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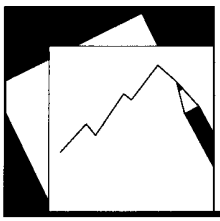

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Fiscal Policy and the Current Account: Are Microstates Different?

Yehenew Endegnanew, Charles Amo-Yartey, and Therese Turner-Jones

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Fiscal Policy and the Current Account: Are Microstates Different?

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Abstract

This paper examines the empirical link between fiscal policy and the current account focusing on microstates defined as countries with a population of less than 2 million between 1970 and 2009. The paper employs panel regression and panel vector autoregression (VAR) on 155 countries of which 42 are microstates. Panel regression results show that a percentage point improvement in the fiscal balance improves the current account balance by 0.4 percentage points of GDP. The real effective exchange rate has no significant impact on the current account in microstates but the coefficient is significant in the global sample. Panel VAR results show that an increase in government consumption results in real exchange appreciation but the effect on the current account after an initial deterioration dies out quicker in microstates than in the global sample. The result implies that fiscal policy has little effect on the current account in microstates beyond its direct impact on imports. Overall, the results suggest that the weak relative price effects make the effect of fiscal adjustment on the current account much more difficult in microstates.

JEL Classification Numbers: F32, H30, O23

Keywords: Fiscal policy, Current account, Microstates

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I. INTRODUCTION

This paper examines the empirical link between fiscal policy and the current account focusing on microstates defined as countries with a population of less than 2 million between 1970 and 2009. The extent to which fiscal adjustment can lead to predictable development in the current account remains controversial with two competing views. The traditional view argues that changes in fiscal policy are associated with changes in the current account through a number of channels that are discussed in the literature review. The traditional view is challenged by the Ricardian equivalence principle, which states that an increase in budget deficit (through reduced taxes) will be offset by increases in private saving, insofar as the private sector fully discounts the future tax liabilities associated with financing the fiscal deficit, hence not affecting the current balance.

This paper employs panel regression and panel VAR to estimate the impact of fiscal policy on the current account. The main challenge in the empirical literature is how to measure fiscal policy that reflects deliberate policy decisions and not simply the impact of business cycle fluctuation. The conventional approach to addressing this problem is to use the cyclically adjusted fiscal data to identify deliberate changes in fiscal policy. The presumption is that cyclically adjusted changes in the fiscal balance reflect decision by policy makers to adjust tax rates and expenditure levels.[1] IMF (2010) uses an alternative approach based on identifying changes in fiscal policy directly from historical records. While this approach could be superior to the conventional approach, this paper follows the conventional approach because of the difficulties in constructing exogenous fiscal policy measures from historical records in microstates.

Panel regression results show that a percentage point improvement in the fiscal balance improves the current account balance by 0.4 percentage points of GDP (similar to the coefficient of 0.34 found for the global sample). The real effective exchange rate has no significant impact on the current account in microstates but the coefficient is significant in the global sample. Panel VAR results show that an increase in government consumption results in real exchange appreciation but the effect on the current account after an initial deterioration dies out quicker in microstates in contrast to the global sample where the deterioration remains for extended periods. The results imply that fiscal policy has little effect on the current account in microstates beyond its direct impact on imports. Overall, the results suggest that the weak relative price effect makes fiscal adjustment much more difficult in microstates.

The remainder of the paper is organized as follows. The next section reviews the theoretical and empirical literature on fiscal policy and the current account. Section III reviews the literature on microstates with focus on their characteristics that have implications for the current account. In sections IV and V, we evaluate econometrically the relationship between fiscal policy and the current account using both panel regression and panel VAR respectively. Section VI concludes the paper.

[1] IMF (2011) outlines a number of shortcomings of using the cyclically adjusted fiscal balance as a measure of deliberate fiscal policy changes.

II. LITERATURE REVIEW

This paper builds on the literature on fiscal policy and the current account and the literature on microstates. The theoretical and empirical relationship between fiscal policy and the current account is studied extensively. Theoretically, there are competing views that give different results depending on the kind of transmission mechanisms considered in the model to explain the link between fiscal policy and the current account.

Theoretical studies differentiate between intratemporal and intertemporal transmission mechanisms (Mundell, 1960; Salter, 1959). The Mundell-Fleming model and the Swan-Salter model focus on intratemporal (the relative price effect) mechanism. In the Mundell-Fleming model, an expansionary fiscal policy by raising domestic demand and increasing interest rate leads to a real exchange appreciation through higher capital inflows to the domestic economy. In this model, financial openness and exchange rate regime can affect the effectiveness of the transmission mechanism. In the Swan-Salter model, exchange rate is defined as the relative price of tradables to non-tradables. If the government spending is skewed to non-tradables, the induced real exchange appreciation might worsen the trade balance by driving production away from tradables and switching consumption towards tradables.

The intertemporal approach (Frenkel and Razin, 1996; Baxter, 1995) on the other hand, suggests that declines in public saving resulting from a fiscal expansion would be offset by an equal increase in private saving leaving the national saving unaffected. In models of intertemporal mechanism, an increase in debt-financed government spending lead forward looking private agents to consume less and increase labor supply to offset the future tax increases resulting in improvements in the current account that counteract the negative effect of government spending on the current account.

New open economy models that incorporate both the intertemporal and intratemporal mechanisms have been developed recently to address empirical findings on developed countries that show positive government spending shocks resulting in an increase in private consumption and real exchange depreciation in spite of the worsening of the trade balance. Monacelli and Perotti (2006) developed an open economy model with non-separable preferences mitigating the negative wealth effect of an increase in government spending and giving rise to a positive consumption response. Furthermore, when the elasticity of substitution between domestic and imported goods is sufficiently small, the model is also successful in delivering real exchange depreciation and trade balance deterioration after government spending shocks. Ravn, et al. (2007) offer alternative explanation using a two-country model that incorporates deep habit mechanism. Under deep habits, an increase in government spending in the domestic economy leads to a decline in domestic markups relative to foreign markups that induces the real exchange rate to depreciate. At the same time, a decline in domestic markups raises labor demand, giving rise to an increase in domestic real wages. In turn, the rise in wages leads households to increase their leisure consumption strong enough to offset the negative wealth effect stemming from the increase in government spending, resulting in an equilibrium increase in private consumption.

Empirically, the evidence is less debatable and the balance of evidence seems to support the intratemporal mechanism of a strong relationship between fiscal policy and the current account. Empirical research on the relationship between fiscal policy and the current account can be

grouped into two according to the fiscal variable of interest and the methodology used. Studies based on panel regression approach (Chinn and Prasad, 2000) examine the effect of changes in the fiscal balance on the current account. Generally, they find evidence suggesting that fiscal expansion worsens the current account. Estimates of the impact of 1 percentage point of GDP increase in the government deficit on the current account range between 0.2–0.7 percentage points of GDP, depending on the sample and techniques used. Studies based on VAR (Ravn et al., 2007; Beetsma et al., 2007) analyze the effect of government spending on the current account. These studies find evidence to show that an increase in government spending has a deteriorating effect on the current account except for countries like United States where the results are mixed (Kim and Roubini, 2008).

An important issue in the VAR literature is the identification of the government spending shocks. There are two main approaches to identify government spending shocks namely recursive and narrative approaches. The recursive approach assumes that government consumption does not to react to changes in other variables within a given period (Blanchard and Perotti, 2002). The narrative approach examines official documents to captures specific episodes of large exogenous changes in government spending (Ramey and Shapiro, 1998; IMF, 2010; 2011). This paper uses the recursive approach taking into account the difficulty involved in trying to apply the narrative approach in the large sample of countries considered.

