

# Government Spending Cyclicalities in Developing Countries: The Role of Remittances

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## Abstract

According to some authors, the transition from procyclical fiscal policy to countercyclical one that occurred in many developing countries over the last decade is related to the better institutions observed in those countries. Based on credit constraint mechanism, I investigate whether remittances inflows help run countercyclical fiscal policy in developing countries. Using a dynamic panel data framework, it appears that in non-OECD countries in general and African countries in particular, remittances mitigate the procyclical fiscal policies. Moreover, the mitigation role played by remittances is strongly marked during recessionary periods. Further, these results remain statistically significant to different robustness checks.

*Keywords:* Business cycle, Remittances, Fiscal Policy

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## 1. Introduction

Several studies have pointed out the difference between developed and developing countries in how they conduct fiscal policy. The fiscal policy of the former is countercyclical while that of the latter is procyclical. That is, while in bad times, developed countries increase public expenditures in

order to stabilize the output fluctuation, these expenditures decrease in developing countries. And when it comes to changes in tax rates, developed countries reduce them while they increase in developing countries during bad times. The opposite for features described is true in good times. As long as fiscal policy aims at stabilizing macroeconomic volatility, implementing procyclical fiscal policy is out of comprehension. Efforts made to understand the puzzling procyclical fiscal behavior conduct to two explanations. The first explanation is political and relies on the “voracity effect” mechanism developed by [Tornell and Lane \(1999\)](#). The idea is that resource abundance during good times, strengthens the severity of the common-pool problem and hence conflicts among different interest groups. Indeed, no group will be willing to moderate its claims on the increased resources as it knows that the saved resources will be appropriated by another groups. This theory receives empirical supports, among which [Alesina et al. \(2008\)](#). The second explanation emphasizes the imperfections in the international credit markets. As developing countries are prevented from borrowing in bad times, they cannot run deficits and have to cut spending ([Gavin and Perotti, 1997](#); [Riascos and Vegh, 2003](#), among others).

In a recent work, [Frankel et al. \(2013\)](#) point out that, over the last decade, many developing countries relinquish their procyclical fiscal policy in favour of a countercyclical fiscal policy. According to these authors, a key factor in explaining this transition to countercyclical fiscal policy is the improvement in the quality of institutions observed in many developing countries. But they also underline the crucial role of increased financial integration and lower output volatility in reducing fiscal procyclicality. [Strawczynski](#)

and Zeira (2013) also note a break in the procyclical fiscal policy in many emerging countries that coincide with the after 1990s. According to them, this period marks the exposure of many emerging countries to international investments that results from globalization process.

This paper emphasizes one alternative by which conducting procyclical fiscal policy is made possible in the emerging and developing countries: remittances flows. Unlike several international capital flows positively correlated to business cycles (Kaminsky et al., 2004; Pallage and Robe, 2001), remittances flows received by many developing countries — by and large countercyclical to business cycles (Frankel, 2011)— may smooth consumption and therefore the income stabilization. Remittances are all the more important in countries where the existing alternative mechanisms that permit income stabilization are unreachable. For example, while international credit markets provide resources for developed countries to smooth business cycles by running the suitable fiscal policy, developing countries are excluded, for their low credit rating. Another possible solution for income stabilization will consist in changing the share of the government spending components. Assume that government spending consists of government consumption, investments and transfers, one may think to increase government consumption at the cost of either investments or transfers. This strategy is not without consequences since capital accumulation plans and/or subvention programs would be affected. But the possibility that remittances can smooth consumption may help cut transfers in favor of government consumption in order to stabilize the business cycles.

Remittances due to their considerable volume may positively affect the eco-

conomic downturn in such a way that government faces a less severe magnitude of recession for which it will be able to fund a countercyclical fiscal policy. By interacting remittances flows with the business cycles variable, it emerges that the response in terms of fiscal policy to business cycles depends on the level of remittances

This paper is the first to consider remittances as one factor that help the transition from procyclical to countercyclical fiscal policy as it is the case in many developing countries these last years. The study the paper is more closed to is [Strawczynski and Zeira \(2013\)](#) who have investigated whether procyclicality becomes small in the presence of high foreign direct investment. Regressions including the interaction terms FDI-persistent shocks show that the coefficient of procyclicality decreases from 0.42 to 0.14. According to the authors, the high level of FDI is one way emerging countries are exposed to investors worldwide and therefore the possibility for them to fund public spending.

