<td>(0.003) ***</td>
</tr>
<tr>
<td>DLREER</td>
<td>0.004</td>
<td>0.188</td>
<td>0.041</td>
<td>-0.107</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.021)</td>
<td>(0.158)</td>
<td>(0.029)</td>
<td>(0.032) ***</td>
</tr>
<tr>
<td>DLRGDP</td>
<td>0.186</td>
<td>0.102</td>
<td>0.080</td>
<td>0.139</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.027) ***</td>
<td>(0.141)</td>
<td>(0.093)</td>
<td>(0.006) **</td>
</tr>
<tr>
<td>DUIT</td>
<td>0.0013</td>
<td>-0.005</td>
<td>-0.001</td>
<td>-0.011</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.0013)</td>
<td>(0.006)</td>
<td>(0.0016)</td>
<td>(0.005) **</td>
</tr>
<tr>
<td>AR(2)</td>
<td>0.215</td>
<td>0.341</td>
<td>0.304</td>
<td>0.202</td>
</tr>
<tr>
<td>Hansen</td>
<td>0.832</td>
<td>0.756</td>
<td>0.350</td>
<td>0.467</td>
</tr>
<tr>
<td>Hansen-Difference</td>
<td>1.000</td>
<td>0.921</td>
<td>0.948</td>
<td>0.167</td>
</tr>
<tr>
<td>Number of Countries</td>
<td>32</td>
<td>47</td>
<td>30</td>
<td>48</td>
</tr>
<tr>
<td>Number of Instruments</td>
<td>44</td>
<td>59</td>
<td>33</td>
<td>36</td>
</tr>
</tbody>
</table>

Note: All Estimated Models are System GMM, 2 Step Procedure. Robust Standard Errors
Stata Command using LagLimits (1 1) and (1 2) to control for instrument proliferation
All estimated models include a constant
D = indicates deviation from the period average for nominal variables and the cyclical component from HP Filter for real variables
DUIT = dummy variable for inflation targeters
*, ** and *** indicates significance at 10%, 5% and 1%

Regarding the inflation rate, it is clear that the conduct of monetary policy in all countries reacted to inflation before the crisis, and continued to do so afterwards. However, when one compares the magnitude of the coefficients, it is clear that emerging/LDC economies became more lenient to inflation developments, as their coefficients went from 0.221, before the crisis, to 0.093 after the crisis.

With respect to real exchange rate, when one compares different periods and different stages of economic development among countries, statistical significance is found only for emerging/LDC economies, after the intensification of the financial crisis. One of the consequences of the crisis was the increase in liquidity all the world, due to the quantitative easing process, and the flow of part of this liquidity to emerging economies, such as Brazil. As a result, countries had to implement policies
to work with this capital flow. Nevertheless, on the other hand, this same capital flow was an important tool for inflation control.

As for economic activity, the sign found was as expected, but significance was found only for advanced countries, before the crisis, and emerging economies, afterwards. This might be an indication that emerging economies were even more worried about their economic activity than rich countries in the period after the developments of the financial crisis.

The dummy variable for inflation targeters is statistically significant, with a negative sign, only for emerging and developing economies in the period after the intensification of the financial crisis. This shows that inflation targeting emerging countries seem to have lowered interest rates more strongly than others have, making use of expansionary monetary policy to fight effects of the crisis.

5.4. Fiscal Policy (Pre and Post-Crisis Period)

We now turn to the results of the two-step system GMM models for the fiscal policy in advanced and emerging/LDC economies for the pre-crisis period (Table 4) and post-crisis period (Table 5).

For the period before the beginning of the crisis (Table 4), the estimated coefficients for the lagged real government expenditure are still positive and statistically significant in all regressions performed. However, ever since the outbreak of the financial crisis, things seem to have changed and fiscal policy began to be used more heavily as an important tool of macroeconomic policy. Advanced economies appear to be relying even more heavily on this instrument, creating a stronger persistence in real government expenditure, which went from around 0.4 before the crisis to around 0.8 after the crisis. It comes as a surprise the smaller coefficient for emerging/LDC economies, from about 0.6 before the crisis to 0.4 after the crisis (Tables 4 and 5).

With respect to the output gap, what is of interest here is to analyze whether government spending is really procyclical, as we found for the whole sample (Table 2). As previously, the output gap is still with a positive sign and statistically significant for the sample related to the period before the outburst of the economic crisis, i.e., government spending apparently behaved in a procyclical way at that time and it was not stabilizing. When we look at the magnitude of the parameters, the size of the government spending multiplier related to emerging economies was just about four times higher than the one related to advanced countries, meaning that the former used to increase public spending much more, as GDP increased (Table 4). However, when we look at the post-crisis period, we are not able to find any significant relationship between the output gap and government spending (Table 5). This could be an indication that the fiscal spending multiplier has not been fully materialized yet for the world economy as whole, or that a fiscal consolidation process also took
Paula & Pires (2013) argue that counter-cyclical fiscal policy had a significant impact on the economy, especially right after the intensification of the global financial crisis. Nonetheless, the world economy began to recover in 2010, and most advanced economies started to implement a fiscal consolidation package, causing a slowdown in economic activity. It could also be argued that despite the size of the fiscal stimulus, its effects could have been transitory and not the solution to put the world economy on a sustainable growth path again. Besides that, we could infer that fiscal policy was pro-cyclical before the crisis and, at least, it stopped behaving that way after the intensification of the crisis.