Abbas et al. (2011) apply both the panel regression and panel VAR approaches to study the effect of fiscal policy on the current account using a large sample of advanced, emerging and low-income economies. They find that a strengthening in the fiscal balance by 1 percentage point of GDP is associated with a current account improvement of 0.3 percentage points of GDP. This relationship appears to be stronger in emerging and low-income economies; when the exchange rate is flexible; in economies that are more open; when output is above potential; and when initial debt levels are above 90 percent of GDP.

Studies on the impact of relationship between fiscal policy and the current account in microstates are sparse. Imam (2008) attempted to identify policies that help reduce the current account in microstates. The results suggest that microstates are more likely to have large current account adjustments if they are already running large current account deficits; run budget surpluses; and are less open. Interestingly, Imam (2008) finds that changes in the real effective exchange rate do not help drive reductions in the current account deficit in microstates.

III. CHARACTERISTICS OF MICROSTATES

This paper defines microstates as countries with an average population of less than 2 million between 1970 and 2009. Using this definition, about 42 microstates were identified of which about 70 percent are islands and usually located in the Caribbean, the African region and the pacific. Microstates possess a wide range of characteristics such as location, climate, and size, which create a variety of comparative advantages as well as disadvantages. This section highlights some of the unique characteristics of microstates with a focus on those characteristics that have implications for the current account.

Small size of domestic market: Microstates are characterized by small size of domestic market making the level of domestic demand lie below the minimum efficient scale of output

(Armstrong et al. 1993). Due to the small size, microstates are usually disadvantageous as a location for extensive industrial activities especially those that could substantially raise growth. The small domestic market is less conducive for the development of indigenous technologies limiting the growth of research and development, technical progress and technology acquisition. In addition, a small domestic market does not allow competitive firms to emerge within microstates because of the limited number of participants involved in any economic activity. As a result, prices of goods are generally higher in microstates than larger economies (Armstrong et al., 1993).

Small domestic resource base: Microstates have small and/or poor domestic resource base due to their small size. In countries where agriculture dominates economic activity, the sector tends to absorb a significant share of land endowment thereby depriving other alternative production activities from this resource (Commonwealth Secretariat, 1997). The relatively small population tends to make labor very scarce in microstates as a result output in microstates is usually enhanced through the accumulation of human or physical capital rather than through employment (Bhaduri et al., 1982). The small size of domestic market and scarce labor tends to narrow the structure of domestic output in microstates making them dependent on a small number of activities and hampering the potential to implement import substitution industrialization strategies thereby exposing them to exogenous shocks.

Narrow range of exports and export markets: Microstates have narrow range of exports and export markets due in part to the narrowness of their domestic production structures. The need for specialization tends to limit export oriented domestic output to just a few products. Tourism and financial services are usually the main service sectors in microstates normally complemented by an uncompetitive agricultural sector. Offshore financial services have become an important sector in microstates due to their strategic location and enabling local laws. Highly liberalized financial systems based on lax regulatory standards or strong supervisory frameworks have been a major attraction in the emergence of microstates as offshore financial centers. The export specialization of microstates renders them vulnerable to external shocks and the vulnerability is exacerbated by reliance on export market in just a few countries (Armstrong et al., 1998).

High degree of openness: Microstates are usually characterized by high level of openness to trade. The small domestic market and the tendency towards a high degree of specialization in output and export limit the potential for import substitution because of the adverse impacts on the price level and competitiveness. The importance of tradable goods to these economies necessitates the pursuit of highly open trading regime. Consequently, import barriers are less important than for larger states (Selwyn, 1975). There is a substantial asymmetry between domestic production patterns and consumption of microstates. Therefore, the proportion of imports in domestic consumption is high.

High transport cost and lumpiness of investment: Armstrong et al. (1993) discussed extensively the specific problems of landlocked and island microstates including high transport cost and a high degree of dependence of adjacent states for surface communications and port facilities and, therefore access to export markets and import sourcing. High transport cost has the effect of reducing prices received for exports and raising prices of imports leading the current account to deteriorate. Djankov et al. (2006) estimated that microstates were on the average 50 percent more distant from trading partners than larger countries. Microstates can suffer from lumpiness of

Table 1: Real GDP Per Capita and Population of Selected Microstates (2009)

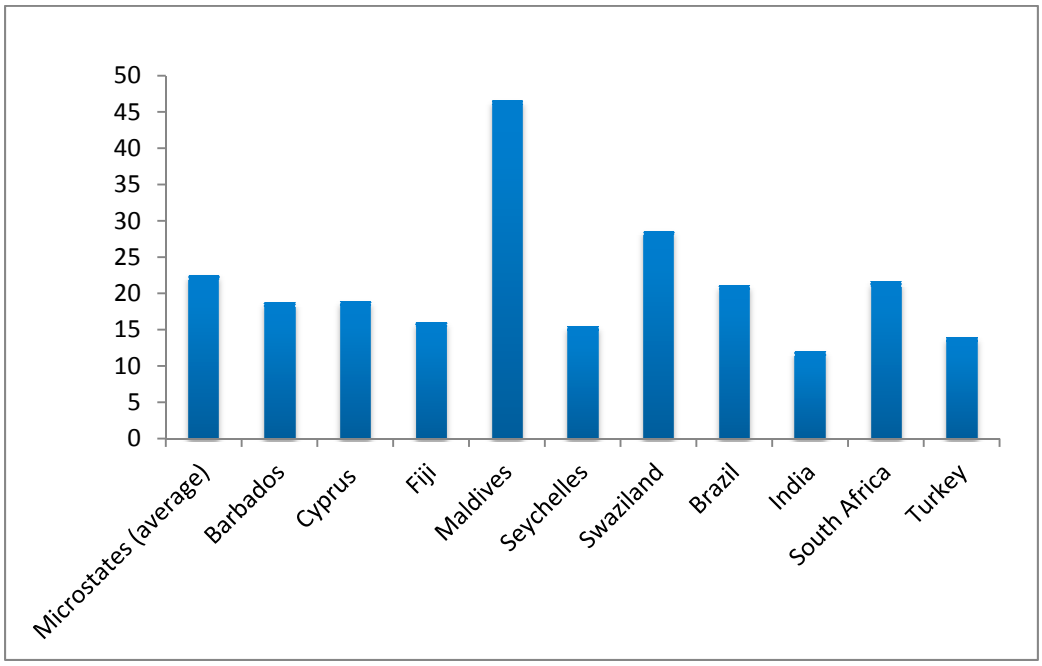
Country	Real GDP Per Capita in USD	Real GDP Per Capita in PPP	Population
Antigua and Barbuda	12,920	18,778	87,600
Bahamas, The	16,300	22,868	341,713
Bahrain, Kingdom of	26,021	39,200	791,473
Barbados	9,244	17,504	255,872
Belize	4,062	6,628	333,200
Bhutan	1,831	5,113	697,335
Botswana	6,064	13,384	1,949,780
Cape Verde	3,064	3,644	505,606
Comoros	812	1,183	659,098
Cyprus	31,280	30,848	871,036
Djibouti	1,214	2,319	864,202
Dominica	5,132	8,883	73,596
Equatorial Guinea	15,397	31,779	676,273
Fiji	3,326	4,526	849,218
Gabon	7,502	14,419	1,474,586
Gambia, The	430	1,415	1,705,212
Grenada	6,029	8,362	103,930
Guinea-Bissau	519	1,071	1,610,746
Guyana	2,656	3,240	762,498
Iceland	38,029	36,795	319,062
Kiribati	1,306	2,432	98,045
Lesotho	764	1,468	2,066,919
Luxembourg	105,044	83,820	497,854
Maldives	4,760	5,476	309,430
Malta	19,248	24,814	414,971
Mauritius	6,735	12,838	1,275,323
Namibia	4,267	6,410	2,171,137
Oman	11,192	24,226	2,845,415
Qatar	69,754	91,379	1,409,423
Samoa	2,776	4,405	178,846
São Tomé & Príncipe	1,171	1,820	162,755
Seychelles	8,688	19,587	87,972
Solomon Islands	1,256	2,547	523,170
St. Kitts and Nevis	10,988	14,527	49,593
St. Lucia	5,496	9,605	172,092
St. Vincent & Grenadines	5,335	9,154	109,209
Suriname	2,668	6,930	519,740
Swaziland	2,533	4,998	1,184,936
Trinidad and Tobago	15,841	25,572	1,338,585
Vanuatu	2,702	4,438	239,788