The paper is structured as follows. Section 2 presents the theoretical mechanisms explaining why fiscal policies tend to be procyclical. It is also discusses the volatility of the business cycle in developing countries and the ways to smooth income in those countries. In section 3, after describing and justifying the choices of the variables required for this study, I specify the empirical model following the literature. Section 4 presents the results of the empirical specification tested by several estimators (fixed effects, GMM). In this section, to investigate the asymmetry of fiscal policy, I also explore the effect of remittances focusing on the recession periods. The last section concludes.

## 2. Theory

### *2.1. Causes of Procyclical Fiscal Policies*

#### *2.1.1. Weak Institutions*

Researchers have proposed several reasons for developing countries adopting a procyclical fiscal policy. One potential explanation relates to the quality of institutions. According to Tornell and Lane (1999), expansionary fiscal spending can be observed during upturns in a context of weak legal and political institutions combined with the presence of different groups of interest which seek to capture fiscal revenue. The appropriation goal of fiscal resources by each group of interest is more intensive during upturns and this induces voracity effect, that is fiscal spending grow more than what a given positive shock to income generates as fiscal revenue. Supporting the view of the importance of institutions, [Alesina et al. \(2008\)](#) show that procyclical fiscal policy is more conducted in countries which suffer from corruption. They contend that in a political agency problem framework, procyclical fiscal policy emerges, for voters seek to reduce political rents by asking for more public goods or lower taxes —the “starve the Leviathan” concept”.

[Talvi and Vegh \(2005\)](#) add a political distortion to a standard model of optimal fiscal policy in the way that pressure groups force government to increase public spending in good times precluding running budget surpluses. A key finding with the model is that high output volatility which causes a large variability in the tax base is conducive to procyclical fiscal policy. In a dynamic political economy model, [Ilzetzki \(2011\)](#) introduces a political friction: that is successive governments are in disagreement about how to distribute public expenditures. Using numerical simulations, he finds that political dis-

tortions are more relevant to explain procyclical fiscal policy compared to borrowing constrains and macroeconomic volatility.

### *2.1.2. Lack Access to International Credit Markets*

A second class of explanations for the procyclical feature of the fiscal policy in developing countries underlines the external financial constraints. As developed countries, developing countries need resources to finance an expansionary fiscal policy in bad times. But unlike the former, their chance to raise resources — if not at high interest rate — in the international capital markets is very low. As a consequence, developing countries have to cut their budget deficits in bad times. Conversely, they borrow more easily in good times. And this borrowing serves them to pay for public spending ([Gavin and Perotti, 1997](#); [Riascos and Vegh, 2003](#)). [Caballero and Krishnamurthy \(2004\)](#) maintain that the lack of financial depth in developing countries explain their conduct of procyclical fiscal policy. They explain that financial depth that is “the supply of funds available to the government and private sector” is low in developing countries. The reason is the risk environment in developing countries which leads to less investment compared to developed countries. In such a situation, an expansionary fiscal policy will induce the crowding out private investment which is more pronounced if the expansionary fiscal policy deteriorate the quality of the country’s assets. Their regression results show more negative effect of fiscal expansion on private investments in emerging economies than in advanced ones.

### *2.1.3. The Volatile Business-cycle*

According to [Aguiar and Gopinath \(2007\)](#), the fact that trend is volatile in emerging countries is very informative regarding the difference on some fundamentals of economic performance between emerging countries and developed ones. Indeed, considering one small developed economy (Canada) and an emerging market one (Mexico), they find that permanent shocks account for 50% of the variance at business cycle frequencies in Canada while they represent 80% in Mexico. In [Aguiar and Gopinath \(2006\)](#), one immediate insight is that the high frequency of sovereign default occurring in emerging markets has to do with the trend volatility.

