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# The effects of fiscal policy during the financial crises in transition and emerging countries: does fiscal policy matter?

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## ABSTRACT

The article investigates empirically the effect of fiscal policy using 101 episodes of banking crisis in transition and emerging countries during the period 1980 to 2013. The research question is whether the timely undertaking of fiscal policy measures would have shortened the length of the financial crisis? Based on data from Leaven and Valencia (2012), we employ OLS with robust standard error and ordered logit model in order to examine the countercyclical effect of fiscal policy during the systematic banking crisis. We find out that countercyclical fiscal policy measures have a positive effect in shortening the length of the financial crisis. The results suggest that fiscal expansion can shorten the length of the financial crisis by nine months in those countries. The countercyclical fiscal measures of income tax cuts are more effective than government consumption in shortening the duration of the crisis. In addition, the results show the effect of income tax cuts become weaker or lose their effect after the output recovery, i.e., after the crisis. Thus, it holds that public investments have the strongest positive effects on economic growth in the medium term and decomposition of fiscal policy matters.

## ARTICLE HISTORY

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Fiscal policy; financial crisis; quantitative analysis

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## 1. Introduction

The latest financial crises have again opened a long debate on whether monetary, fiscal policy or mixed measures are most effective in shortening the length of the financial crisis. There is not yet a consensus among the researchers on which policy measure is more effective; however, the literature has shown that fiscal policy is more effective than monetary policy during financial crises, and therefore fiscal expansion may reduce output loss or shorten the of length crises (IMF, 2008a, 2008b; Baldacci, Gupta, & Mulas-Granados, 2009). Baldacci et al. (2009) investigate the effect of fiscal policies on real output during the financial crisis and find that government consumption can shorten the duration of the financial crisis, and such a measure is more effective than policy supporting public investment or tax cuts. Regarding monetary policy, the evidence shows that countercyclical monetary policy can support shortening of economic recession; however, its efficiency is limited during the

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crisis (see IMF, 2009b; Christiano, Eichenbaum, & Rebelo, 2009). In addition, the empirical evidence has shown that fiscal policy has helped shorten the length of the financial crisis in advanced economies; however, it is not the case with emerging and transition countries (IMF, 2009b). The literature has shown mixed results in emerging and transition countries due to the governments' ability to apply fiscal stimulus over the financial crisis if there is insufficient room before the crisis (Alesina, Ardagna, Perotti, & Schiantarelli, 2002; Kaminsky, Reinhart, & Vegh, 2004). In other words, fiscal policy expansion may shorten the length of the financial crisis, but if the countries have lower public debt it will have a negative impact on public debt level. In such fiscal environment, applying countercyclical fiscal policy will have more cost than benefit in the medium term, i.e., after the financial crisis (Gali, Lopez-Salido, & Valles, 2005; Gosh, Chamon, Crowe, Kim, & Ostry, 2009; Rogoff & Reinhart, 2009).

The financial crises (both banking and currency crisis) are some of the most controversial issues in the literature with regard to the question of to what extent fiscal expansion will shorten length of the crisis in short term and their effect after the financial crisis in medium term (Jansen, Li, Wang, & Yang, 2008). Therefore, first we examine the effectiveness of fiscal policy during and after the crisis period; then we continue by the investigating the composition of the fiscal policy, and determine whether composition of the fiscal policy matters during and after the financial crisis. There are few studies that assess the composition of fiscal expansion and its effect on economic growth during the financial crisis in the short term and after the crisis in the medium term (see Baldacci et al., 2009). Studies by Gali et al. (2005), Gosh et al. (2009) and Rogoff and Reinhart (2009) have shown that tax cuts and public spending measures applied during the financial crisis may have a negative impact on economic efficiency and productivity when the crisis is over. Therefore, the main contributions of this study are as follows. First, we examine the efficiency of fiscal policy to restore growth during the financial crisis and in sustaining economic growth in the post-crisis period. Previous studies such Claessens, Kose, and Terrones (2008), Gupta, Mishra, and Sahay (2007), Hutchison, Noy, and Wang (2010) and Fetai (2013) have investigated only policy responses during the crisis with insufficient detail. Second, we examine the efficiency of the decomposition of well-known channels of fiscal policy during crisis and post-crisis periods. The composition of fiscal policy and its effect on the length of crisis and post-crisis output recovery has not been investigated in any detail in the literature. Hence, we attempt to fill this gap in the literature by answering the following research questions: Does the timely undertaking of fiscal policy measures shorten the length of the crisis and what is their effect on post-crisis growth in the medium term? Furthermore, does the composition of fiscal policy matter during and after the financial crisis? Moreover, what kind of fiscal measure should be used in transition and emerging countries during financial crises in order to alleviate economic recession?

To address these questions, the article examines the effectiveness of the fiscal policy of restoring growth during the financial crisis and their implications after the financial crisis using 101 episodes of banking crisis in transition and emerging countries during the period 1980–2013. In spite of their importance, the questions above have not been investigated in the literature due to the lack of appropriate data. Based on the structured data-set by Leaven and Valencia (2012), we employ OLS with robust standard error and ordered logit model in order to examine the countercyclical effect of fiscal policy during the financial crisis and in the post-crisis period. The ordered logit model is used as robust study method in order

to check the impact of outliers between the crisis and long duration. We also employ the General Method of Moments (GMM) estimator for robustness check and to solve endogeneity problem (see Appendix, Table A.3).