Source: World Development Indictors.

investment due to small size. A single large investment project has an immediate effect on the current account making it more volatile than it would be in larger economies.

Large size of the public sector: Per capita cost of supplying public goods may be higher in microstates than larger states due to the lack of economies of scale in supplying public goods. The public sector as a share of GDP tends to be bigger. Since government spending is biased toward non-tradables, and since historically microstates have had large current account deficits, the current account tends to be structurally more vulnerable in these countries (Imam, 2008).

Figure 1: Government Consumption (Percent of GDP)



While there is near consensus that the salient features of microstates make them disadvantageous, microstates also possess some advantages that could help external stability: greater social homogeneity and cohesion, a consequent greater flexibility and decision making efficiency, greater openness to change and the gains from greater openness (Streeten, 1993). For instance greater social homogeneity should enable adjustment to shocks to be more promptly handled because the shifting of adjustment onto other social groups is not possible (Alesina and Drazen, 1991).

IV. Panel Regression

A. Data

This paper uses data from 155 countries of which 42 are microstates. The main data source is the World Economic Outlook (WEO) where we obtained most of the fiscal variables. The real per capita in purchasing power parity is taken from World Development Indicators (WDI). We used the updated and extended version of the Lane and Milesi-Ferretti (2007) database to get data on

net foreign assets. The real effective exchange rate is obtained from the IMF's INS database. The data range from 1970–2009 whenever they are available. All details can be found in the Appendix I.

B. The Model

The benchmark specification assumes a fixed effects model of the form:

$$\boldsymbol{Y_{it} = (\alpha + f_i) + \beta X_{it} + \varepsilon_{it}}$$

Where $\boldsymbol{f_i}$ is the country fixed effects, Y is the current account to GDP ratio and X is a vector of explanatory variables including cyclically adjusted primary balance to potential GDP ratio, the lagged log real GDP per capita, trade openness (imports plus exports to GDP ratio), the lagged net foreign assets to GDP ratio, the volatility of terms of trade, the lagged log of real effective exchange rate.

The explanatory variables might influence current account through the following ways.

Cyclically adjusted fiscal balance:

An increase in government balance could improve the current account through an increase in national saving in the absence of Ricardian equivalence. Reduction in government spending or tax increase would lead to an increase in public saving. Unless the private sector is fully Ricardian, the total national saving would increase thereby improving the current account. This paper uses the cyclically adjusted primary balance (CAPB) to potential GDP ratio to capture fiscal balance. This choice is motivated by the fact that there could be some endogeneity problems between fiscal balance and the current account balance because of common reaction to the business cycle. IMF (2011) criticized what they call the conventional approach of using cyclically adjusted fiscal data on the grounds that CAPB may still include non-policy factors or it may reflect deliberate policy responses to other developments affecting economic activity or to the current account itself. This paper attempts to address these problems by applying a panel VAR methodology using another fiscal variable less vulnerable to the criticisms, namely government consumption in the next section.

The CAPB is calculated by applying Hodrick–Prescott **(**HP) filtering to the real GDP to obtain the output gap measure and then use 1 and 0 as the elasticity of revenue and expenditure respectively with respect to the output gap. In this way, the CAPB becomes:

$$\boldsymbol{CAPB = R\left(\frac{Y^P}{Y}\right) - G}$$

Where R is revenue and grants, G is government spending less interest payment, Y^p is the potential output and Y is the actual output.

Trade openness:

Due to high increase in the international trade in the past decades, it would be interesting to study the relationship between trade openness and the current account balance. Microstates are characterized by narrow range of exports, large proportion of imports and high degree of openness. We would expect more trade openness in microstates to lead to more imports implying a negative relationship between trade openness and the current account balance.

Net foreign assets:

The relation between net foreign assets (NFA) and the current account is ambiguous as net foreign assets may have two different effects. On the one hand, a negative relationship can exist between NFA and the current account because high NFA might lead to think that economies can afford to prolong trade deficits. On the other hand, high NFA could bring higher net income flows resulting in a positive relationship with the current account balance.

Terms of trade volatility:

Increased uncertainty associated with high volatility in terms of trade might lead agents in the economy to save more for precautionary reasons. Moreover, for the same reason the economies may also experience low investment. Therefore, we expect a positive relationship between high terms of trade volatility and the current account balance. The volatility of the terms of trade is constructed by taking the three-year moving standard deviation of the terms of trade of goods and services index.

Real effective exchange rate:

Depreciation of the real effective exchange rate makes imports more expensive and exports cheaper. As a result, the real effective exchange rate is expected to be negatively related with the current account balance.

C. Results

This section presents the panel regression results for the global sample and microstates. Tables 2 and 3 give the results obtained for the benchmark model and its variations under different specifications. The latter is used to check robustness.

In both the global sample and the microstates, the fiscal balance appears to be positively associated with current account. The size of the CAPB coefficients is 0.34 and 0.39 for the global sample and the microstates, respectively. The coefficient for microstates reflects their openness to trade and the likely impact of fiscal expansion on imports. Our results compare well with the CAPB coefficient obtained by Abbas et al. (2011) for large sample of countries, which

is 0.35 and who also show that the coefficient is larger for countries with high degree of trade openness.

Table 2: Panel Regressions – Global sample (Dependent Variable – Current Account Balance to GDP ratio)

	Fixed Effects	Fixed Time Effects	Pooled OLS	Excluding Oil Exporting Countries	Dynamic Panel GMM
Cyclically adjusted primary balance to potential GDP ratio	0.346*** (10.61)	0.322*** (9.76)	0.367*** (11.41)	0.289*** (8.63)	0.297*** (8.57)
Lagged log per capita income	-0.481 (-1.00)	0.836 (1.37)	0.628*** (2.72)	-0.666 (-1.35)	-1.713* (-1.93)
Trade Openness	-0.0128* (-1.87)	-0.00328 (-0.46)	-0.0154*** (-3.13)	-0.00684 (-0.98)	-0.0488*** (-4.92)
Lagged net foreign assets to GDP ratio	0.0221*** (7.81)	0.0263*** (9.32)	0.0256*** (10.87)	0.0203*** (7.07)	-0.0120*** (-2.59)
Volatility of Terms of Trade	0.00152 (0.65)	0.00207 (0.89)	0.00116 (0.50)	0.00108 (0.47)	-0.00123 (-0.13)
Lagged log of real effective exchange rate	-1.237*** (-2.79)	-1.279*** (-2.71)	-1.032** (-2.41)	-0.968** (-2.00)	-1.569** (-2.23)
Lagged current Account to GDP					0.324*** (14.21)
Constant	8.599* (1.87)	-4.562 (-0.87)	-1.586 (-0.53)	8.219* (1.75)	22.85*** (2.70)
Number of observations	2370	2370	2370	2211	2131

T statistics in parentheses. Asterisks *, **, and *** denotes significant at 10, 5, and 1 percent respectively.

