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Emerging Market Queries in Finance and Business

The impact of fiscal policy on FDI in the context of the crisis. Evidence from Central and Eastern European Countries

Adina Dornean^{a,*}, Dumitru-Cristian Oanea^b^a“Al. I. Cuza” University of Iasi, Carol I Boulevard no.11, Iasi 700505, Romania^bThe Bucharest University of Economic Studies, 6, Piata Romana, 1st district, Bucharest 010374, Romania

Abstract

Fiscal policy is an important tool in the hand of the central authorities, through which they may influence the distribution of income, the allocation of resources and also the economic activity. On overall, the fiscal policy changes will be reflected in macroeconomic variables, such as GDP, government budget, government debt and also foreign direct investment (FDI). The 2007 financial crisis had a major impact on all economies and each country has applied several fiscal policy measures in order to stabilize their economies. This paper aims to analyze the impact of fiscal policy on FDI for Central and Eastern European countries (EU members) in the context of the recent global crisis. The crisis had a major impact on economic activity of the region, although the magnitude of the impact differed notably, depending on the characteristics of each country economy. In order to highlight this, we use a regression model and panel data methodology, trying to find the most important fiscal policy instruments that influenced the level of FDI for the analyzed countries. The results will be very useful if there is a pattern for different countries regarding the power of a specific fiscal policy instrument in influencing the FDI flows. We expect that, at least one of the two most important instruments of fiscal policy - government revenue (tax revenue) and government expenditure – to have an important impact on FDI level, being a signal that at least some regulation measures applied achieved their goal of stabilizing and helping the economies affected by crisis to recover.

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* Corresponding author. Tel.: +40-232-201610; fax: +40-232-217000.

E-mail address: amartin@uaic.ro.

1. Introduction

Investments are a powerful tool in promoting economic relationships between different parts of the world. After a period of steady improvement in FDI flows between countries, the year 2008 seems to be the end of this period of growth. The upward trend recorded during 2003 – 2007, can be explained through economic growth, investments' liberalization, and an increased number of transnational corporations UNCTAD, 2009a. The global record for the year 2007 of about \$ 1.9 trillion in level of FDI flows was followed by a downward trend. The level of FDI flows recorded in 2007 was a historical peak, being about ten times more than the value recorded in 1990.

For Central and Eastern European Countries appendix A, financial crisis left its mark starting on 2008, when was recorded a decrease of about 27.7% in average level of FDI flows compared to the average level recorded in 2007. Measures applied in CEE countries to counteract the crisis effects focused on monetary policy and fiscal policy, which have led to a deterioration of budget deficit, causing an increase in country risk premiums, finally affecting, at a higher or lower rate, the FDI flows level. Taking into account all these concerns, in our paper we want to analyze the relationship between the FDI flows and fiscal policy for CEE countries. Our study is part of a more comprehensive project that aims to study, to analyze and to argue the macroeconomic and microeconomic effects of the global crisis on FDI, and further the effects on FDI flows of all measures and public policies adopted by countries, in order to counteract the crisis effects.

This paper is organized as follows: section 2 reviews the literature on the relationship between FDI, fiscal policy and financial crisis. In section 3, we describe the methodology used, we show the data selection process and the characteristics of our sample and we report our results. Finally, we present the main conclusions of our study.

2. Literature review on the relationship between FDI, fiscal policy and crisis

The study of FDI and its determinants is very prevalent in academic research. In the literature IEO-IMF, 2003 is widely accepted that among the most important determinants of FDI are the availability of infrastructure, which is critical for motivating investors to invest in emerging market countries (EMC) and also reasonable levels of taxation and the overall stability of the tax regime. In the same study is also mentioned that in the context of the recent financial crises the risk to invest in EMC is greater and the investors pay more attention to the legal framework, the investment regime and the environment for business, when they are investing in a foreign country.

In their paper, Morisset and Pirnia 1999 reviewed the existing literature on tax policy and FDI by examining different aspects: the impact of tax policy on FDI from a global perspective; which tax instruments have the greatest impact on FDI and what kind of foreign investors is likely to be most responsive to changes in tax policy; the interconnection between the home and host countries taxation and its subsequent impact on FDI; tax competition versus harmonization across countries and states, and the costs associated with tax incentive schemes. Their findings suggest that the impact of tax policy may significantly depend on the tax instruments used by the authorities (tax holidays and a general reduction in the statutory tax rate may have different effects on FDI flows and the effectiveness of incentives is also likely to vary depending on the multinational firm's activity and on its motivations for investing abroad.