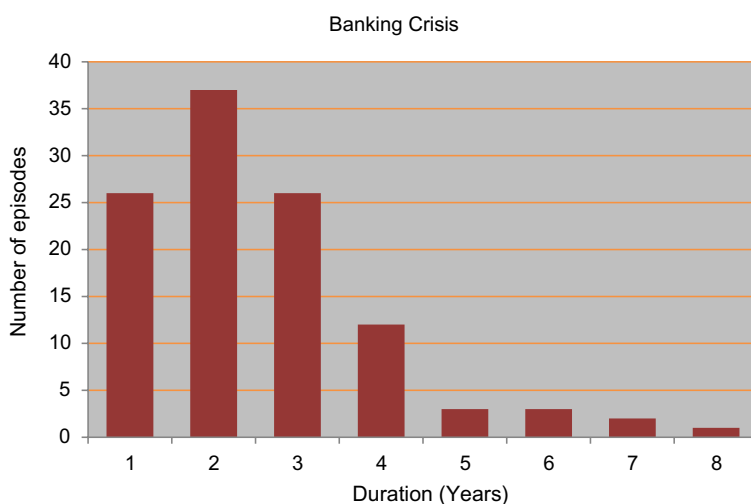
Finally, the main findings of this study are as follows. First, we find that countercyclical fiscal policy measures have positive effect in shortening the length of the financial crisis. Second, in the composition of the fiscal measures, income tax cuts are more effective than government consumption in shortening the duration of the crisis. Third, the results show that income tax cuts become weaker or lose their effect after the output recovery, i.e., after the financial crisis. Thus, it holds that public investments have the strongest positive effects on economic growth in the medium term and decomposition of fiscal policy matters.

The remainder of the article is organised as follows. Section 2 provides a brief history of fiscal policy during the banking crisis; Section 3 covers the methodology and data; Section 4, the results; and Section 5, the conclusions.

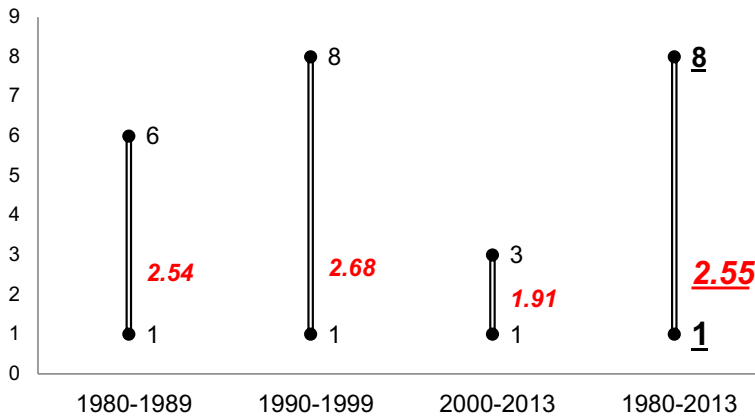
## 2. Brief history of fiscal policy during the banking crisis

In this section, we present the data-set of the duration of banking crisis and the impact on economic growth in the emerging and transition countries during the period 1980 to 2013. Based on the data-set structured by Leaven and Valencia (2012) and including additional data from the International Financial Statistics, World Economic Outlook and Government Financial Statistics, we identify 101 episodes of banking crisis in the period 1980–2013 in emerging and transition countries. As shown in Figure 1, the duration of the banking crisis episodes has lasted between one and three years 80.1% of the time, with only one episode lasting eight years, in Paraguay from 1995 to 2003.

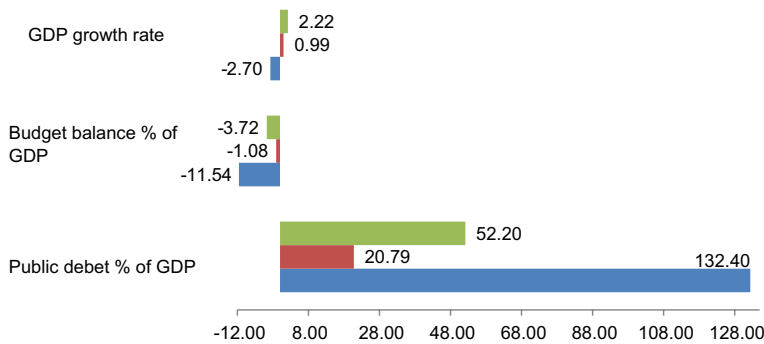
In addition, we find that banking crisis episodes last on average for two and half years in the period from 1980 to 2013 (see Figure 2). This is consistent with the findings by Claessens,



**Figure 1.** Frequency of the duration of banking crisis. Source: Leaven and Valencia (2012) and IFS, WEO and GPS and Author's calculation.



**Figure 2.** Frequency of the duration of the crisis in different periods. Source: Leaven and Valencia (2012) and IFS, WEO and GFS and Author's calculation.



**Figure 3.** Economic consequences of the banking crisis. Source: IFS, WEO and GFS and Author's calculation.

Kose, and Terrones (2008). They find that the relation between recession and credit crisis has lasted for two and half years.

The longest duration of the banking crisis has occurred in the period from 1990 to 1999, compared with others periods.

The Figure 3 shows the economic cost generated by the banking crisis. The average real GDP growth fell from 2.22 before the year of the crisis to  $-2.7$  during the banking crisis. The budget deficit went up by  $-11.54\%$ , and also public debt level went up by  $132.4\%$  of GDP.

Following recent literature by Ardagna (2009), we estimate behaviour of the fiscal variables two years before the crisis, during the crisis and two years after the crisis. All fiscal variables are estimated as a percentage of GDP. As shown in Table 1, public debt is increased during the crisis by 20 percentage points of GDP, and budget deficit is increased by 2.34 percentage points. Looking at the expenditure side of the budget composition reveals that the current expenditure increased considerably, while the public investment remained unchanged during the banking crisis. In the post-crisis period, current expenditure declined and returned to its normal path, and the public investment recovered considerably more than the reduction in the public spending.