As for the measure of government fiscal balance, as a means of an automatic stabilization mechanism, the coefficient is still small, but positive and statistically significant. Finally, the dummy variable to for inflation targeters showed no statistical significance, regardless of the economic development, either advanced or emerging, or the period, either before or after the crisis.

Table 4
Fiscal Rule: Advanced and Emerging Economies (Pre Crisis)

<table>
<thead>
<tr>
<th>Models</th>
<th>1</th>
<th>1</th>
<th>2</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country Sample - Pre Crisis</td>
<td>Advanced Pre Crisis</td>
<td>Emerging / LDC Pre Crisis</td>
<td>Advanced Pre Crisis</td>
<td>Emerging / LDC Pre Crisis</td>
</tr>
<tr>
<td>Dealing with Instrument Proliferation</td>
<td>NO RESTRICTION</td>
<td>NO RESTRICTION</td>
<td>LAGLIMITS (1 1)</td>
<td>NO RESTRICTION</td>
</tr>
<tr>
<td>DRGOV</td>
<td>0.407</td>
<td>0.645</td>
<td>0.355</td>
<td>0.642</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.110) ***</td>
<td>(0.320) **</td>
<td>(0.131) ***</td>
<td>(0.305) **</td>
</tr>
<tr>
<td>DLRGDP</td>
<td>0.142</td>
<td>0.555</td>
<td>0.135</td>
<td>0.640</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.064) **</td>
<td>(0.253) **</td>
<td>(0.065) **</td>
<td>(0.454)</td>
</tr>
<tr>
<td>DLBF</td>
<td>-0.0004</td>
<td>-0.0004</td>
<td>-0.0004</td>
<td>-0.0004</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.0003)</td>
<td>(0.00001) **</td>
<td>(0.00001) **</td>
<td>(0.00001) **</td>
</tr>
<tr>
<td>DUIT</td>
<td>0.0012</td>
<td>-0.029</td>
<td>-0.002</td>
<td>-0.007</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.0003)</td>
<td>(0.0018)</td>
<td>(0.0001)</td>
<td>(0.0015)</td>
</tr>
<tr>
<td>AR(2)</td>
<td>0.100</td>
<td>0.338</td>
<td>0.090</td>
<td>0.336</td>
</tr>
<tr>
<td>Hansen</td>
<td>0.678</td>
<td>0.357</td>
<td>0.330</td>
<td>0.282</td>
</tr>
<tr>
<td>Hansen-Difference</td>
<td>1.000</td>
<td>0.832</td>
<td>0.319</td>
<td>0.060</td>
</tr>
<tr>
<td>Number of Countries</td>
<td>33</td>
<td>70</td>
<td>33</td>
<td>70</td>
</tr>
<tr>
<td>Number of Instruments</td>
<td>40</td>
<td>40</td>
<td>34</td>
<td>60</td>
</tr>
</tbody>
</table>

Note: All Estimated Models are System GMM, 2 Step Procedure. Robust Standard Errors
Stata Command using LagLimits (1 1) to control for instrument proliferation
NO RESTRICTION indicates that there is no instrument proliferation
All estimated models include a constant
D = indicates deviation from the period average for nominal variables and the cyclical component from HP Filter for real variables
DUIT = dummy variable for inflation targeters
*, ** and *** indicates significance at 10%, 5% and 1%
Table 5
Fiscal Rule: Advanced and Emerging Economies (Post Crisis)

Fiscal Policy - System GMM (Post Crisis) - Dependent Variable: REAL GOVERNMENT SPENDING DEVIATION (DRGOV)

<table>
<thead>
<tr>
<th>Country Sample - Post Crisis</th>
<th>Advanced Post Crisis</th>
<th>Emerging / LDC Post Crisis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dealing with Instrument Proliferation</td>
<td>NO RESTRICTION</td>
<td>NO RESTRICTION</td>
</tr>
<tr>
<td>DRGOV t-1</td>
<td>0.832</td>
<td>0.417</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.217) ***</td>
<td>(0.130) ***</td>
</tr>
<tr>
<td>DLURGDP</td>
<td>0.081</td>
<td>0.144</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.237)</td>
<td>(0.299)</td>
</tr>
<tr>
<td>DLBF</td>
<td>-0.0009</td>
<td>0.0009</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.0007)</td>
<td>(0.0007)</td>
</tr>
<tr>
<td>DUIT</td>
<td>-0.001</td>
<td>0.014</td>
</tr>
<tr>
<td>Robust</td>
<td>(0.004)</td>
<td>(0.020)</td>
</tr>
<tr>
<td>AR(2)</td>
<td>0.258</td>
<td>0.265</td>
</tr>
<tr>
<td>Hansen</td>
<td>0.029</td>
<td>0.453</td>
</tr>
<tr>
<td>Hansen-Difference</td>
<td>0.497</td>
<td>0.912</td>
</tr>
<tr>
<td>Number of Countries</td>
<td>33</td>
<td>65</td>
</tr>
<tr>
<td>Number of Instruments</td>
<td>18</td>
<td>18</td>
</tr>
</tbody>
</table>