In order to analyze the role of the government policies in attracting FDI, Goodspeed et al., 2007 have found in their study that increasing government expenditure, such as investment in infrastructure and lowering taxation attract FDI. Their results could help public authorities to understand the importance of maintaining low taxes and using them for investment in infrastructure, rather than using the collected taxes for consumption expenditures if they are interested in attracting FDI.

A large number of empirical studies have been conducted to identify the determinants of FDI but no consensus view has emerged, because factors such as labor costs, trade barriers, trade balance, exchange rate and tax have been found to have both negative and positive effects on FDI Moosa and Cardak, 2003. Also, according to Faeth, 2009 there is not one single theory of FDI, but a variety of theoretical models attempting to explain FDI; therefore, FDI should not be explained by single theories but more broadly by a combination of factors from a variety of theoretical models.

The effect of FDI and public expenditures on economic growth is very important in these times of financial crisis. Regarding to this, Le and Suruga, 2005, analyzed the impact of these two macroeconomic variables on economic growth for a sample of 105 countries for the period 1970-2001. They were able to show that, excessive public expenditure might have a negative impact on FDI, and in the same time FDI has a positive impact on economic growth, results which may lead to directions of recovering from financial crisis.

3. Methodology

3.1. The model

The model used in this paper has as starting point the location model discussed by Tiebout, 1956, which emphasize the influence of government expenditure and taxes over the investment decision. Some ideas of this theory were developed under the Eclectic Paradigm or OLI (Ownership, Location and Internalization) described by Dunning, 2000 and firstly discussed in 1977. Moreover, the benefits of public expenditures and the costs of taxation over the FDI were further discussed in the literature Goodspeed et al., 2007 or Bose and Jha, 2011, highlighting important issues for the central authorities. Our paper will extend the model, because we want to capture the effects of the government decisions regarding fiscal policy during the crisis period on FDI, so the basic model will be given by Equation (1).

$$FDI_{i,t} = \alpha_0 + \alpha_1 \cdot FisPol_{i,t} + \alpha_2 \cdot CRISIS \cdot FisPol_{i,t} + \alpha_3 \cdot FDI_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

where $FDI_{i,t}/FDI_{i,t-1}$ - the level of FDI for country i and year $t/t-1$ as percentages of GDP; $CRISIS \cdot FisPol_{i,t}$ - represent the effects of fiscal policy during the crisis period; $FisPol_{i,t}$ - the fiscal policy proximate represented by government revenue and government expenditure for country i in year t (percentage of GDP); $\alpha_0, \alpha_1, \alpha_2, \alpha_3$ - the model's parameters and $\varepsilon_{i,t}$ - error term. The model will be estimated, first for government revenue and second for government expenditure as proxies for fiscal policy, using last square method (LS) based on balanced panel data. We chose this approach due to a high correlation between revenues and expenditures (0.82), which would lead to multicollinearity if we include both variables in the same regression. We did not include the fiscal deficit (percentage of GDP) as proxy for fiscal policy because according to the results obtained by Bose and Jha 2011 the cross-correlations between FDI inflows and government balances for European Union member states showed that government finances are less important in that countries. The robustness of our regression models will be checked based on the methodology used by Carkovic and Levine 2005. To achieve this goal, we select a control variable represented by Openness trade.

Moreover, we are interested in capturing the magnitude of FDI response to government expenditure and revenues changes in elasticity terms. We estimate an elasticity function (the demonstration is presented in appendix B) for each fiscal policy proxy and regression, based on Equation (2) Sydsæter and Hammond, 2008, for crisis period and non-crisis period:

$$El_x f(x) = \left| \frac{x}{f(x)} \cdot \frac{df}{dx} \right| \quad (2)$$

3.2. Data and descriptive statistics

Data for CEE countries is available for the period 1995 – 2012 from European Commission, AMECO database for government revenue, government expenditure, imports and exports as percentages of GDP (proxy for Openness trade). The values for FDI as percentage of GDP were available on United Nations Conference on Trade and Development (UNCTAD). Officially, the financial crisis started in September 2008, when Lehman Brothers filed for Chapter 11 bankruptcy protection, followed by other financial institutions (e.g. Merrill Lynch, American International Group). CEE countries have experienced the financial crisis more aggressively after the beginning of 2009. In 2009, the level of FDI decreased with almost 58.2%, from a value of 6.02% of GDP in 2008, to 2.52% of GDP.