**Table 1.** Fiscal aggregates and budget composition (as percentage of GDP).

|  | Prior crisis (t-2; t-1) | During crisis (t) | After crisis (t+1; t+2) |
|--|-------------------------|-------------------|-------------------------|
| Public debt                                | -0.42                   | 20.79             | -6.82                   |
| Budget balance                             | -0.74                   | -3.08             | 1.50                    |
| Primary budget balance                     | -0.30                   | -0.18             | 0.32                    |
| • Current expenditure                      | 0.8                     | 2.1               | 0.3                     |
| • Capital investment                       | 0.1                     | 0.1               | 2.6                     |
| Total expenditure                          | 0.9                     | 2.2               | 2.9                     |
| Public revenues                            |                         |                   |                         |
| • Income, profits, and capital gains taxes | 0.4                     | -1.2              | 3.8                     |
| • Good and service taxes                   | 0.2                     | -0.5              | 0.4                     |
| Total public revenue                       | 1.02                    | -2.52             | 0.14                    |

Notes: Figures in (t) show the change in the variables between the last year of the crisis period and the pre-crisis period. Figures in (t-2; t-1) show the changes in the variables two years before the beginning of the crisis. Figures in the (t + 1; t + 2) show the change in the variables in the next two years after the last year of the crisis.

Source: Data are obtained from IMF, World Bank and WEO and Author's calculation.

Regarding public revenue of the budget composition, the income, profits, and capital gains taxes decreased by one percentage point of GDP, which is also associated by decreasing the goods and service taxes.

After the period of the crisis, revenue increased, especially income, profits and capital gains and goods and service taxes due to the economic recovery of the private sector and recovering of private consumption.

### 3. Methodology and data

#### 3.1. Research methodology and data

Following the methodology by Gupta et al. (2007), Baldacci et al. (2009), Hutchison et al. (2010) and Fetai (2013) in investigating the effect of fiscal policy on crisis length and post-crisis growth, we employ OLS with robust standard errors and an ordered logit model. The ordered logit model is used as a robust analysis method in order to check the impact of the outliers between crisis and long duration. We also employ the GMM estimator (except Baldacci et al. that apply 2OLS for endogeneity problem), in order to solve the endogeneity problem due to the correlation between GDP and fiscal variables (see Appendix, Table A.3).

Based on the data by Laeven and Valencia (2012), we estimate the effect of fiscal expansion policy using Equation (1). In the equation, fiscal policy expansion takes the value of 1 if the budget worsens more than 1.5 in relation to GDP in the three years from the beginning of the financial crisis, and 0 otherwise.

$$\begin{aligned} Duration(t) = & B_0 + B_1 Exap.Fisc_t + B_2 Cred.Boom_{t-1} + B_3 Depo.Freez \\ & + B_4 N.BankClosed + B_5 Gov.Intervention + \epsilon_t \end{aligned} \quad (1)$$

Duration in Equation (1) is defined as a period between start and end of the crisis. We suppose that a crisis end after two successive years of real GDP growth above ½ percentage per year (Laeven & Valencia, 2012). This supports us in connecting the duration of the crisis with negative output growth of the crisis. The  $t$  expresses the time period during the banking crisis, while  $t-1$  express one year before the start of the crisis. Fiscal expansion

is specified above. Credit boom takes the value 1 if the banking crisis was associated with large expansion of credit and 0 otherwise. Deposit freeze is a dummy variable that takes the value 1 if there is deposit freeze and 0 otherwise. Furthermore, we include two additional control variables on the number of the banks closed and the level of government intervention (Laeven & Valencia, 2012)

Next, we also examine the effectiveness of the fiscal policy regarding the role of budget composition. We apply the following specification of the model:

$$\begin{aligned} Duration(t) = & B_0 + B_1 Exap.Fisc_t + B_2 \sum_{i=1}^4 BudgetComposition + B_3 Cred.Boom_{t-1} \\ & + B_4 Depo.Freez + B_5 N.BankClosed + B_6 Gov.Intervention + \varepsilon_t \end{aligned} \quad (2)$$

The expansionary fiscal policy is accompanied with four fiscal variables of budget composition in order to measure more specific channels of the effect of fiscal policy during and after a financial crisis. Those channels may boost both aggregate demand and supply, and thus restore economic growth during the crisis and maintain output recovery in the post-crisis period. For this purpose, we include the well-known channels of fiscal policy that can affect economic growth through public consumption, public investment, income, profits, capital gain taxes and goods and service taxes. In other words, we examine both sides of the structure of the budget, i.e., the expenditure side and revenue side. For policy control we also include credit boom, deposit freeze, the number of the bank closed and the degree of the government intervention in the financial sector. The government intervention in the financial sector is estimated by recapitalising banks in order to restore banks' lending channels (see Laeven and Valencia (2012) for the derivation of these variables).

The countercyclical fiscal policy responses and budget composition are important not only to shorten the length of crises but also to contribute to output recovery after the financial crises. For this purpose we use the following model:

$$\begin{aligned} PostOutputGrowth(t) = & B_0 + B_1 Exap.Fisc_t + B_2 \sum_{i=1}^4 BudgetCompstion + B_3 Cred.Boom_{t-1} \\ & + B_4 Depo.Freez + B_5 N.BankClosed + B_6 Gov.Intervention + \varepsilon_t \end{aligned} \quad (3)$$

The model contains the impact of the most important determinants on average real GDP growth in the five years after the end of the crisis.