Note: All Estimated Models are System GMM, 2 Step Procedure. Robust Standard Errors
NO RESTRICTION indicates that there is no instrument proliferation
All estimated models include a constant
D = indicates deviation from the period average for nominal variables and the cyclical component from HP Filter for real variables
DUIT = dummy variable for inflation targeters
*, ** and *** indicates significance at 10%, 5% and 1%

Conclusion

The outburst of the global financial crisis in 2008 made countries around the world use a wide range of tools in order to fight the negative effects of such deep crisis. These included the adoption of expansionary monetary and fiscal policies. This article aimed at evaluating the conduct of monetary and fiscal policies in the global economy as a whole. For a panel data set of 113 advanced and emerging/developing economies, and for the period ranging from 2001-2012, we examined the role played by monetary and fiscal policies before and after the intensification of the 2008 global financial crisis.

In the first stage of the analysis, we focused on the entire period, from 2001 to 2012, and estimated a series of the two-step system GMM dynamic panel data models. The results show that monetary policy can be characterized as counter-cyclical, but fiscal policy appears to be more procyclical. We also found that smoothing interest rates seemed to be an important tool in the conduct of monetary policy around the world. As expected, after the intensification of the global crisis, there was a considerable decline of overall interest rates worldwide.

In the second stage of the analysis, our sample was divided in order to analyze the periods before and after the crisis separately. The estimations related to the conduct of monetary policy made clear that the smoothing short-term interest rates was used more intensively by rich countries,
especially after the intensification of the global financial crisis. On the other hand, emerging economies seem to have become more lenient to inflation developments after the crisis. As for inflation targeters, they appear to have decreased their interest rates more strongly than others have.

Fiscal policy was also used as an important economic tool against the effects of the crisis. Advanced economies seem to have relied more heavily on this instrument, creating a greater persistence to government spending, when compared to emerging economies. With respect to the output gap, it is still significant for the sample related to the period before the outburst of the economic crisis in the autumn of 2008, i.e., government spending apparently behaved in a procyclical way at that time and it was not stabilizing. However, we were not able to find a significant relationship for the fiscal multiplier for the period after the crisis.

In summary, our work has shown that the period prior to the beginning of the crisis was marked by the adoption of a counter-cyclical monetary policy stance in the world, whilst fiscal policy was characterized by being procyclical. With the advent of the financial crisis, both policies had to be used in some sort of coordinated way, mainly in the beginning of the crisis. Even though fiscal policy proved to be effective, several countries started to put in practice a fiscal consolidation package after gradual economic recovery began to be observed. However, some government spending inertia was detected, mainly in advanced countries. There is no doubt some more research on the topic is needed in order to clarify some topics raised in this work.
References


Appendix:

List of Countries:

Advanced Economies: (According to the IMF):

Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hong Kong, Iceland, Ireland, Israel, Italy, Japan, Luxembourg, Malta, Netherlands, New Zealand, Norway, Portugal, Singapore, Slovakia, Slovenia, South Korea, Spain, Sweden, Switzerland, United Kingdom, United States

Emerging Market and Developing Economies:

Algeria, Argentina, Bahamas, Bahrain, Bangladesh, Bolivia, Botswana, Brazil, Bulgaria, Burkina Faso, Cameroon, Chile, China, Colombia, Congo, Congo DR, Costa Rica, Côte d'Ivoire, Croatia, Dominican Republic, Ecuador, Egypt, El Salvador, Ethiopia, Gabon, Gambia, Ghana, Guatemala, Guinea, Haiti, Honduras, Hungary, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Libya, Lithuania, Madagascar, Malawi, Malaysia, Mali, Mexico, Mongolia, Morocco, Mozambique, Nicaragua, Niger, Nigeria, Pakistan, Panama, Papua New Guinea, Paraguay, Peru, Philippines, Poland, Romania, Russia, Saudi Arabia, Senegal, Sierra Leone, South Africa, Sri Lanka, Sudan, Syria, Thailand, Togo, Trinidad & Tobago, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Venezuela, Vietnam, Zambia.

List of Inflation Targeting Countries:

Australia, Brazil, Canada, Chile, Colombia, Czech Republic, Ghana, Guatemala, Hungary, Iceland, Indonesia, Israel, Mexico, New Zealand, Norway, Peru, Philippines, Poland, Romania, Serbia, South Africa, South Korea, Sweden, Thailand, Turkey, United Kingdom.