Table 3: Panel Regressions –Microstates (Dependent Variable- Current Account Balance to GDP Ratio)

	Fixed Effects	Fixed Time Effects	Pooled OLS	Excluding Oil Exporting Countries	Dynamic Panel GMM
Cyclically adjusted primary balance to potential GDP ratio	0.394*** (5.25)	0.443*** (5.71)	0.416*** (5.63)	0.313*** (4.02)	0.361*** (5.49)
Lagged log per capita income	-1.043 (-0.76)	2.305 (1.20)	1.398* (1.73)	-1.607 (-0.92)	-4.807*** (-3.17)
Trade Openness	-0.0537*** (-2.84)	-0.0519*** (-2.74)	-0.0599*** (-3.70)	-0.0394** (-1.97)	-0.0335* (-1.88)
Lagged net foreign assets to GDP ratio	0.0363*** (4.57)	0.0381*** (4.53)	0.0421*** (7.59)	0.0322*** (3.87)	0.00589 (0.78)
Volatility of Terms of Trade	-0.000823 (-0.27)	-0.00140 (-0.46)	-0.000528 (-0.18)	-0.000810 (-0.27)	-0.00163 (-0.72)
Lagged log of real effective exchange rate	1.599 (0.58)	-1.896 (-0.63)	1.733 (0.70)	1.828 (0.64)	3.105 (1.38)
Lagged current Account to GDP					0.428*** (10.59)
Constant	2.840 (0.14)	-7.807 (-0.37)	-17.52 (-1.17)	4.434 (0.19)	26.75 (1.43)
Number of observations	510	510	510	472	444

T statistics in parentheses. Asterisks *, **, and *** denotes significant at 10, 5, and 1 percent respectively.

In line with the a priori expectations, the degree of openness appears to be negatively related to the current account balance. The coefficient is statistically significant at 1 percent in microstates while it is only significant at 10 percent level in the global sample. One possible interpretation for this is that with limited exports and already high trade openness in microstates, an increase in

the degree of openness is likely to imply more imports. Chinn and Prasad (2000) find similar negative relationship in the medium term between openness and the current account balance.

The coefficient of the NFA is positive and statistically significant both for the global sample and microstates implying that high NFA helps countries to obtain higher net income flow and that negative NFA are associated with low current account balance due to outward interest payment. Imam (2008) however, finds a negative relationship between NFA and the CA and suggested that high NFA help to finance and sustain a current account deficit.

The coefficient of terms of trade volatility appears to have an insignificant relationship with the current account in both the global sample and microstates. One plausible explanation is that changes in saving and investment decisions taken by agents—the main channel through which volatility affects the current account balance—could be more of a medium term behaviors that is difficult to capture in our annual data framework. Chinn and Prasad (2000) supported this hypothesis by finding a strong positive relationship between terms of trade volatility and the current account in the medium term (using 5-year averages) but a negligible relationship in the short term.[2]

In the global sample, the coefficient of the real effective exchange rate implies that appreciation appears to be associated with deterioration of current account balance. However, in microstates, the impact is not statistically significant. As counter intuitive as it may sound, the result is not surprising. This might be due to the fact that imports, mainly food and fuel, are inelastic in microstates preventing the expenditure switching effect from taking place as relative price changes. Moreover, most imports are not produced locally limiting the ability of substitution. In addition, exports such as tourism and banking are usually conducted in foreign currency suggesting exports may not be cheaper after devaluation. Imam (2008) documents similar results for microstates.

To check the robustness of our results, we examined the sensitivity of the benchmark fixed effect model to changes in estimating methods. The specifications considered include fixed effects with time effects, pooled OLS, dynamic panel model (where the lagged variable of the current account is included as explanatory) and the benchmark model after excluding oil-exporting countries. In all cases, our benchmark results seem to hold.

[2] We used a 5-year moving standard deviation and changes in terms of trade but the result remains the same.

V. PANEL VECTOR AUTOREGRESSION

The next exercise we conduct in this paper is to examine the impact of fiscal policy on the current account using panel vector autoregresssion (VAR) methodology. The panel VAR technique combines the traditional VAR approach that treats all variables in the system as endogenous with the panel data approach that allows for unobserved individual heterogeneity. In this paper, the benchmark specification is a second order panel vector auto-regression model of the form:

$$\boldsymbol{Z_{it}} = \propto_{\mathbf{0}} + \propto_{\mathbf{1}} \boldsymbol{Z_{i\,t-1}} + \boldsymbol{f_i} + \boldsymbol{\varepsilon_i}$$

Where Z_t is a four-variable vector of log of real government consumption, log of real GDP, current account to GDP ratio and log of real effective exchange rate. We have allowed for individual heterogeneity by adding country fixed effects, f_i. As the fixed effects are correlated with the lags of the dependent variables, instead of the mean-differencing procedure, a forward mean-differencing procedure is used to remove the fixed effects.[3]

Identification of government consumption shocks is achieved through a methodology that is commonly known as the recursive approach. This methodology assumes government spending does not react contemporaneously to shocks to other variables in the system. The argument is movements in government spending, unlike movements in taxes, are largely unrelated to the business cycle. Therefore, it seems plausible to assume that government spending is not affected contemporaneously by shocks originating in the private sector. To this end, a reduced form model with variables ordered as government spending, GDP, current account to GDP ratio, and the real effective exchange rate is used.

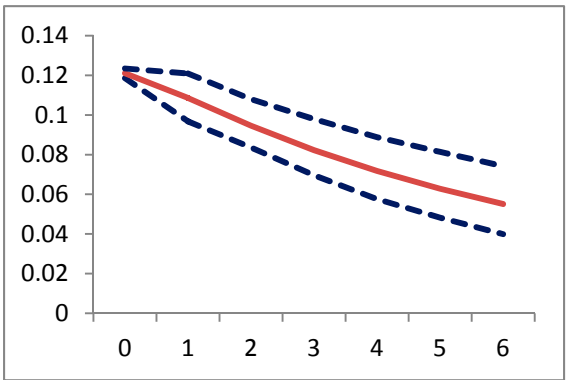
The results show that a one standard deviation shocks in government consumption on impact increases government consumption by 12 percent in the global sample and by 11 percent in the microstates. In both cases the effect on the government consumption seems to die slowly. The effect on GDP is small in both samples indicating a very small multiplier. However, while the effect in microstates dies out quickly; it persists in the global sample.