The evolution of average FDI and average government expenditures and revenues can be clearly observed in Figure 1. If we take a look at fiscal policy proximate, we observe that government expenditures varied a lot due to financial crisis, so after a peak recorded in 2009 of 44.7% of GDP, expenditures start to decrease, due to fiscal measures adopted by all countries. It seems that the value of revenues did not fluctuate during the financial crisis, being recorded just a small increase of 0.7% in 2011. The descriptive statistics for FDI, government revenues, government expenditures and openness trade series are given in Table 1.

At first glance, we see that the highest level of FDI is recorded in Bulgaria (8.97%), while the lowest level belongs to Slovenia (1.73%). Both, the highest value for average expenditure (50.29%) and average government revenues (45.02%) are recorded for Hungary. The lowest values are recorded for Romania, for both variables.

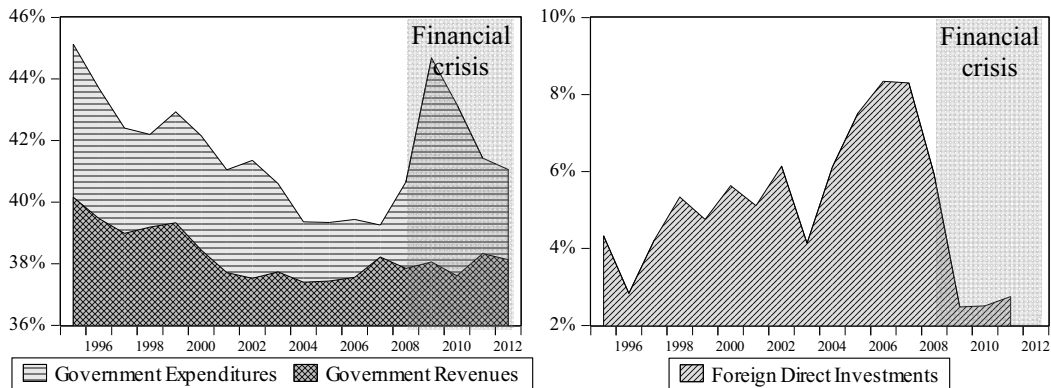


Fig. 1. (a) Average Government Expenditures and Revenues; (b) Average FDI flows for CEE countries (1995 - 2012) (% of GDP)

Table 1: Descriptive statistics

Variable	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtosis		
Average series									
FDI (%)	4.95	3.94	29.42	-1.18	4.19	2.36	11.67		
Expenditures (%)	41.66	41.18	55.83	33.03	0.05	0.33	2.15		
Revenues (%)	38.28	38.31	53.86	29.61	0.04	0.34	2.72		
Openness trade (%)	108.01	106.00	195.33	43.54	0.34	0.16	2.31		
Country level series									
	FDI (% of GDP)			Expenditures (% of GDP)			Revenues (% of GDP)		
	Mean	Max.	Min.	Mean	Max.	Min.	Mean	Max.	Min.
Bulgaria	8.97	29.42	0.68	39.22	48.99	33.90	38.05	41.65	33.60
Czech Rep.	5.01	10.82	1.49	43.94	53.01	41.04	39.45	43.31	38.02
Estonia	7.81	20.63	1.20	37.75	45.48	33.60	37.99	43.46	34.74
Hungary	5.34	11.20	1.62	50.29	55.83	47.76	45.02	53.87	42.17
Latvia	4.59	8.38	0.36	37.97	43.71	34.91	35.62	39.10	33.00
Lithuania	3.36	8.22	0.47	37.43	49.63	33.04	33.86	37.88	31.69
Poland	3.44	5.74	1.73	44.32	51.01	41.08	39.75	46.14	37.21
Romania	3.86	9.26	0.71	36.54	41.11	33.18	32.82	35.32	29.61
Slovakia	5.36	16.93	-0.06	46.67	52.31	42.44	43.36	44.51	42.16
Slovenia	1.73	7.01	-1.19	42.49	53.75	34.21	36.94	45.21	31.98

Through the regression model we have to capture all the characteristics of FDI, openness trade, governmental expenditures and revenues (time series) and we apply the Levin-Lin-Chu panel unit root test Levin et al., 2002 to see if the time series are stationary. According to the results both series are stationary.

Table 2: Stationarity Test Results

Variable	FDI (%)	Expenditures (%)	Revenues (%)	Openness trade (%)
H ₀ : I(1)	-2.61***	-5.09***	-4.28***	-4.03***

*** - Indicates significant at the 0.01 level.

3.3. Results

The empirical analysis is split in two parts. First, we estimated the regression models for government expenditures and government revenues, and secondly we estimate FDI elasticity function with respect to expenditures and revenues, for both periods: crisis and non-crisis. The models are summarized in Table 3.