### 3.2. Data in empirical research

In the Table 2, we provide basic summary statistics of the variables, from the sample of 101 banking crisis episodes which are included in the OLS with robust standard error and the ordered logit model and GMM estimator. We apply econometric techniques and include the duration of the crisis and variety of fiscal policy indicators in order to provide a more robust result (see Table 2). First, we assess the impact of fiscal expansion on the duration of the crisis and then we assess the relevance of the budget composition on the duration of the crisis and its effect on average real GDP after the crisis.

Furthermore, we introduce control variables in order to provide more control factors, unless they influence the fiscal variables during the duration of the crisis and real GDP

**Table 2.** Descriptive statistics.

| Variables   | Observation | Mean    | Standard deviation | Minimum  | Maximum  |
|---|-------------|---------|--------------------|----------|----------|
| Duration  | 110         | 2.55454 | 1.44366            | 1        | 8        |
| Fiscal expansion  | 101         | 0.63934 | 0.4841758          | 0        | 1        |
| Credit boom   | 101         | 0.30693 | 0.4635207          | 0        | 1        |
| Deposit freeze  | 101         | 0.15384 | 0.3655178          | 0        | 1        |
| Number of the banks closed over t to t+3                    | 101         | 18.5116 | 61.0259            | 0        | 399      |
| Government intervention                                     | 101         | 0.84615 | 0.3643213          | 0        | 1        |
| Public consumption as percentage of total expenditure       | 103         | 14.6383 | 6.747075           | 4.363883 | 43.4792  |
| Public Investment as percentage of total expenditure        | 104         | 20.7120 | 11.9318            | 2.732897 | 111.6711 |
| Income tax revenue as percentage of total revenue           | 102         | 4.6459  | 3.044865           | 0.005678 | 11.34465 |
| Good and service tax revenue as percentage of total revenue | 105         | 7.73041 | 4.144947           | 0.002699 | 18.97056 |

Source: Author's calculation.

**Table 3.** The impact of fiscal policy on shortening crises length.

|  | Duration (OLS)       | Duration (Orderedlogit) |
|--|----------------------|-------------------------|
|  | Model 1              | Model 2                 |
| Fiscal expansion                           | -0.8056***<br>(1.16) | -0.3136***<br>(0.34)    |
| Credit boom                                | -0.3214**<br>(0.56)  | -0.6582**<br>(0.86)     |
| Deposit freeze                             | -0.9578**<br>(1.23)  | -1.2801***<br>(1.26)    |
| Number of the banks closed during t to t+3 | -0.0055**<br>(1.36)  | -0.0106**<br>(1.43)     |
| Government intervention                    | 0.2985***<br>(0.34)  | 1.0422***<br>(0.89)     |
| Constant                                   | 3.1064***<br>(2.30)  |                         |
| Observation                                | 101                  | 101                     |
| R-squared/Pseudo R2                        | 0.5495               | 0.2774                  |

Notes: \*\*\* significant at 1%; \*\* significant at 5%; \* significant at 10%.

Source: Author's calculation.

after the crisis. For this purpose, we include four control variables: credit boom; deposit freeze; number of the closed banks; and government intervention. The data sources for all variables are provided in the Appendix (Table A.2).

## 4. Empirical analysis

### 4.1. The effect of fiscal policy on duration of financial crises

In this section, we estimate the impact of fiscal policy on the duration of the crisis and its effect on average real GDP after the crisis. As seen from the Table 3, fiscal expansion has significant effect on shortening the duration of the crisis by more than three-quarters and the coefficient is statistically significant. In addition, the other variables have the expected sign that may help expansionary fiscal policy to shorten length of the crisis; particularly, deposit freeze will reduce the length of the crisis by almost one year and the coefficient is statistically significant.



The number of the closed bank may help to shorten the length of the crisis. The only factor that does not have any impact on the duration of the crisis, but could make longer the length of the crisis (by more than three months), is government intervention in the financial sector. Moreover, government intervention in the financial system by recapitalising stressed banks and enabling them to lend again during the financial crisis is likely to worsen the crisis rather than restore the economic growth.

Table 4 shows the result of the fiscal expansion which is associated with four fiscal variables of budget composition. In this model, we also find that fiscal expansion and four fiscal variables of budget composition may reduce the length of the crisis, and the coefficients are statistically significant. Looking at the result of budget composition, we find that all fiscal variables, such as public consumption, public investment, income taxes and goods service taxes, may lead to a reduction of the length of the crisis. Furthermore, the result suggests that the government may shorten the duration of the crisis by undertaking measures that are either expenditure-based or revenue-based fiscal expansion.

However, the result also suggests that the income tax cuts are a more effective tool than government consumption, public investment and goods and service taxes in shortening the length of the crisis. A decrease in the income tax by 1% would shorten the length of the crisis by around two months, which is not case with public consumption, public investment and goods and service taxes.

#### **4.2. The effect of fiscal policy after the financial crises**

The result in Table 5 shows that fiscal expansion does not have a statistically significant effect on economic growth after the crisis. Furthermore, the coefficient of public consumption and government intervention in the financial sector are not statistically significant, while only public investments and income tax cuts have a positive effect on economic growth after the crisis. An increase in the public investment by 1% will generate a positive effect on real GDP by 0.14% in the medium term, while if income tax cuts are reduced by 1% it will have a positive effect on real GDP by 0.014%.