As the current account is used as percent of GDP, we normalize the one standard deviation shocks in government consumption to 1 percentage point increase in government consumption to GDP ratio and assess the result to the recalculated effect on current account to GDP ratio. To do this, we follow a number of steps. First, we calculate the average government consumption to GDP ratio over the sample period for the global sample and the microstates. This gives 18.5 percent and 22.5 percent respectively. Second, we transform the increase on government

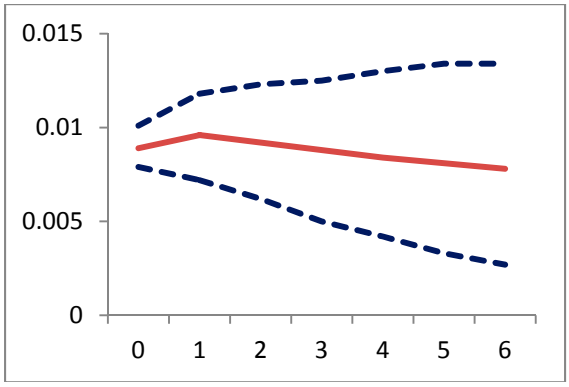
[3] This procedure also known as Helmert transformation is based on Arellano and Bover (1995). The procedure preserves the orthogonality between the transformed variables and the lagged regressors that thus can be used as instruments to estimate the coefficients by system GMM.

consumption to an increase in government consumption to GDP ratio. For the global sample, an increase in 12 percent of the average 18.5 percent government consumption to GDP ratio translates to 2.2 percent increase in the average government consumption to GDP ratio. For microstates, similar calculation gives 2.5 percent. Third, we normalize these changes and the effects on current account to GDP ratio to a 1 percentage point increase in government consumption to GDP ratio.

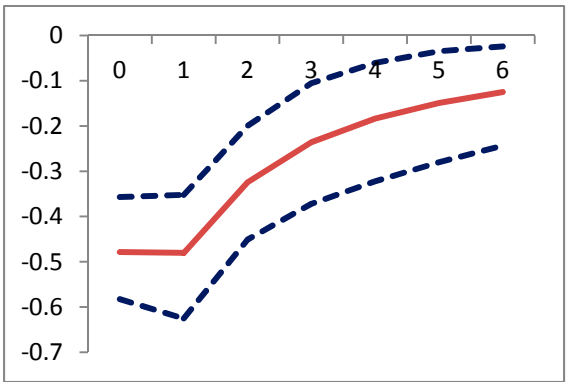
Figure 2: Panel VAR- Global Sample: Impulse Response to 1 Standard Deviation Shocks in Government Consumption



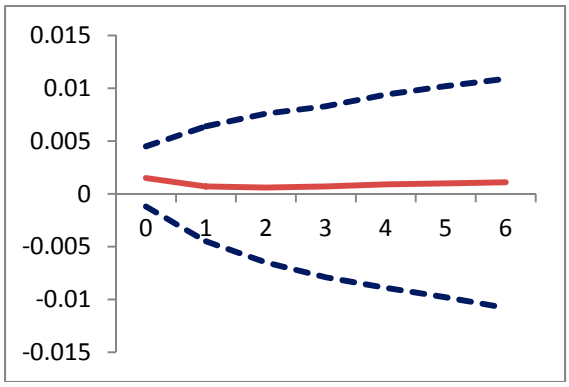
Response of government consumption



Response of GDP



Response of the current account to GDP ratio



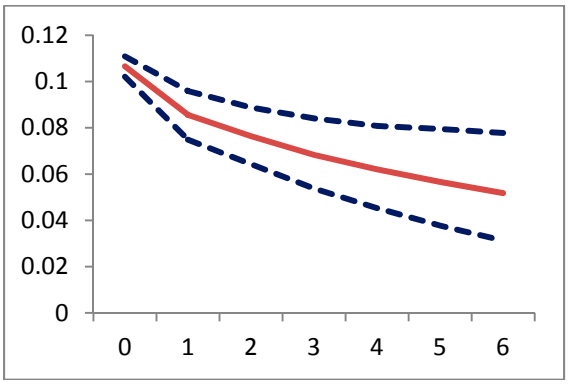
Response of the real exchange rate

A percentage point increase in government consumption to GDP ratio leads to 0.21 percentage points deterioration in the current account to GDP ratio in the global sample. The equivalent effect for the microstates is a worsening of the current account by 0.42 percentage points. The result is not surprising given the fact that the proportion of imports in domestic consumption is high. Although the impact effect of a government consumption shock is larger in microstates, the

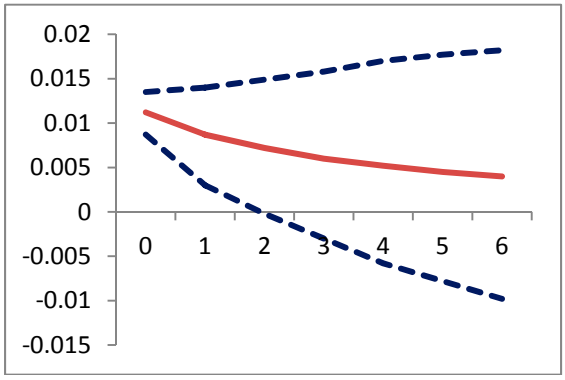
impact is short lived and dies out in 2 years and become insignificant. On the other hand, the impact effect of a government consumption shock in the global sample though smaller is significant and persistent even after 5 years.

The effect of an increase in government consumption on real effective exchange rate is not significant in the global sample, while in microstates there seems to be a significant appreciation of the real effective exchange rate on impact although it becomes insignificant in the subsequent periods. The appreciation of the real effective exchange rate in microstates might be the result of their limited ability to influence the price of tradable goods as opposed to non-tradable goods. However, the real exchange rate is unable to reinforce the deterioration of the current account. Once again, this highlights the weakness of the relative price effect and limits the impact of fiscal policy on the current account in microstates.

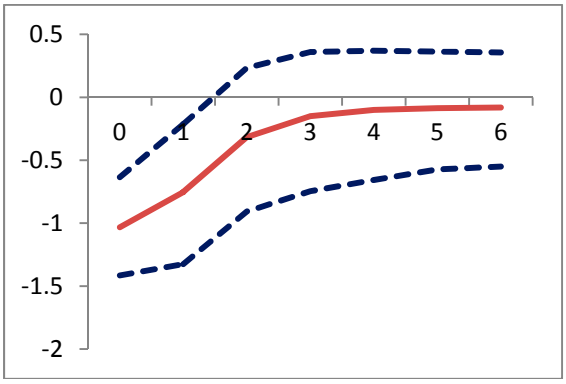
Figure 3: Panel VAR- Microstates: Impulse Response to 1 Standard Deviation Shocks in Government Consumption



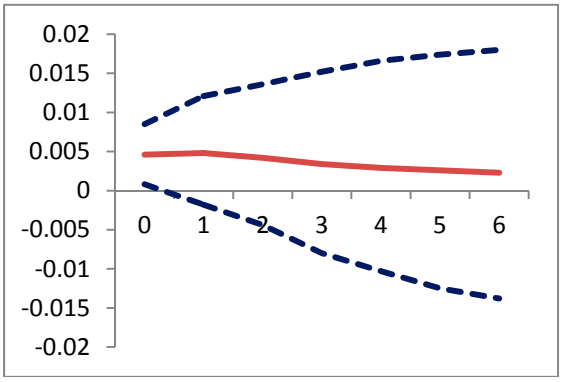
Response of government consumption



Response of GDP



Response of the current account to GDP ratio



Response of the real exchange rate

To check the robustness of our results, we estimated different variations of the model. We changed the lag length from 2 to 3, excluded oil-exporting countries, changed the order of the variables in the model, and restricted the time period to more recent years starting from 1990. In all these specifications, the results presented in Appendix III seem to support our benchmark results.