Moreover, the response of fiscal policy related to the characteristics of business cycles has been investigated in the literature. In research on the cyclicity of fiscal policy, [Strawczynski and Zeira \(2009\)](#) divide fluctuations into permanent and transitory shocks; for a sample of 22 OECD countries over the period 1963-2006, they show that expenditures and deficits are countercyclical if shocks are transitory. But, if shocks are permanent, government expenditures are not significant meaning fiscal policy is acyclical. They conclude that the countercyclical fiscal policy is associated only to transitory shocks. [Brückner and Gradstein \(2014\)](#) have also showed that the response of fiscal policy to business cycles is not the same according as the income shocks are transitory or permanent. As previous studies aware of the endogeneity issue, these authors seek to instrument for GDP growth; but their approach is different as they consider two instruments which have respectively a transitory effect and persistent effect on the business cycles variables. Running the regressions on the Sub-Saharan African countries, they use the level of

rainfall as an instrument for transitory GDP and trade weighted GDP growth of sub-Saharan African countries' OECD trading partners as an instrument for the permanent one. The main findings are that government consumption expenditures are not procyclical in the case of transitory income shock while procyclical expenditures are observed in the case of persistent income shock.

## *2.2. In Search of Smoothing Income*

For many developing countries, the availability of resources actually remains a constraint to finance countercyclical fiscal policy. As [Lee et al. \(2009\)](#) pointed out, the fiscal stimulus the IMF called, has severely hampered in many developing countries by financing constraints and high debt constraints. These constraints are especially harmful as many developing countries do not have access to international capital markets to loosen the budget constraint. Unable to secure new loans through customary ways, developing countries could take advantage of their exposure to inflows of foreign capital and their access to international reserves. [Kandil and Morsy \(2014\)](#) show that international reserves help to implement the countercyclical fiscal policy. Indeed, with international reserves, domestic financing constraints are tight, permitting to not crowd out private investment. Moreover, reserves availability make credible the expansionary fiscal policy to stabilize cycles as there is a less concern about debt sustainability. [Strawczynski and Zeira \(2013\)](#) emphasize the role foreign direct investment can play in the move to countercyclical fiscal policy. Observing that fiscal policy in emerging countries tends to be less procyclical after the 1990s, they explore the possibilities that globalization offers in terms of the level of foreign direct investment. They posit that



a high level of FDI could mitigate procyclical fiscal policy. By interacting the FDI variable with the persistent business cycles variable they compute, they show that the coefficient of procyclical fiscal policy decreases by more than 60% in emerging countries with a high level of FDI.

Likewise, there are good reasons to believe that international capital flows comprising foreign aid and remittances flows may also allow the countercyclical fiscal policy to be conducted. However, the international capital flows –apart from remittances– are procyclical with business cycles and this won't really help developing countries for which financing constraints come up during recessions. [Pallage and Robe \(2001\)](#) document the procyclical feature of foreign aid flows to developing countries. This is quite problematic in period of crisis where aid receiving countries are denied new loans to stabilize output fluctuations. Because of the substantial source of income foreign aid represents for many developing countries, it can be used to smooth out output fluctuations. Being procyclical, foreign aid flows unfortunately do not serve this function. More generally, [Kaminsky et al. \(2004\)](#) point out that capital flows are procyclical in developing countries that is “the correlation between the cyclical components of the net capital inflows and output is positive”. Even though capital flows tend to be procyclical both in developed and developing countries, capital inflows over the GDP in bad times fall principally in the middle-high income economies, suggestive of lack of access to international capital markets. One immediate insight is that capital flows when countercyclical will stabilize the business cycle while procyclical capital flows will reinforce the business cycle. One finding –as a stylized fact– is that there is a positive relationship between the capital flow cycle and the

macroeconomic policy cycle in developing countries. For example, graphic illustration shows a positive correlation between the cyclical components fiscal expenditure and net capital inflows, specific to developing countries. Based on the evidence suggesting that fiscal spending is positively correlated to capital flows in middle-high and low income countries, the authors suspect the capital flows to be the cause of fiscal spending. The absence of significant correlation between the same aggregates for OECD countries, supports the lack of access to international capital markets faced by developing countries. Moreover the fact that foreign capital flows to developing countries are procyclical do not help either to relax budget constraints.