The results also show that the income tax cut effect becomes weaker or loses its effect after the output recovery, i.e., after the crisis. Thus, it holds that public investments have the strongest positive effects on economic growth in the medium term and decomposition of fiscal policy matters. Furthermore, since the coefficient the government intervention in the financial sector is not statistically significant, we may conclude that the government intervention in the financial sector in order to recapitalise stressed banks and support them to lend again will not have any effect in restoring economic growth and sustaining economic growth after the financial crisis. Therefore, the result does not suggest any interaction between fiscal policy and financial system in terms of restoring growth during the crisis and sustaining growth in the post-crisis period.

In order to examine the robustness check and to deal with endogeneity problem, we employ the GMM estimator. Appendix Table A.3 report the estimation results by this methodology. The dynamic panel model is well modelled, as the coefficients lagged for the duration are statistically significant (see Appendix, Table A.3). Furthermore, the Hansen J-test with associated p-value, which examines the validity of the instrumental variables, is accepted as a healthy instrument. Therefore, the results from GMM estimator have proved the hypothesis that instrumental variables are not correlated with the set of residuals. As a

**Table 4.** The impact of fiscal policy composition on shortening crises length.

|   | Duration (OLS)      |                     |                     |                     | Duration (Orderedlogit) |                     |                     |                    |
|---|---------------------|---------------------|---------------------|---------------------|-------------------------|---------------------|---------------------|--------------------|
|   | Model1              | Model2              | Model3              | Model4              | Model1                  | Model2              | Model3              | Model4             |
| Fiscal expansion  | -0.841**<br>(-1.14) | -0.791**<br>(-1.1)  | -1.285**<br>(-1.53) | -0.866**<br>(-1.16) | -0.497*<br>(-0.51)      | -0.354**<br>(-0.38) | -0.988**<br>(-0.81) | -0.515*<br>(-0.55) |
| Public consumption as percentage of total expenditure       | -0.02**<br>(-0.4)   |                     |                     |                     | -0.05**<br>(-0.72)      |                     |                     |                    |
| Public investment as percentage of total expenditure        |                     | -0.5*<br>(-0.14)    |                     |                     |                         | 0.002*<br>(0.27)    |                     |                    |
| Income tax revenue as percentage of total revenue           |                     |                     | 0.162***<br>(1.37)  |                     |                         |                     | 0.286***<br>(1.57)  |                    |
| Good and service tax revenue as percentage of total revenue |                     |                     |                     | 0.010**<br>(0.14)   |                         |                     |                     | 0.010**<br>(0.11)  |
| Credit Boom   | -0.425<br>(-0.7)    | -0.294<br>(-0.48)   | -0.898<br>(-1.1)    | -0.288<br>(-0.44)   | -0.943<br>(-1.15)       | -0.730<br>(-0.91)   | -1.802<br>(-1.49)   | -0.597<br>(-0.71)  |
| Deposit freeze  | -0.966**<br>(-1.21) | -0.97***<br>(-1.22) | -1.780**<br>(-1.85) | -1.121**<br>(-1.32) | -1.3***<br>(-1.33)      | -1.234**<br>(-1.2)  | -4.403**<br>(-2.36) | -1.75**<br>(-1.54) |
| Number of the banks closed over t to t+3                    | -0.005**<br>(-1.23) | -0.005**<br>(-1.33) | -0.007*<br>(-1.6)   | -0.006**<br>(-1.32) | -0.01**<br>(-1.37)      | -0.01**<br>(-1.42)  | -0.016**<br>(-1.77) | -0.01**<br>(-1.43) |
| Government intervention                                     | 0.245**<br>(0.27)   | 0.311***<br>(0.35)  | 0.252***<br>(0.25)  | 0.481***<br>(0.47)  | 0.935**<br>(0.78)       | 1.002***<br>(0.85)  | 2.113***<br>(1.16)  | 1.654**<br>(1.14)  |
| Constant  | 3.493***<br>(2.3)   | 3.170***<br>(2.18)  | 4.851***<br>(2.46)  | 3.016***<br>(1.8)   |                         |                     |                     |                    |
| Observation   | 101                 | 101                 | 101                 | 101                 | 101                     | 101                 | 101                 | 101                |
| R-squared/pseudo R2   | 0.461               | 0.350               | 0.317               | 0.271               | 0.190                   | 0.478               | 0.314               | 0.299              |

Notes: \*\* significant at 1%; \*\*\* significant at 5%; \* significant at 10%.

Source: Author's calculation.