VI. CONCLUSION

This paper has examined the empirical link between fiscal policy and the current account in microstates. The results suggest that there is indeed a relationship between fiscal policy and the current account in microstates. Panel regression results suggest that a strengthening of the fiscal balance improves the current account in microstates. However, the real effective exchange rate has no significant impact on the current account in microstates. Panel VAR results show that an increase in government consumption leads to an immediate deterioration of the current account in microstates. The deterioration effect dies out together with the government consumption, notwithstanding the appreciated exchange rate, which according to theoretical mechanisms should have sustained the deterioration longer. The result implies that fiscal policy has little effect on the current account in microstates beyond its direct impact on imports. Overall, the results suggest that the weak relative price effects make fiscal adjustment much more difficult in microstates.

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Appendix I. Summary of Empirical Literature

Table 5: Selected Recent Empirical Works

Selected works	Sample and Methodology	Results
This Paper	155 countries of which 42 are microstates, annual data, 1970-2009, Panel regression and Panel VAR	1) 1% of GDP increase in the CAPB improves current account by 0.35% of GDP in the global sample and 0.4% of GDP in the microstates. 2) 1% of GDP increase in government consumption worsens the current account by 0.21% of GDP in the full sample and 0.42% of GDP in microstates on impact
Abbas et al. (2011)	124 countries, annual and quarterly data, 1985-2007, Panel regression and Panel VAR	1) 1% of GDP increase in the CAPB improves current account by 0.3% of GDP 2) 1% of GDP increase in government consumption worsens the current account by 0.3% of GDP on impact
Abiad et al. (2009)	135 countries, 5-year averages, 1975-2004, Panel regression	1% of GDP increase in the budget balance improves current account by 0.3% of GDP
Beetsma et al. (2008)	14 EU countries, annual data, 1970-2004, Panel VAR	1% GDP increase in government spending worsens the trade balance by 0.5% of GDP on impact and a peak fall of 0.8% of GDP after 2 years
Chinn and Prasad (2003)	89 countries, annual data, 1971-1995, Panel regression	1% of GDP increase in the budget balance improves current account by 0.25-0.4% of GDP
Corsetti and Müller (2006)	Australia, Canada, the UK and the US, quarterly data, 1975-2001, VAR	1% GDP increase in government spending worsens the trade balance by 0.5% of GDP in UK, by 0.17% of GDP in Canada and to a non-significant effect of trade balance in U.S. and Australia on impact
Monacelli and Perotti (2006)	Australia, Canada, the UK and the US, quarterly data, 1975-2006, VAR	1% GDP increase in government spending worsens the trade balance by between 0.4 to 0.9 percentage point of GDP in the different countries
Ravn et al. (2007)	Australia, Canada, the UK and the US, quarterly data, 1975-2005, Panel VAR	1% increase in government spending worsens trade balance (to GDP ratio) by around 0.03% at impact and to a peak of 0.05% after one year.

Appendix II. Variables and Sources of Data

Table 6: Variables and Sources of Data

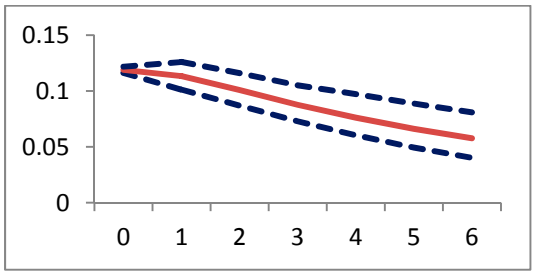
Descriptor	Series Code	Database
Current account balance	BCA	WEO
Imports of goods and services	BM	WEO
Exports of goods and services	BX	WEO
Central government balance	GCB	WEO
Central government, total expenditure and net lending	GCENL	WEO
General government, total revenue and grants	GGRG	WEO
General government expenditure, interest	GGEI	WEO
Public consumption expenditure, current prices	NCG	WEO
Gross domestic product, current prices	NGDP	WEO
Gross domestic product deflator	NGDP_D	WEO
Gross domestic product, current prices, U.S. dollars	NGDPD	WEO
Consumer price index	PCPI	WEO
Terms of trade, goods & services	TT	WEO
GDP per capita' PPP (constant 2005 international $)	NYGDPPCAPPPKD	WDI
Real effective exchange rate	EREER	INSDATA
Net foreign asset to GDP ratio (%)	NFAGDP	LM

Note: WEO refers to the World Economic Outlook. WDI refers to the World Development Indicators. INSDATA refers to IMF's INS database. LM refers to the updated version of the Lane and Milesi-Ferretti (2007) database.

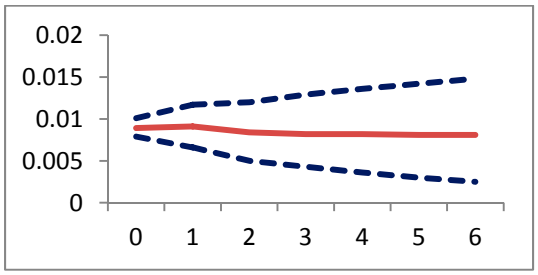
Appendix III. Panel Vector Autoregression Results

Figure 11: Panel VAR – Impulse Response to 1 Standard Deviation Shocks in Government Consumption: Length of Lag Set to Three