Our findings suggest that expenditures have a higher impact on FDI flows and the impact is negative, while revenues do not have a significant impact, that coincide with the result of Hajkova et al., 2006. Despite these findings, during the crisis period, both instruments of fiscal policy become strongly significant. Even if in theory, an increase in public expenditures is supposed to attract more foreign investors, in practice, this decision deters them because the increase of expenditures could mean that the financial health of that country is worsening.

Moreover, we estimate FDI elasticity functions with respect to government expenditures and revenues, in order to capture the magnitude of FDI response to fiscal policy. In figure 2 we represent the FDI elasticity evolution based on expenses and revenues for two periods: crisis and non-crisis. We can see that in non-crisis period, FDI is not sensitive at revenues changes, while for expenditures case, for any level above 49.8% of GDP, the FDI flows will react immediately. The situation is changing during financial crisis.

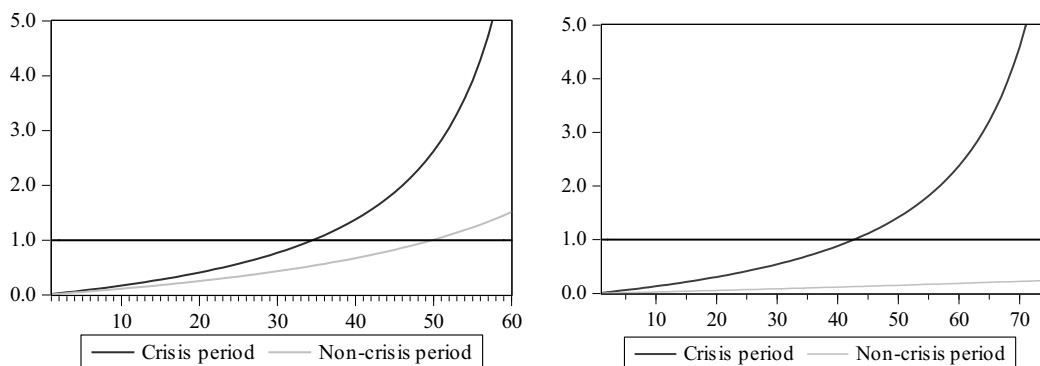


Fig. 2. (a) FDI elasticity with respect to Government Expenditures;

(b) FDI elasticity with respect to Government Revenues

Table 3: FDI, Fiscal Policy and Crisis

FDI – dependent variable	Constant	Expenditures	Expenditures× Crisis	FDI_{t-1}	Openness trade	R-squared	R-squared (adjusted)
Expenditures model							
Basic model	0.0619*** (0.0206) ^a	-0.0916* (0.0478)	-0.0406*** (0.0150)	0.5872*** (0.0591)		0.4684	0.4582
Model robustness	0.0489** (0.0219)	-0.0911* (0.0475)	-0.0425*** (0.0149)	0.5805*** (0.0589)	0.0123* (0.0074)	0.4777	0.4643
FDI – dependent variable	Constant	Revenues	Revenues× Crisis	FDI_{t-1}	Openness trade	R-squared	R-squared (adjusted)
Revenues model							
Basic model	0.0283 (0.0229) ^a	-0.0141 (0.0597)	-0.0490*** (0.0169)	0.6102*** (0.0590)		0.4545	0.4440
Model robustness	0.0195 (0.0233)	-0.0274 (0.0598)	-0.0517*** (0.0169)	0.6034*** (0.0587)	0.0133* (0.0075)	0.4652	0.4514

^a – (standard errors in parentheses)

*, **, *** - Indicates significant at the 0.1 level, 0.05 level and 0.01 level

FDI becomes more sensitive at both instruments of fiscal policy; that is why at a higher level than 34.5% of GDP for government expenditure and 42.6% of GDP for government revenues, FDI become elastic to the fiscal policy measures. In elasticity terms, before financial crisis, the magnitude of FDI response to changes of expenditures was 0.7 and changes of revenues was 0.1. During the financial crisis, the magnitude of FDI response to changes of government expenditures was 1.6 and changes of government revenues was 0.8.

4. Conclusions

In order to contribute to existing literature, we have analyzed the relationship between the financial crisis, fiscal policy and FDI in CEE Countries. The results show that the financial crisis affects the magnitude of FDI response to financial policy, while in normal times, FDI responds only at government expenditure changes.