**Table 5.** The impact of fiscal policy composition on economic growth after crises.

|   | Average growth (t - t+5) (ols) |                    |                    |                     | Average growth (t - t+5) (robust) |                    |                    |                     |
|---|--------------------------------|--------------------|--------------------|---------------------|-----------------------------------|--------------------|--------------------|---------------------|
|   | Model 1                        | Model 2            | Model 3            | Model 4             | Model 1                           | Model 2            | Model 3            | Model 4             |
| Fiscal expansion  | 1.055<br>(1.16)                | 0.395<br>(0.39)    | 0.865<br>(0.75)    | 0.896<br>(0.99)     | 1.055<br>(1.41)                   | 0.395<br>(0.45)    | 0.865<br>(0.81)    | 0.896<br>(1.21)     |
| Public consumption as percentage of total expenditure       | -0.051<br>(-0.77)              |                    |                    |                     | -0.051<br>(-0.87)                 |                    |                    |                     |
| Public investment as percentage of total expenditure        |                                | 0.141**<br>(0.27)  |                    |                     |                                   | 0.141**<br>(0.31)  |                    |                     |
| Income tax revenue as percentage of total revenue           |                                |                    | -0.014*<br>(-0.64) |                     |                                   |                    | -0.014*<br>(-0.72) |                     |
| Good and service tax revenue as percentage of total revenue |                                |                    |                    | -0.075**<br>(-0.89) |                                   |                    |                    | -0.075**<br>(-1.25) |
| Credit boom   | 0.511<br>(0.68)                | -0.050<br>(-0.06)  | 1.372<br>(1.22)    | 0.760<br>(0.96)     | 0.511<br>(0.75)                   | -0.050<br>(-0.05)  | 1.372<br>(1.07)    | 0.760<br>(1.05)     |
| Deposit freeze  | 0.972***<br>(0.99)             | 0.995***<br>(0.89) | 1.820**<br>(1.37)  | 0.736***<br>(0.71)  | 0.972**<br>(0.89)                 | 0.995***<br>(0.93) | 1.820**<br>(1.28)  | 0.736**<br>(0.69)   |
| Number of the banks closed over t to t+3                    | 0.007<br>(1.41)                | 0.005<br>(0.86)    | 0.007<br>(1.22)    | 0.006<br>(1.18)     | 0.007<br>(3.19)                   | 0.005<br>(1.83)    | 0.007<br>(1.91)    | 0.006<br>(2.57)     |
| Government intervention                                     | 1.492<br>(1.31)                | 0.932<br>(0.73)    | 2.220<br>(1.58)    | 1.921<br>(1.51)     | 1.492<br>(1.81)                   | 0.932<br>(0.96)    | 2.220<br>(2.02)    | 1.921<br>(2.11)     |
| Constant  | 1.282**<br>(0.69)              | 1.517**<br>(0.74)  | -1.02**<br>(-0.38) | -0.38**<br>(-0.19)  | 1.28**<br>(0.96)                  | 1.517<br>(1.03)    | -1.02**<br>(-1.02) | -0.38**<br>(-0.26)  |
| Observation   | 101                            | 101                | 101                | 101                 | 101                               | 101                | 101                | 101                 |
| R-squared/pseudo R2   | 0.326                          | 0.263              | 0.288              | 0.348               | 0.226                             | 0.163              | 0.388              | 0.448               |

Notes: \*\*\* significant at 1%; \*\* significant at 5%; \* significant at 10%.  
Source: Author's calculation.

result, the Hansen p-value test cannot reject the null hypothesis. In addition, AR (1) and AR (2) test with associated p-value is accepted in the second order, which confirms that there is no autocorrelation in the second order in the errors term. Applying different techniques OLS with robust standard errors and ordered logit model and GMM estimators, we obtain almost the same result. The results in Appendix Table A.3 show that the main findings hold.

## 5. Conclusion

This article empirically examines the effect of fiscal policy on the length of crisis during the 101 banking crisis episodes and their effect after the crisis from 1980 to 2013, in emerging and transition economies. The results show that expansionary fiscal policy has positive effect in shortening the length of crisis episodes. Furthermore, the results suggest that fiscal expansion may shorten the length of the crisis by around nine months in those countries. This result is in line with previous studies (Classenes, Kose, & Terrones, 2008; Baldacci et al., 2009; International Monetary Fund, 2009b, 2009c) that emphasise the effectiveness of the fiscal policy during recessions that are triggered by problems in the financial sector.

The fiscal expansion associated with budget composition matters for the length of the crisis since all fiscal variables, such as public consumption, public investment, income taxes and goods service taxes, would lead to a reduction of the duration of the crisis. Furthermore, the result suggests that the government may undertake such measures as expenditure-based or revenue-based fiscal expansion in order to reduce the duration of the crisis. The result also suggests that income tax cuts are a more effective tool than government consumption, public investment and goods and service taxes in shortening the length of the crisis in those countries. A decrease in the income tax by 1% would shorten the length of the crisis by around two months, which is not the case with public consumption, public investment and goods and service taxes.

In the post-crisis period, the fiscal expansion does not have any impact on economic recovery, which is likely to generate negative impact on long-term economic growth. Moreover, the coefficient of public consumption is not statistically significant, while only public investments and income tax cuts have a positive effect on economic growth after the crisis. An increase in public investment by 1% will generate a positive effect on real GDP by 0.14% in the medium term, while a 1% decrease in income tax will have a positive effect on real GDP by 0.014%. In summary, the results show that the effect of income tax cuts become weaker or lose their effect after the output recovery, i.e., after the financial crisis. Thus, it holds that public investments have the strongest positive effects on economic growth in the medium term and the quality of fiscal stimulus package matters.

## Disclosure statement

No potential conflict of interest was reported by the author.

## References

- Alesina, A., Ardagna, S., Perotti, R., & Schiantarelli, F. (2002). Fiscal policy, profits, and investment. *American Economic Review*, 92, 571–589. doi:10.1257/00028280260136255
- Ardagna, S. (2009). Financial markets' behavior around episodes of large changes in the fiscal stance. *European Economic Review*, 53(January), 37–55. doi:10.1016/j.euroecorev.2008.07.003