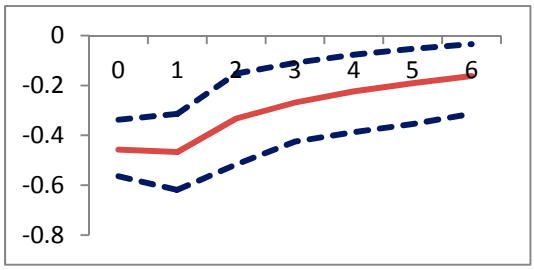
a) Global sample



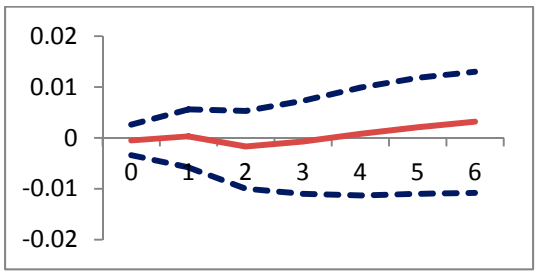
Response of government consumption



Response of GDP

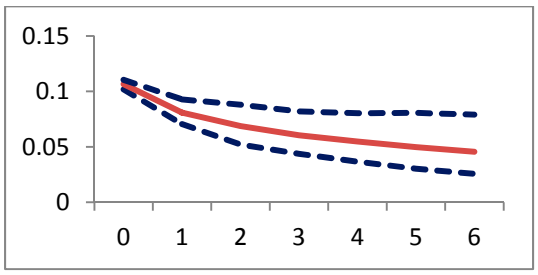


Response of current account to GDP ratio

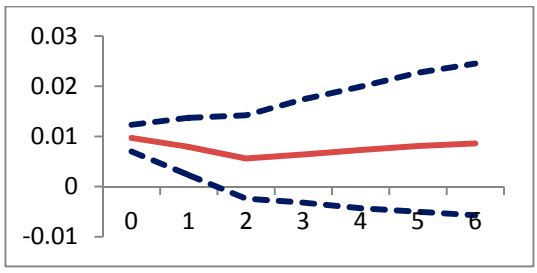


Response of the real exchange rate

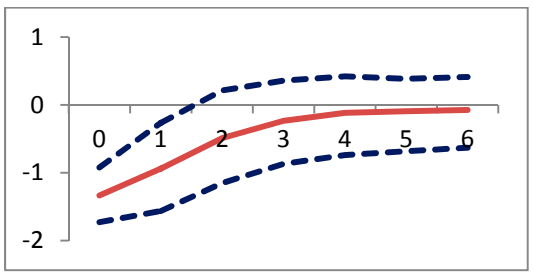
b) Microstates



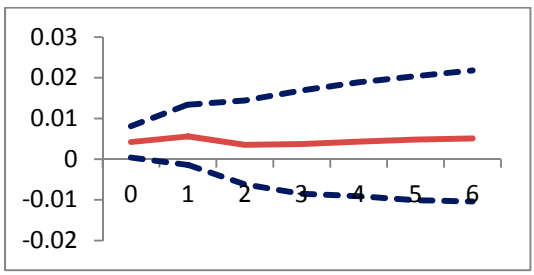
Response of government consumption



Response of GDP



Response of current account to GDP ratio

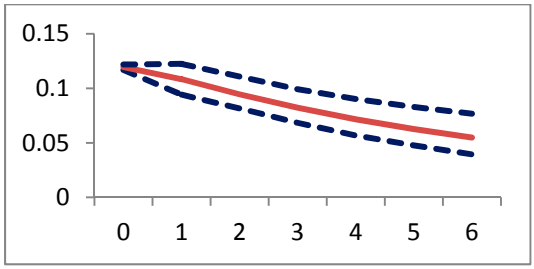


Response of the real exchange rate

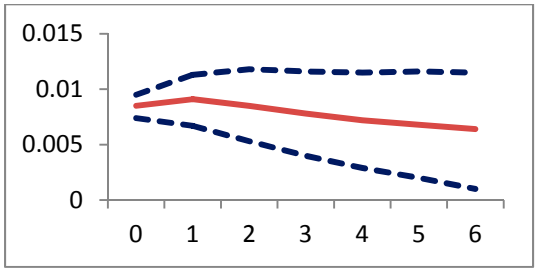
Note: X-axes refer to years after the shock. Confidence bands are the 5th and 95th percentiles from Monte Carlo simulations based on 500 replications.

Figure 12: Panel VAR – Impulse Response to 1 Standard Deviation Shocks in Government Consumption: Excluding Oil-Exporting Countries

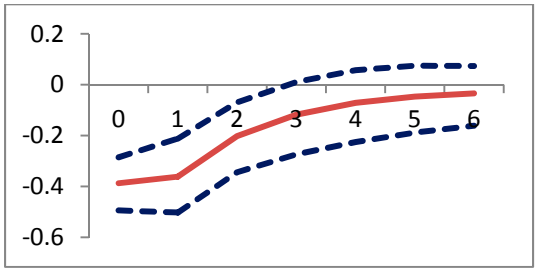
a) Global sample



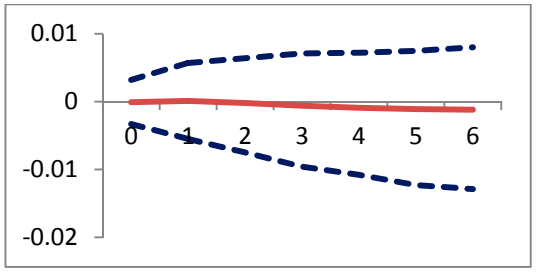
Response of government consumption



Response of GDP

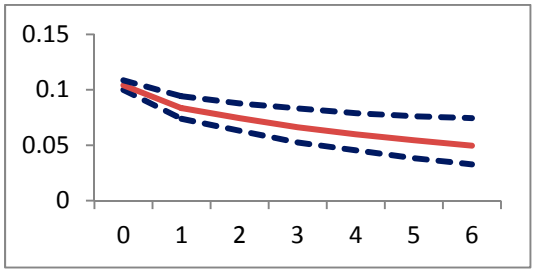


Response of current account to GDP ratio

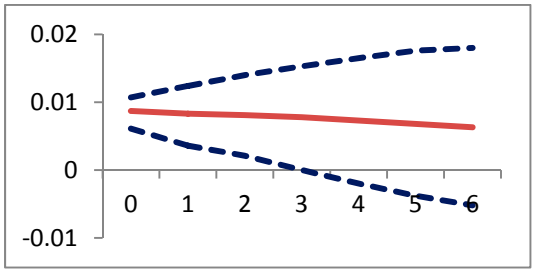


Response of the real exchange rate

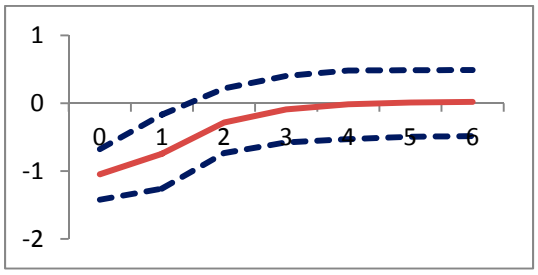
b) Microstates



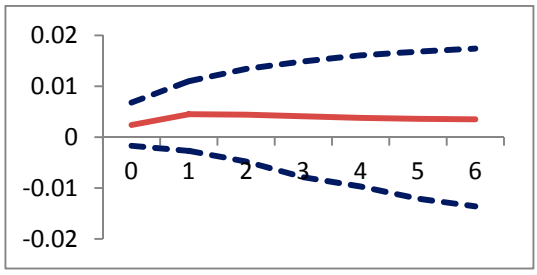
Response of government consumption



Response of GDP



Response of current account to GDP ratio

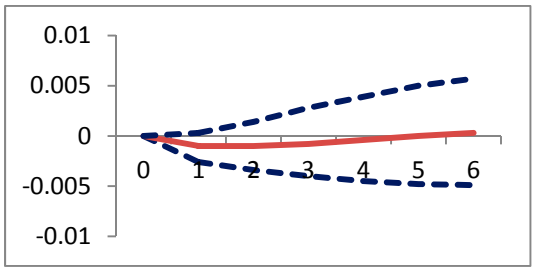


Response of the real exchange rate

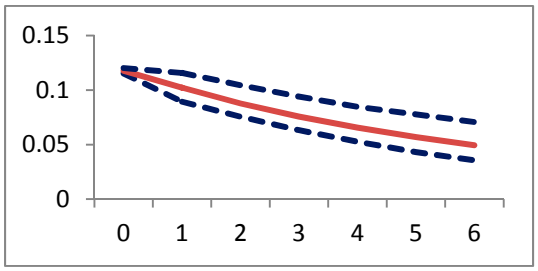
Note: X-axes refer to years after the shock. Confidence bands are the 5th and 95th percentiles from Monte Carlo simulations based on 500 replications

Figure 13: Panel VAR – Impulse Response to 1 Standard Deviation Shocks in Government Consumption: Government Consumption Ordered Second

