International Journal of Economics and Finance; Vol. 5, No. 9; 2013
ISSN 1916-971X E-ISSN 1916-9728
Published by Canadian Center of Science and Education

Monetary and Fiscal Responses during the Financial Crisis in the Developing and Emerging Economies

Besnik Taip Fetai[1]

[1] Department of Economics, Faculty of Business and Economics, South East European University, Tetova, Republic of Macedonia

Correspondence: Besnik Taip Fetai, Department of Economics, Faculty of Business and Economics, South East European University, Tetova, Republic of Macedonia. E-mail: b.fetai@seeu.edu.mk

Received: June 14, 2013 Accepted: July 17, 2013 Online Published: August 26, 2013

doi:10.5539/ijef.v5n9p110 URL: http://dx.doi.org/10.5539/ijef.v5n9p110

Abstract

The study provides empirical analyses of the role of monetary and fiscal policy on economic growth during the financial crisis in developing and emerging economies. I investigate 72 episodes of financial crisis in developing and emerging countries, in order to assess the effect of monetary and fiscal policy on output cost over the financial crisis. I find out that effect of monetary and fiscal tightening will increase output cost during the financial crisis. The results show that fiscal policy has been more effective tools in dealing with financial crisis, than the effect of monetary policy. In addition, the result suggests that the coordination with an expansionary fiscal policy and a neutral monetary policy will reduce output cost during the financial crisis in developing and emerging countries.

Keywords: monetary policy, fiscal policy, financial crisis, economic growth

1. Introduction

The aim of this paper is to assess the effect of monetary and fiscal policy on economic growth during the financial crisis in developing and emerging countries. The economic downturn caused by the global financial crisis in 2007 has posed again discussion among the researchers regarding the impact of financial crisis on output growth. There are quite few studies that investigate the effectiveness of monetary and fiscal policy on output growth during the financial crisis. However, the question of the suitable monetary and fiscal measures has become more pronounced especially during the global financial crisis. Furthermore, there is no consensus among the researchers regarding monetary and fiscal policy mix. To address this question, I examine 72 episodes of the financial crisis in developing and emerging countries, in order to measure the effect of monetary and fiscal policy on output cost during the financial crisis.

In addition, different monetary and fiscal strategies have been applied in advanced economies and emerging and developing countries in order to prevent further progress of the financial crisis and smoothing economic recession. Most of advanced economies the government has been more focused both in expansionary monetary policies by Central Bank's interest rate cut and fiscal stimulus packages, supporting financial and real economic activity. Regarding emerging and developing countries the fiscal and monetary measures have been different from the developed countries for the reason that they believe that those countries have small room in terms of applying expansionary monetary and fiscal policy stimulus. During the financial crises the policymakers of the monetary policy in developing and emerging countries have been more interested in maintaining higher interest rates and administrative lending controls in order to keep the inflation under control and to prevent capital outflows. However, some of the developing and emerging countries have adopted somehow an expansionary fiscal policy by changes of the budget structure, cutting current expenditure in favor to capital spending, some of them introducing a cut in public administration costs.

In the literature, most of the studies ague that fiscal policy is more effective than monetary policy during the financial crisis and therefore fiscal expansion can reduce output cost or output loss (IMF report, 2008a and 2008b). As for monetary policy the report shows that countercyclical monetary policy can support shortening of economic recession, however its efficiency is limited during the crisis. Baldacci at al., (2009) examine effect of fiscal policy on real output during the financial crisis and they find out that government consumption can shorten duration of the financial crisis and such measure is more effective than policy supporting public investment or

tax cuts. On the other hand, Li J., and Tang L., (2010) analyze the effectiveness of monetary and fiscal policy response twin crisis for 72 episodes during 1977-2010 in 57 emerging and developing countries. They find out that monetary expansion (contraction) can decrease (increase) output cost, whereas fiscal expansion (contraction) has no effect on both banking and currency crisis. They conclude that policy mix has to be coordinated by discretionary monetary expansion with a neutral fiscal policy during the financial crisis, since fiscal expansion or contraction has no effect on output cost. On the other hand the study by Hutchison at al. (2010) investigate the effect of monetary and fiscal policy over the financial crisis in emerging and developing economies and they conclude that fiscal expansion is more effective than monetary expansion. They find out that expansionary fiscal policy is related with lower output cost during the financial crises, whereas the effects of expansionary monetary policy have not been identified. Goldfain and Gupta (2003) analyses a financial crisis in 80 countries for the period 1980-1998, and they find out that if the economies have currency and banking crisis the monetary and fiscal policy are ineffective.