According to UNCTAD, 2012, many countries adopted a series of measures regarding investment liberalization, investment promotion and facilitation, and others FDI restrictions and regulations. In 2009, CEE countries adopted stimulus package or state aid and international investment agreements UNCTAD, 2009b. Further, during financial crisis, these countries tried to adopt other measures in order to facilitate FDI. Regarding this, Bulgaria, Hungary and Poland implemented in 2010 measures regarding the entry's barriers,

investments facilitation and promotion, and tax incentives UNCTAD, 2010 followed by Estonia and Latvia, which adopted similar measures one year later UNCTAD, 2011. Even if countries want to attract foreign investors, there are situation when, they are constrained to adopt less desired regulations for investors. This is the case of Slovak and Hungary that introduced less favorable policy measures for investors, regarding the operation level (Slovak) and entry level (Hungary), as is stated in UNCTAD, 2013. Thus, our results add evidence to previous studies and emphasize the importance of fiscal policy in attracting more FDI, as a solution for recovery of the economies affected by crisis.

The regression model might have some limitations due to the small size of the sample, only 18 annual observations for a sample of 10 countries, over the period 1995–2012. Further studies can replicate our analysis using a different sample of data in order to identify if there are some special characteristics of selected countries which might affect the intensity and effects of fiscal policy instruments usage during financial crisis on FDI. Another direction for further studies will be to analyze the impact of specific tax incentives or expenditures on FDI flows.

References

- UNCTAD, 2009a. *Assessing the Impact of the Current Financial and Economic Crisis on Global FDI Flows*, United Nations Conference on Trade and Development, New York and Geneva.
- IEO-IMF, 2003. *Foreign Direct Investment in Emerging Market Countries—Report of the Working Group of the Capital Markets Consultative Group (CMCG)*.
- Morisset, J., Pirmia, N., 1999. *How Tax Policy and Incentives Affect Foreign Direct Investment: A Review*, The World Bank eLibrary.
- Goodspeed, T., Martinez-Vazquez, J., Zhang, L., 2007. *Are Government Policies More Important than Taxation in Attracting FDI?*, International Studies Program Working Paper 07-02, Andrew Young School of Policy Studies, Georgia State University, USA.
- Moosa, I., Cardak, B., 2003. *The Determinants of Foreign Direct Investment: An Extreme Bounds Analysis*, Working Papers 2003.02, School of Economics, La Trobe University.
- Faeth, I., 2009. *Determinants of Foreign Direct Investment – A Tale of Nine Theoretical Models*, *Journal of Economic Surveys*, vol. 23, no. 1, pp. 165–196.
- Le, M., Suruga, T., 2005. *Foreign direct investment, public expenditure and economic growth: the empirical evidence for the period 1970–2001*, *Applied Economics Letters*, vol.12, no 1, pp. 45-49.
- Tiebout, C., 1956. *A pure theory of local expenditures*, *Journal of Political Economy*, vol. 64, no. 5, pp. 416-424.
- Dunning, J.H., 2000. *The Eclectic Paradigm as an Envelope for Economic and Business Theories of MNE Activity*, *International Business Review*, 9(1), pp. 163-90.
- Bose, S., Jha, S., 2011. *Financial Crisis, Fiscal Deficits and Foreign Direct Investment – Lessons for India from Emerging Europe*, *ICRA Bulletin: Money & Finance*, July, pp. 99-124.
- Carkovic, M., Levine, R., 2005. *Does Foreign Direct Investment Accelerate Economic Growth?* In T.H. Moran, E.M. Graham, and M. Blomstrom. *Does foreign direct investment promote development?* Washington, DC: Institute for International Economics and Center for Global Development, pp. 195-220.
- Sydsæter, K., Hammond, P., 2008. *Essential Mathematics for Economic Analysis*, 3rd edn, Prentice-Hall, United Kingdom.
- AMECO database, http://ec.europa.eu/economy_finance/ameco/user/serie/SelectSerie.cfm
- UNCTADstat, http://unctadstat.unctad.org/ReportFolders/reportFolders.aspx?sCS_referer=&sCS_ChosenLang=en.
- Levin, A., Lin, C., Chu, C. J., 2002. *Unit root tests in panel data: asymptotic and finite-sample properties*, *Journal of Econometrics*, no. 108, pp. 1-24.
- Hajkova, D., Nicoletti, G., Vartia, L., Yoo, K., 2006. *Taxation, Business Environment, and FDI Location in OECD Countries*, OECD Economic Department, Working Paper, no. 502.
- UNCTAD, 2012. *World Investment Report 2012: Towards a New Generation of Investment Policies*, UNCTAD Conference, New York.
- UNCTAD, 2009b. *Investment Policy Monitor*, UNCTAD Secretariat, no. 1, December.
- UNCTAD, 2010. *Investment Policy Monitor*, UNCTAD Secretariat, no. 7, October.
- UNCTAD, 2011. *Investment Policy Monitor*, UNCTAD Secretariat, no. 5, May.
- UNCTAD, 2013. *Investment Policy Monitor*, UNCTAD Secretariat, no. 9, March.