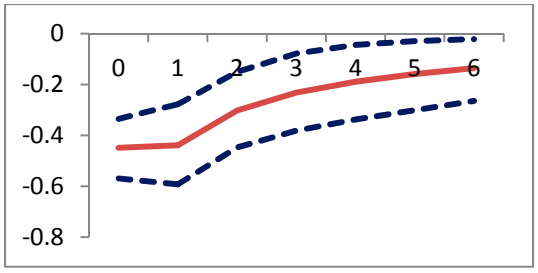
a) Global sample



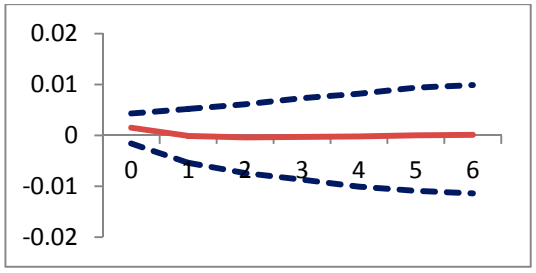
Response of GDP



Response of government consumption

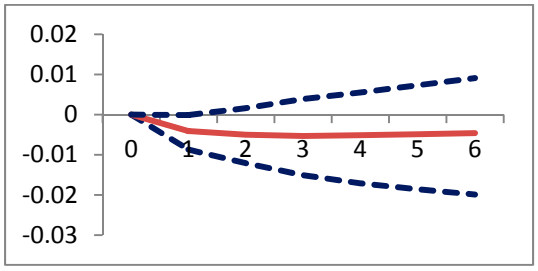


Response of current account to GDP ratio

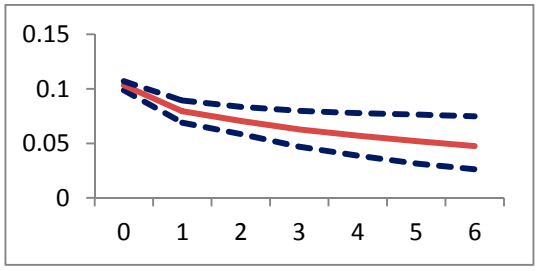


Response of the real exchange rate

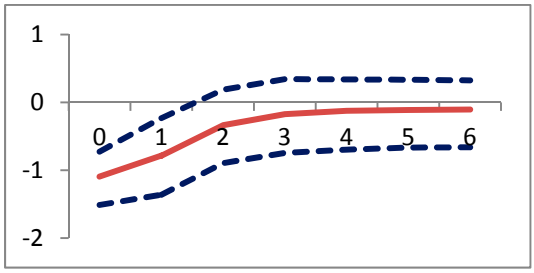
b) Microstates



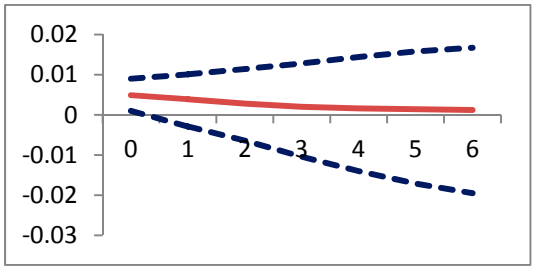
Response of GDP



Response of government consumption



Response of current account to GDP ratio

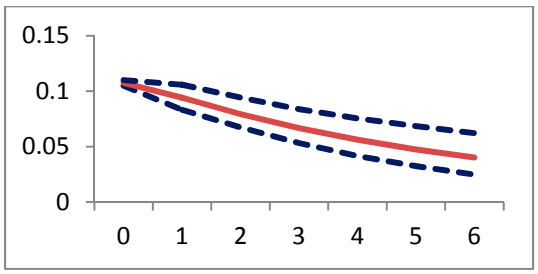


Response of the real exchange rate

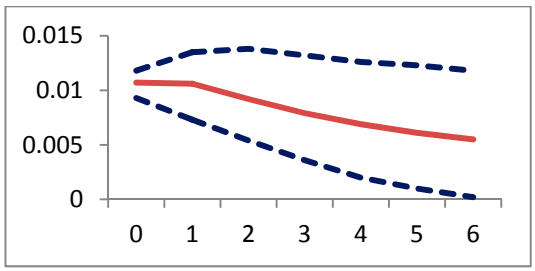
Note: X-axes refer to years after the shock. Confidence bands are the 5th and 95th percentiles from Monte Carlo simulations based on 500 replications

Figure 14: Panel VAR – Impulse response to 1 standard deviation shocks in government consumption: Sample period restricted to 1990-2009

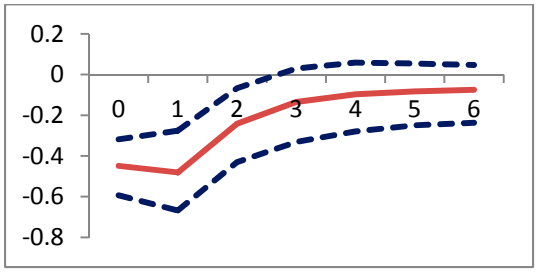
a) Global sample



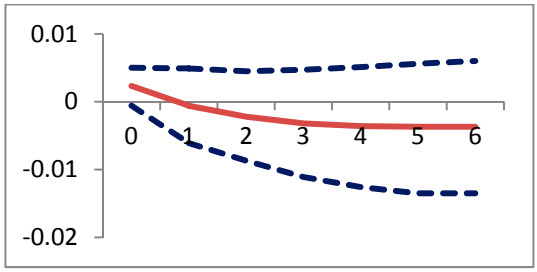
Response of government consumption



Response of GDP

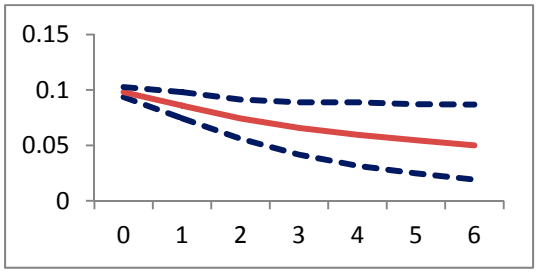


Response of current account to GDP ratio

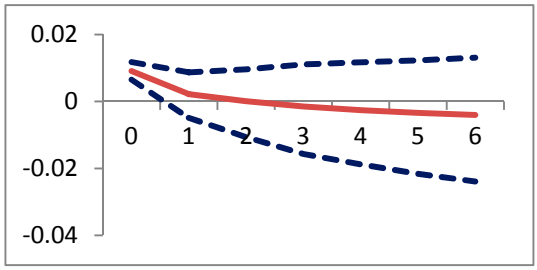


Response of the real exchange rate

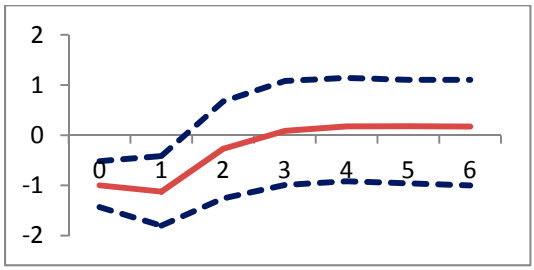
b) Microstates



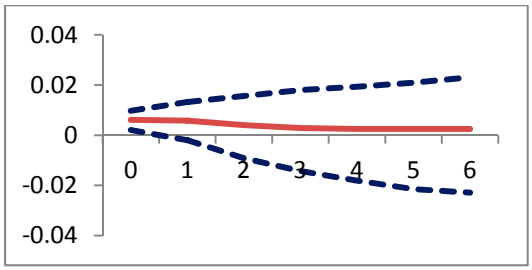
Response of government consumption



Response of GDP



Response of current account to GDP ratio



Response of the real exchange rate

Note: X-axes refer to years after the shock. Confidence bands are the 5th and 95th percentiles from Monte Carlo simulations based on 500 replications