Moreover, little empirical evidence has addressed to the question regarding optimal macroeconomic policy mix during the financial crisis. I try to fill this gap in the literature. Therefore the main objective of this paper is to examine the impact of the financial crisis on real output for developing and emerging countries and what kind of macroeconomic measure should be used in the developing and emerging countries during the economic crisis in order to alleviate economic recession. For this purpose, I analyze 72 episodes of financial crisis that have been occurred over 1980-2010 in developing and emerging countries in order to measure the effect of monetary and fiscal policy on output growth during the financial crises. I employ cross-sectional methodology and following methodology adopted by Gupta et al. (2007).

The reminder paper is organized as a follows: Section II Econometric analysis of the impact of monetary and fiscal policy measure on output cost; Section III Data description; Section IV empirical result and Section V conclusions

2. Econometric Analysis of the Effect of Monetary and Fiscal Policy on Output Cost during the Financial Crisis

To investigate the effect of monetary and fiscal policy on output cost during the financial crisis I employ benchmark empirical model that contain a standard set of variables. I follow the methodology by Jie (2013) and Hutchison at al., (2010), who investigates the effect of monetary and fiscal policy on output cost. The benchmark model of output cost or output-loss includes important control variables in the regression in order to measure marginal effect of macroeconomics variables and avoiding omitted-variables bias.

The specification of econometrics model is as follows:

$$Cost_i = B_0 + B_1 X_i + B_2 D_i^{fisc} + B_3 D_i^{mon} + u_i \quad (1)$$

Where output-cost is the cost of output associated with financial crisis $\boldsymbol{i}$, D_I^{fisc} are binary indicators for expansionary and contractionary changes in fiscal policy stance, X_i is a vector of control variables, D_i^{mon} are binary indicators for expansionary and contractionary monetary policy. I measure monetary policy by the changes in the international reserves and in the discount rate as monetary indicators. Fiscal policy is measured by changes of fiscal stance that are independent of the business cycle. The constructions of monetary and fiscal indicators are explained in detail in the following section.

3. Description of Data

3.1 Definition of Financial Crisis

In this part I explain the characteristics of financial crisis both banking crisis and currency crisis. I utilized the database calculated by Laeven and Valencia (2008, 2010) (LV-henceforth) and they identify 124 systematic banking crisis and 208 banking crisis. They define banking crisis as "a corporate and financial sectors experience a large number of defaults and financial institutions and corporations face great difficulties repaying contracts on time. The currencies crisis is defined as "a nominal depreciations of currency of at least 30% percent that is also a 10 percent increase in the rate of depreciation compared to the year before."

The sample episodes include 72 countries over the period from 1977 to 2010. I denote the starting of a both crises in period t, as a banking crisis, associated with currencies crisis over the period [t-3, t+3]. The details of the episodes and data sources are reported in Appendix A and B.

In Table 1, I display frequency of both crises such as banking crisis and currency crisis. As seen from the Table 1, in period of 1970, banking and currency episodes are infrequent, which is 0.2 on averages per year, whereas

from 1980, the frequency of both crisis are considerably increased from 2.2 on average per year to 3.43 on average per year. Since 1980, an increase of both crises, (banking crisis and currencies crisis), perhaps could be as result of financial liberalization (Kaminsky and Reinhart, 1999). In addition, both crises are larger than single crisis, which indicate that banking crisis can lead to a currency crisis or after the currency crisis. Thus, the policy makers have to take into account both crises should not consider separately.

Table 1. Frequency of banking and currency crises

	1970-2003		1970-1979		1980-1989		1990-2003	
	total	average	total	average	total	average	total	average
banking crises	72	12.4	4	0.4	39	3.9	81	5.79
both crises episodes	72	7.2	2	0.2	22	2.2	48	3.43
currency crises	207	20.7	25	2.5	7.2	7.2	110	7.86

Note: both crises episodes are beginning data of a banking crisis with currency crises over (t-3, t+3). Average is average per year. Source: Author's calculation.

3.2 Definition of Variables in Empirical Research

a. Output-loss or output cost

There is several ways to measure output-cost associated with financial crisis. Following Laeven et al., (2008, 2010), I construct the data for output cost by calculating the data (pre-crisis) for average GDP growth rate trend for given countries t-3 to t-1, t is starting crisis and (post-crisis) GDP growth rate t+1 to t+3, until GDP growth rate return back to its trend. Therefore, the difference between real GDP growth rate trend (pre-crisis) and actual real GDP growth (post-crisis) represent the output-cost for each given countries.

b. Fiscal policy

I' m interested to measure discretionary fiscal policy response to output cost. As the budget- balance can move with the same path with rate of economic growth, I have to decompose budget-balance into their structural and cyclical component in order to assess discretionary fiscal measure during financial crisis. I employ standard method used by Blanchard, (1990), Jie (2013) and Hutchison at al., (2010), in order to take out both trend and cyclical component from budget-balance. The discretionary fiscal policy I calculate from the residual of each country based on the following equation. This is standard measure for fiscal stance which allows us to find discretionary fiscal measure.