One alternative to international borrowing is the capacity for a country to attract international investments. Supportive of this, [Strawczynski and Zeira \(2013\)](#) examine the impact of foreign direct investment and international reserves on fiscal policy. These authors observe that fiscal spending are no longer procyclical in many emerging countries after 1990s i.e. with the globalization process around the world. Note that the explanation favored by [Strawczynski and Zeira \(2013\)](#) is entirely different from the institutional argument supported by ([Frankel et al., 2013](#)). However, how comes that FDI increases dramatically in emerging markets is not addressed. The institutional view and the availability of international investments are not mutually exclusive as the improvement of institutions may attract international investors. There is also no reason that FDI flows should be countercyclical. They should also react to business cycles with incoming and outgoing flows.

### 3. Empirical Strategy

#### 3.1. Data

The empirical analysis covers a sample as large as possible of industrial and developing countries for the period 1970-2013. Although the analysis will focus on developing countries –for which the potential role played by the remittances should be relevant–, the estimations will be also run on developed countries for comparison. The variables described below are the most important determinants in explaining the cyclicity of the fiscal policy in the literature. The variables of interest namely the business cycles, the fiscal policy and remittances are defined first. The reasons why fiscal policy is procyclical, acyclical or countercyclical also rely on various factors such as the financial integration and depth, the domestic financial development and the quality of institutions.

- *Fiscal policy.* The General government final consumption expenditures is the fiscal indicator used to examine the features of the fiscal policies. The reasons why this aggregate is an appropriate measure of fiscal policy are twofold. First, of the budget surplus and the total government spending, [Kaminsky et al. \(2004\)](#) argue that government expenditures are the proper measurement to use in the context of examining cyclical behavior. In contrast, the focus on deficits can be misleading. Second, [Ilzetzki and Vegh \(2008\)](#) break down government expenditures and show that government consumption is the component that reflects the will to smooth the business cycle. The main sources of this fiscal

indicator are the IMF's International Financial Statistics (IFS) and the World Bank's World Development Indicators (WDI).

- *Business cycles.* Following [Brückner and Gradstein \(2014\)](#); [Panizza and Jaimovich \(2007\)](#); [Ilzetzki and Vegh \(2008\)](#), the change in the log of real GDP (per capita) is used to measure the business cycles. The real GDP growth series come from the World Development Indicators (WDI).
- *Remittances to GDP (%)* consist of personal transfers and compensation of employees. The former comprises current transfers in cash or in kind made or received by resident households to or from nonresident households. The latter includes all current transfers between resident and nonresident individuals. Many developing countries are supplied with considerable volume of remittances. These data are from the IMF balance of payments data.
- *Financial depth* is represented by the domestic credit to private sector over GDP (%). This variable comes from the Global Financial Development Database (GFDD) of the World Bank.
- *Financial openness* is also considered by using several variables from [Chinn and Ito \(2008\)](#). Data from [Lane and Milesi-Ferretti \(2007\)](#) are also used to construct the total foreign assets and liabilities to GDP ratio.
- *Quality of institutions.* The recent work of [Frankel et al. \(2013\)](#) emphasized the improvement of the quality of institutions as the key factor

in explaining the recent countercyclical fiscal policies observed in many developing countries. The composite index of institutions based on the ICRG data these authors construct will be used. Also, I resort to other well known indicator of institutions such as the polity 2 variable of [Marshall and Jagers \(2002\)](#). [Beck et al. \(2001\)](#), Checks and balances as a proxy to measure whether government abuses its power is taken from the Database of Political Institutions ([Beck et al., 2001](#))

### 3.2. Specification

To investigate the cyclicity of the fiscal policy, [Ilzetki and Vegh \(2008\)](#) and [Panizza and Jaimovich \(2007\)](#) regress the changes in the log of real government consumption on the log of real GDP. Others simply regress the fiscal indicator chosen on real GDP growth. One last approach relates the change in the log of real government consumption expenditures to the change in the log of real GDP per capita. The following specification therefore relates the change in the log of the real government consumption expenditures to the change in the log of real GDP:

$$\Delta \ln G_{ct} = \alpha_c + \tau_t + \varphi G_{c,t-1} + \phi \Delta \ln GDP_{ct} + \eta X_{it} + \varepsilon_{ct} \quad (1)$$