- Baldacci, E., Gupta, S., & Mulas-Granados, C. (2009). How effective is fiscal policy response in systematic banking crises. IMF Working Paper, WP/09/160. Retrieved from [https://www.ucm.es/data/cont/media/www/pag-20077/3-How%20effective\\_FMI.pdf](https://www.ucm.es/data/cont/media/www/pag-20077/3-How%20effective_FMI.pdf)
- Christiano, L., Eichenbaum, M., & Rebelo, S. (2009). When is the government spending multiplier large? mimeo. Retrieved from <http://www.kellogg.northwestern.edu/faculty/rebelo/html/multiplier.pdf>
- Classenes, S., Kose, M., & Terrones, M. (2008). What happens during recessions, crunches and busts? IMF Working Paper WP/08/274. Retrieved from <https://www.imf.org/external/pubs/ft/wp/2008/wp08274.pdf>
- Fetai, B. (2013). Monetary and fiscal responses during the financial crisis in the developing and emerging economies. *International Journal of Economics and Finance*, 5, 110–116. doi:10.5539/ijef.v5n9p110
- Gali, J., Lopez-Salido, D., & Valles, J. (2005). Understanding the effects of government spending on consumption. NBER Working Paper No. 11578. doi:10.3386/w11578
- Gosh, A. R., Chamon, M., Crowe, C., Kim, J. I., & Ostry, J. D. (2009). Coping with the crisis: Policy options for emerging market countries. IMF Staff Position Note, SPN/09/08. Retrieved from <https://www.imf.org/external/pubs/ft/spn/2009/spn0908.pdf>
- Gupta, P., Mishra, D., & Sahay, R. (2007). Behavior of the output during the currency crisis. *Journal of International Economics*, 72, 428–450. doi: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*, xxx, 1–15, doi:10.1016/j.jimonfin.2009.12.005
- International Monetary Fund. (2008a). *From recession to recovery: How soon and how strong?*, World Economic Outlook, October, Chapter 3, Washington, DC: International Monetary Fund. Retrieved from <https://www.imf.org/external/pubs/ft/weo/2009/01/pdf/c3.pdf>
- International Monetary Fund. (2008b). *Fiscal policy as a countercyclical tool*. World Economic Outlook, October, Chapter 5, Washington, DC: International Monetary Fund. Retrieved from <https://www.imf.org/external/pubs/ft/weo/2008/02/pdf/text.pdf>
- International Monetary Fund. (2009b). *From recession to recovery: How soon and how strong?* World Economic Outlook 2009, Chapter 3. Washington, DC: International Monetary Fund. Retrieved from <https://www.imf.org/external/pubs/ft/weo/2009/01/pdf/c3.pdf>
- International Monetary Fund. (2009c). *Recessions and recoveries in Asia, regional economic outlook*. Asia and Pacific, April 2009, Chapter 2. Washington, DC: International Monetary Fund. Retrieved from <https://www.imf.org/external/pubs/ft/reo/2009/APD/eng/areo0509.htm>
- Jansen, D. W., Li, Q., Wang, Z., & Yang, J. (2008). Fiscal policy and asset markets: A semiparametric analysis. *Journal of Econometrics*, 147, 141–150. doi:10.1016/j.jeconom.2008.09.007
- Kaminsky, G. L., Reinhart, C., & Vegh, C. A. (2004). When it rains, it pours: Procyclical capital flows and macroeconomic policies. *NBER Working Paper*, 10780. Research. Retrieved from <http://www.nber.org/books/gert05-1>
- Laeven, L., & Valencia, F. (2012). Systemic banking crises: An update. IMF Working Paper 08/224. Retrieved from <https://www.imf.org/external/pubs/ft/wp/2012/wp12163.pdf>
- Rogoff, K., & Reinhart, C. (2009). The aftermath of financial crises NBER, Working Paper, 14587. doi:10.3386/w14656

## Appendix

Table A.1. Episodes of the banking crisis in the emerging and transition countries.

| Country           | Episodes | Duration | Country                    | Episodes | Duration | Country             | Episodes | Duration |
|-------------------|----------|----------|----------------------------|----------|----------|---------------------|----------|----------|
| Argentina         | 1980     | 3        | Algeria                    | 1990     | 4        | Azerbaijan 11/      | 1995     | 2        |
| Egypt             | 1980     | 2        | Brazil 10/                 | 1990     | 1        | Belarus 11/         | 1995     | 3        |
| Morocco           | 1980     | 4        | Burkina Faso               | 1990     | 1        | Cameroon            | 1995     | 2        |
| Chile             | 1981     | 2        | Lebanon                    | 1990     | 1        | Central African Rep | 1995     | 3        |
| Mexico            | 1981     | 6        | Nicaragua                  | 1990     | 4        | Guinea-Bissau       | 1995     | 2        |
| Uruguay           | 1981     | 4        | Romania 11/                | 1990     | 3        | Kyrgyz Rep 11/      | 1995     | 1        |
| Colombia          | 1982     | 1        | Sierra Leone               | 1990     | 4        | Lithuania 11/       | 1995     | 1        |
| Ecuador           | 1982     | 1        | Congo, Dem Rep             | 1991     | 3        | Paraguay            | 1995     | 8        |
| Ghana             | 1982     | 2        | Djibouti                   | 1991     | 7        | Swaziland           | 1995     | 7        |
| Turkey            | 1982     | 1        | Georgia 11/                | 1991     | 4        | Zambia              | 1995     | 4        |
| Chad              | 1983     | 5        | Hungary 11/                | 1991     | 1        | Zimbabwe            | 1995     | 1        |
| Congo, Dem Rep    | 1983     | 3        | Nigeria                    | 1991     | 1        | Bulgaria            | 1996     | 4        |
| Equatorial Guinea | 1983     | 4        | Tunisia                    | 1991     | 3        | Jamaica             | 1996     | 3        |
| Niger             | 1983     | 2        | Bosnia and Herzegovina 11/ | 1992     | 2        | Yemen               | 1996     | 2        |
| Peru              | 1983     | 1        | Chad                       | 1992     | 2        | Indonesia           | 1997     | 2        |
| Philippines       | 1983     | 3        | Congo, Rep                 | 1992     | 3        | Malaysia            | 1997     | 2        |
| Thailand          | 1983     | 3        | Kenya                      | 1992     | 2        | Philippines 10/     | 1997     | 2        |
| Mauritania        | 1984     | 2        | Poland 11/                 | 1992     | 1        | Thailand            | 1997     | 2        |
| Guinea            | 1985     | 2        | Sao Tome & Principe        | 1992     | 1        | Vietnam             | 1997     | 3        |
| Kenya             | 1985     | 1        | Cape Verde                 | 1993     | 4        | China, Mainland     | 1998     | 2        |
| Bolivia           | 1986     | 1        | Eritrea                    | 1993     | 3        | Colombia            | 1998     | 2        |
| Bangladesh        | 1987     | 2        | Guinea                     | 1993     | 2        | Croatia 11/         | 1998     | 2        |
| Cameroon          | 1987     | 3        | Guyana                     | 1993     | 3        | Ecuador             | 1998     | 2        |
| Costa Rica        | 1987     | 2        | India                      | 1993     | 1        | Russia 11/          | 1998     | 1        |
| Mali              | 1987     | 2        | Macedonia, FYR 11/         | 1993     | 3        | Ukraine 11/         | 1998     | 2        |
| Mozambique        | 1987     | 6        | Togo                       | 1993     | 3        | Nicaragua           | 2000     | 3        |
| Tanzania          | 1987     | 3        | Albania 11/                | 1994     | 4        | Turkey              | 2000     | 2        |
| Benin             | 1988     | 2        | Armenia 4/                 | 1994     | 6        | Argentina           | 2001     | 2        |
| Cote d'Ivoire     | 1988     | 5        | Bolivia                    | 1994     | 3        | Uruguay             | 2002     | 1        |
| Madagascar        | 1988     | 4        | Brazil                     | 1994     | 3        | Dominican Rep       | 2003     | 1        |
| Nepal             | 1988     | 2        | Burundi                    | 1994     | 3        | Hungary 10/         | 2008     | 2        |
| Panama            | 1988     | 1        | Costa Rica                 | 1994     | 3        | Kazakhstan 10/      | 2008     | 2        |
| Senegal           | 1988     | 3        | Haiti                      | 1994     | 1        | Mongolia            | 2008     | 2        |
| Argentina         | 1989     | 2        | Mexico                     | 1994     | 2        | Russia 10/          | 2008     | 3        |
| El Salvador       | 1989     | 1        | Uganda                     | 1994     | 5        | Ukraine             | 2008     | 2        |
| Jordan            | 1989     | 2        | Venezuela                  | 1994     | 3        | Nigeria             | 2009     | 1        |
| Sri Lanka         | 1989     | 1        | Argentina 10/              | 1995     | 1        |                     |          |          |