The model for estimating fiscal indicator is as follows:

$$BB_t = \alpha_0 + B_1 y_t + B_2 y_{t-1} + \alpha_1 t + \eta_t \quad (2)$$

where BB_t is budget balance in percent of GDP of each countries $\boldsymbol{i}$, y_t denotes the real GDP for each countries, $\boldsymbol{t}$ denotes the time trend and η_t denotes the residuals in the regression. Then I estimate the discretionary measure of fiscal policy such as:

$$\Delta_i^f = \hat{\eta}_t - \hat{\eta}_{t+1} \quad (3)$$

Where η_t is the calculated the residuals from equation (2). By this estimation I eliminate simultaneity bias of fiscal stance with output movement in our empirical research. Finally I estimate the binary dummy variable of changes in the fiscal surplus by arranging the 56 observation from small to large. The expansionary fiscal policy is provided from the first 28 observation and I denote the country/year with 1 fiscal expansion and 0 otherwise. The last 28 observation represents contractionary fiscal policy and I denote in the same manner country/year with 1 fiscal contraction and 0 otherwise. This is standard measure of fiscal policy stance see more Blanchard, (1990), Jie (2013) and Hutchison at al., (2010).

c. Monetary policy

There are several way to measure monetary policy, I follow Jie (2013) and Hutchison at al., (2010), Baig and Goldfajn (2001), Goldfajn and Gupta (2003) and they consider changes of international reserves and discount rate. Accumulating international reserves is accompanied with an increase of the monetary base which is the instrument of monetary loosing. De-accumulating international reserve is accompanied with a decrease of the monetary base which is the instruments of monetary tightening. In this context, I perform binary variable for monetary expansion and contraction. Monetary expansion is calculated by one or more changes in the reserve which is higher than two standard deviation from the country mean, and I denote with value 1 monetary

expansion and 0 otherwise. Monetary expansion is calculated by changes in the reserve, which is smaller than two standard deviation from country mean and I denote with value 1 monetary tightening and 0 otherwise. I have not introduced interbank inters rate as it is not available measure in developing and emerging countries. In addition, the interbank inters rate does not show market behavior in those countries, and it is not under the control of the monetary authority. Therefore, I introduce the discount rate as it is under the control of monetary authority and show discrete policy movement. The discount rate is calculated as a monthly increase of the discount rate which is the instrument of monetary contraction and a monthly decrease of the discount rate which is the instrument of monetary expansion. As result, I construct binary dummy variable for monetary expansion and tightening in order to limit the problem of endogeneity. Monetary tightening is calculated by one or more changes in the discount rate, which is higher than two standard deviation from the country mean, and I denote with value 1 monetary tightening and 0 otherwise. Monetary expansion is calculated by changes in the discount rate, which is smaller than two standard deviation from country mean and I denote with value 1 monetary expansion and 0 otherwise.

d. Control variables

I use domestic and international the control macroeconomic variables in multiple regression in order to take into the account omitted-variables bias. The list of control variables are based on the previous literature, particularly, Li and Tang (2010) and Clavo et al., (2004). The list is important since I'm interested to control for factors (unless monetary and fiscal variables) which may affect output growth during the financial crisis. The lists of variables that I use in my empirical research are trade openness, inflation rate and degree of openness of the capital account.

4. Empirical Results

4.1 Descriptive Statistics of Financial Crisis, Fiscal and Monetary Policies

Table 2 shows the summary statistics of output cost (OC), monetary and fiscal policy indicators and control variables. I include variety fiscal and monetary indicators such as: fiscal expansion/ tightening (Fiscale/Fiscalt) and monetary expansion/tightening (Discountdec/Reservedinc and Discountinc/Reservedec) in order to provide more robust result.

Table 2. Data description for fiscal and monetary policy

Variable	Obs.	Mean	SE	Min	Max
OC	56	-7.014961	65.92507	-352.101	217.684
FISCALE	56	0.340426	0.478975	0	1
FISCALT	56	0.106383	0.311661	0	1
DISCOUNTINC	56	0.468085	0.504375	0	1
RESERVEINC	56	0.063835	0.247092	0	1
DISCOUNTDEC	56	0.319149	0.471186	0	1
RESERVEDEC	56	0.297342	0.359876	0	1
TROP	66	62.89607	36.73843	6.32	185.665
INFLATION	66	404.3609	1044.335	-12.907	5018.108
KAOPEN	66	-0.347291	1.320673	-1.81162	2.531836

Source: Aouthor's calculation.