Appendix A. Central and Eastern Europe Countries

According to OECD definition, Central and Eastern European Countries (CEECs) is an OECD term for the group of countries comprising Albania, Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, and the three Baltic States: Estonia, Latvia and Lithuania. In our analysis, we include only the European Union member states: Bulgaria, the Czech Republic, Hungary, Poland, Romania, the Slovak Republic, Slovenia, Estonia, Latvia and Lithuania.

Appendix B. Elasticity function estimation

Let be the following function, $f(x, k) : [0, +\infty) \rightarrow R$, $f(x, k) = a_0 + x \cdot (a_1 + a_2 \cdot k)$, where $f(x, k)$ – regression function estimated before, x – expenditures or revenues, k – crisis $\in \{0, 1\}$, $a_0 = \alpha_0 + \alpha_3 \cdot FDI_{t-1}$, we assume that the level of FDI flows recorded the year before is constant, because we are interested to find FDI response at some variation in expenditures and revenues, keeping the others variables constant; for this purpose we set $FDI_{t-1} = \overline{FDI} \cong 0.05$, $a_1 = \alpha_1$ and $a_2 = \alpha_2$. Based on Equation (2), the elasticity function is:

$$El_x f(x, k) = \left| \frac{x}{f(x, k)} \cdot \frac{df}{dx} \right| = \left| \frac{x}{a_0 + x \cdot (a_1 + a_2 \cdot k)} \cdot (a_1 + a_2 \cdot k) \right| = \left| 1 - \frac{a_0}{a_0 + x \cdot (a_1 + a_2 \cdot k)} \right|$$

where, $a_0 + x \cdot (a_1 + a_2 \cdot k) \neq 0 \Rightarrow x \neq \frac{-a_0}{a_1 + a_2 \cdot k}$, with $a_1 + a_2 \cdot k \neq 0$ (TRUE). If $\frac{-a_0}{a_1 + a_2 \cdot k} > 0$, then

$\frac{-a_0}{a_1 + a_2 \cdot k}$ is vertical asymptote for $El_x f(x, k)$, so: $El_x f(x, k) : [0, \frac{-a_0}{a_1 + a_2 \cdot k}) \cup (\frac{-a_0}{a_1 + a_2 \cdot k}, +\infty) \rightarrow [0, +\infty)$

Further we present the estimated elasticity functions for government expenditure and government revenues.

B.1. Elasticity function for government expenditures: crisis period vs. non-crisis period

$$\text{Crisis: } El_x f(x, k) : [0, 0.69) \cup (0.69, +\infty) \rightarrow [0, +\infty), \quad El_x f(x, k) = \left| 1 - \frac{0.0913}{0.0913 - 0.1322 \cdot x} \right|, \quad El_x f(0.345) = 1$$

$$\text{Non-crisis: } El_x f(x, k) : [0, 0.99) \cup (0.99, +\infty) \rightarrow [0, +\infty), \quad El_x f(x, k) = \left| 1 - \frac{0.0913}{0.0913 - 0.0916 \cdot x} \right|, \quad El_x f(0.498) = 1$$

B.2. Elasticity function for government revenues: crisis vs. non-crisis

$$\text{Crisis: } El_x f(x, k) : [0, 0.85) \cup (0.85, +\infty) \rightarrow [0, +\infty), \quad El_x f(x, k) = \left| 1 - \frac{0.0538}{0.0538 - 0.0631 \cdot x} \right|, \quad El_x f(0.426) = 1$$

$$\text{Non-crisis: } El_x f(x, k) : [0, 3.81) \cup (3.81, +\infty) \rightarrow [0, +\infty), \quad El_x f(x, k) = \left| 1 - \frac{0.0538}{0.0538 - 0.0141 \cdot x} \right|, \quad El_x f(1.907) = 1$$