Source: Laeven dhe Valencia (2012).

**Table A.2.** Source of the data.

| Variables                             |
|---------------------------------------|
| Real GDP growth                       |
| Current expenditure                   |
| Public consumption                    |
| Public investment                     |
| Income, profit and capital gain taxes |
| Good and service taxes                |
| Credit boom                           |
| Deposit freeze                        |
| Number of the closed banks            |
| Government intervention               |

Source: Leaven and Valencia (2012), WEO, IFS and GPS.

**Table A.3.** Robustness estimation: controlling for endogeneity (GMM).

|   | Duration of crisis   |                     |                     |                      |
|---|----------------------|---------------------|---------------------|----------------------|
|   | Model 1              | Model 2             | Model 3             | Model 4              |
| Fiscal expansion  | -0.631**<br>(-1.34)  | -0.580**<br>(-1.7)  | -1.176**<br>(-0.67) | -0.765**<br>(-1.89)  |
| Public consumption as percentage of total expenditure       | -0.012**<br>(-0.401) |                     |                     |                      |
| Public investment as percentage of total expenditure        |                      | -0.432*<br>(-0.197) |                     |                      |
| Income tax revenue as percentage of total revenue           |                      |                     | 0.188***<br>(1.97)  |                      |
| Good and service tax revenue as percentage of total revenue |                      |                     |                     | 0.021**<br>(0.147)   |
| Credit boom   | -0.125<br>(-0.632)   | -0.394<br>(-0.378)  | -0.768<br>(-1.123)  | -0.189<br>(-0.332)   |
| Deposit freeze  | -0.765**<br>(-1.33)  | -0.87***<br>(-1.42) | -1.790**<br>(-1.65) | -1.321**<br>(-1.7)   |
| Number of the banks closed over t to t+3                    | -0.003**<br>(-1.13)  | -0.004**<br>(-1.23) | -0.006*<br>(-1.61)  | -0.008**<br>(-1.232) |
| Government intervention                                     | 0.145**<br>(0.37)    | 0.421***<br>(0.45)  | 0.351**<br>(0.35)   | 0.321***<br>(0.17)   |
| Constant  | 2.193***<br>(1.30)   | 2.270***<br>(1.280) | 3.750***<br>(1.465) | 2.017***<br>(1.889)  |
| Observation   | 101                  | 101                 | 101                 | 101                  |
| R-squared/pseudo R <sup>2</sup>                             | 0.361                | 0.450               | 0.417               | 0.371                |
| AR(1) p-value   | (0.000)              |                     |                     |                      |
| AR(2) p-value   | (0.445)              |                     |                     |                      |
| Hansen p-value of J-test                                    | (0.32)               |                     |                     |                      |

Notes: Duration of length crisis is dependant variables. The results are first step GMM estimator. Two lag are utilised as a instruments an GMM method. All GMM regression is used robust standard error. Associated t statistics in parenthesis. \*, \*\*, \*\*\*, denote significance at the 10%, 5% and 1% levels respectively. Hansen J-test shows the p-value for null hypothesis of the validity of instruments. AR (1) and AR (2) are p-values for first and second order of auto correlated of error term. That is no autocorrelation between the residuals.

Source: Author's calculation.