Moreover, I introduce the control variables in order to provide more accurate result of the effect of monetary and fiscal variables on output cost, during the financial crisis. For this purpose, I include three control variables trade openness (TROP), inflation (INFLATION) and openness of the capital account (KAOPEN).

4.2 Model Estimates

The result from table 3 show investigations of eq. 1, applying standard model for output cost for 72 episodes of financial crisis in developing and emerging countries. I include variety fiscal and monetary indicators and three control variables (trade openness, inflation and openness of the capital account) in order to provide more robust result of the effect of monetary and fiscal variables on output cost, during the financial crisis. A positive value of the coefficient of explanatory variables mean a decrease of output cost or output loss and negative value of the coefficient of explanatory variables mean an increase of the output cost or output loss during the financial crises.

As seen from table 3, I find out that fiscal and monetary tightening will shapely increase cost of crisis and

coefficients are statically significant (column (3.1) and (3.2)). Furthermore, the evidence shows that the impact of monetary expansion on output cost is not statically significant (both discount rate and international reserve), while fiscal expansion shows positive impact on output cost and coefficient is statistically significant. A one percentage increase in the fiscal expenditure will decrease output cost or cost of the crisis by 1.41 percentages. The 70 percentage the variation output cost is explained by explanatory variables. In the Column (3.2), I exclude the policy variables that are statistically insignificant. As seen from (3.2), the number of observation is reduce due to the missing of variables for some countries, and the coefficient of determination is slightly increase by 0.02. Almost I find the same result, the fiscal and monetary contraction has significant negative impact on output cost associated with crises and the coefficients are significant. Fiscal expansion has positive impact on output cost during the crisis and the coefficient is statistically significant. A one percentage increase fiscal expenditure reduces output cost by 1.38 percentages and the coefficient is significant.

Table 3. Regressions with policy indicators and control variables

Variable	(3.1)		(3.2)	
Intercept	8.25932**	(0.71)	8.69691***	(0.83)
FISCALE	1.41061**	(2.44)	1.38598*	(2.50)
FISCALT	-2.90112***	(-2.69)	-2.899403**	(2.79
DISCOUNTINC	3.49973	(0.13)		
RESERVEINC	-2.16384	(-0.07)		
DISCOUNTDEC	11.91431	(0.85)		
RESERVEDEC	-3.3897**	(-2.23)	-3.41492***	(-2.32)
INFLATION	0.01929	(3.48)	0.01924	(3.61)
KAOPEN	2.94250***	(0.84)	2.79976**	(0.87)
TROP	-0.04635	(-0.32)	-0.04653	(-0.34)
R-squared	0.700615		0.7213	
F-test	65		7.2	
Obs.	54		43	

Note: The table reports output loss following financial crises, dependant variables output loss to one percent policy variables with control variables (associated t-statistics in parenthesis), *,**,***, show the significance at 10, 5 and 1 percent respectively.

Finally, I find out that fiscal policy is more effective tools than monetary policy during the financial crisis in the developing and emerging countries. My result is consistent with the result of Hutchison et al., (2010), where they find that fiscal policy is more effective tools than monetary policy. However, my result is different than the result of Jie (2013) where they find that monetary policy is more effective than fiscal policy.

5. Conclusion

The paper examines the effect monetary and fiscal policy on output cost or loss during the financial crisis for 72 episodes of financial crisis in developing and emerging countries from 1980 to 2010. The result suggests that in developing and emerging countries fiscal policy is more effective then monetary policy during the financial crisis. An increase of government expenditure by one percentage reduces output cost by approximately 1.4 percentages during the financial crisis, while the coefficient of monetary expansion is statistically insignificant. Moreover, I find out that monetary and fiscal contraction increase significantly output cost. Therefore, the macroeconomic policy mix with an expansionary fiscal policy with a neutral monetary policy reduces output cost during the financial crisis in developing and emerging countries.

References

Baig, T., & Goldfajn, I. (2002). Monetary policy in the aftermath of a currency crises: The case of Asia. *Review of International Economics, 10*(1), 92–112. http://dx.doi.org/10.1111/1467-9396.00320

Baldacci, E., Gupta, S., & Mulas-Granados, C. (2009). *How effective is fiscal policy response in systematic banking crises.* IMF working paper. Retrieved from http://www.imf.org/external/pubs/cat/longres.aspx?sk=23130

Blanchard, O., Chouraqui, J. C., Hagemann, R. P., & Sartor, N. (1990). The sustainability of fiscal policy: New answers to an old question OECD. *Economic Studies, 15*, 17–37. http://dx.doi.org/10.1787/435618162862

Calvo, G. (1998). Capital flow and capital market crises: The sample economics off sudden stops. *Journal of Applied Economics, 1*(1), 35–54. http://dx.doi.org/1903/4261

Goldfajn, I., & Gupta, P. (2003). Does monetary policy stabilize exchange rate following a currency crisis? *IMF staff papers, 50*. Retrieved from http://www.imf.org/External/Pubs/FT/staffp/2003/01/pdf/gupta.pdf

Gupta, P., Mishra, D., & Sahay, R. (2007). Behavior of the output during the currency crisis. *Journal of International Economies, 72*, 428–450. http://dx.doi.org/10.1016/j.jinteco.2006.10.003

Hutchison, M., Noy, I., & Wang, L. (2010). Fiscal policy and monetary policy and the cost of sudden stops. *Journal of International Money and Finance.* http://dx.doi.org/10.1016/j.jimonfin.2009.12.005

IMF. (2008, October). *Fiscal policy as a countercyclical tool.* World Economic Outlook, (Chapter 5, pp. 159–196). Retrieved from http://www.imf.org/external/pubs/ft/weo/2008/02/

IMF. (2008, October). *From recession to recovery: How soon and how strong?* World Economic Outlook, (Chapter 3, pp. 103–138). Retrieved from http://www.imf.org/external/pubs/ft/weo/2008/02/

IMF. (2010). World economic outlook. Retrieved from http://www.imf.org/external/pubs/ft/weo/2010/02/weodata/index.aspx

Jie, L. (2013). The effectiveness of fiscal and monetary policy responses to twin crisis. *Applied Economics, 45*, 27. http://dx.doi.org/10.1080/00036846.2012.736943

Kaminsky, G., & Reinhart, C. (1999). The twin crises: The causes of banking and balance of payment problems. *American Economic Review, 89*(3), 473–500. http://dx.doi.org/10.1257/aer.89.3.473

Laeven, L., & Valencia, F. (2008). *Systematic banking crisis: A new Database*. IMF working paper, 08/224. Retrieved from http://www.imf.org/external/pubs/cat/longres.aspx?sk=26015.0

Laeven, L., & Valencia, F. (2010). *Resolution of Banking crisis: The good, the bad, and the Ugly*. IMF working paper, 10/146. Retrieved from http://www.imf.org/external/pubs/cat/longres.aspx?sk=23971

Appendix A. Financial crisis episodes in developing and emerging countries

Albania	1994	Kenya	1992
Algeria	1990	Korea	1997
Argentina	1980	Lebanon	1990
Argentina	1989	Malaysia	1997
Argentina	1989	Macedonia	1993
Argentina	2001	Mexico	1981
Armenia	1994	Mexico	1994
Azerbaijan, Rep.	1994	Morocco	1980
Belarus	1994	Mozambique	1987
Brazil	1994	Nicaragua	1990
Bulgaria	1996	Nigeria	1991
Cameroon	1994	Paraguay	1995
Central African Rep.	1994	Peru	1983
Chad	1992	Philippines	1983
Chile	1981	Philippines	1997
Congo, Dem. Rep	1983	Russia	1998
Congo, Dem. Rep	1991	Principe	1992
Congo, Rep	1992	Sierra Leone	1989
Dominican Repub.	2003	Sweden	1991
Ecuador	1982	Tanzania	1987
Ecuador	1998	Thailand	1997
Egypt	1980	Togo	1993
Estonia	1992	Turkey	2000
Finland	1991	Ukraine	1998
Georgia	1991	Uruguay	1981
Ghana	1982	Uruguay	2002
Guinea-Bissau	1994	Venezuela	1994
Haiti	1994	Yemen	1995
Indonesia	1997	Zambia	1995
Jordan	1989		

Source: Laeven and Valencia, 2008. Systematic banking crises: a new database, IMF, working paper.

Appendix B. Data Sources

Variables	Data Sources
Real GDP growth rate	WDI
Discount rate/International reserves	IMF, IFS
Annual budget balance (% of GDP)	IMF, GFS
Trade openness	WDI
Inflation	WDI
Capital account openness	Chin and Ito, 2006

Copyrights

Copyright for this article is retained by the author(s), with first publication rights granted to the journal.

This is an open-access article distributed under the terms and conditions of the Creative Commons Attribution license (http://creativecommons.org/licenses/by/3.0/).