Where  $G$  the fiscal policy indicator is here, the general government final consumption expenditures.  $\alpha_c$  and  $\tau_t$  are respectively the country and time effects and  $\varepsilon_{ct}$  is an error term that is clustered at the country level. The lagged  $G$  introduced in the model is to control for the persistence of fiscal indicators and  $X$  is a set of the explanatory variables. To examine whether remittances are relevant to determine fiscal policy cyclicity, I add to the

model an interaction variable between the log difference of the real gross domestic product and remittances to GDP (%) as follows:

$$\Delta \ln G_{ct} = \alpha_c + \tau_t + \varphi G_{c,t-1} + \phi_1 \Delta \ln GDP_{ct} + \phi_2 Remit_{ct} + \phi_3 \ln GDP_{ct} \times Remit_{ct} + \eta_1 X_{it} + \eta_2 \Delta \ln GDP_{ct} \times X_{it} + \varepsilon_{ct} \quad (2)$$

The set of control variables denoted by  $X$  is also interacted with the business cycle variable. Estimations of equation (1) are performed first to compare the results with those in the literature. Regressions are made respectively on the sub sample of non oecd countries, oecd countries and African countries. These regressions are intended to show how the impact of remittances differ across the income groups, as developing countries rely much more on remittances than do industrialized countries. If remittances play a role in the shift of procyclical fiscal policy to countercyclical one, then it seems likely that their impact should be larger for developing countries. In developed countries where remittances flows are negligible, a weak or insignificant impact is expected. Equations (1) and (2) are estimated by fixed-effects OLS which take into account the country effects. Time fixed-effects are also added in each estimation. However, there are two concerns that bias the coefficients obtained with fixed-effects estimators. First, in presence of lagged dependent variable with finite temporal dimension, the use of fixed effects biases the coefficients of the model (Nickell bias). Second, there is also a reverse causality problem. To get consistent and unbiased estimates and also for the endogeneity issues, the interpretations of the coefficients are those with the system GMM estimators. To perform the system GMM estimations, all variables apart from time fixed effects are considered as predetermined.

Variables are instrumented by their lags in level and difference. Up to three lags are only taking as instruments in order to avoid the attendant overfitting problem induced by too many instruments ([Roodman, 2009](#)).

## 4. Empirical Results

### 4.1. Fixed effects estimations

Table (1) presents the simple OLS estimations. The first Column (1) shows the well-known stylized fact that government spending is procyclical in developing countries. The results are statistically significant at the 99 percent confidence level. The results in non oecd countries are compared with those observed in OECD countries. Column (2) displays the regressions with interaction variable. The coefficient on the interaction is negative and significant at 5% level. Column (3) shows that fiscal policy is also procyclical in OECD countries but in low magnitude compared to non oecd countries. Like [Ilzetzki and Vegh \(2008\)](#), a test of the equality of regression coefficients generated from the two samples, rejects at the 99 percent confidence level that the coefficient is the same for the two groups. Column (4) shows that the interaction variable is no significant at the conventional level, suggesting that the role played by remittances does only hold for a specific group of countries. This finding is reinforced by the results observed for African countries. Column (5) shows a positive coefficient on the log change of real gdp, meaning that fiscal policy is procyclical in African countries. Column (6) reports the coefficient of the interaction variable which is negative and significant at 5% level. Like non oecd countries, Remittances tend to reverse the procyclical fiscal policy that occurred in African countries. The coeffi-

cient on the interaction variable in African countries is larger than the one observed in non oecd countries.

Table 1: GOVERNMENT CONSUMPTION REGRESSION WITH REMITTANCES

VARIABLES	NON OECD		OECD		Africa	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>ldlexpensec</i>	-0.0235 (-0.856)	-0.0618* (-1.881)	-0.498*** (-459.2)	-0.498*** (-419.1)	-0.0552 (-1.628)	-0.0893** (-2.290)
<i>dlgdp</i>	0.701*** (7.843)	0.727*** (6.781)	0.507** (2.052)	0.845 (1.230)	0.880*** (5.009)	1.007*** (6.009)
<i>remitgdp</i>		-0.00168** (-2.013)		0.0115 (1.232)		-0.00298*** (-4.497)
<i>interaction</i>		-0.00499** (-2.264)		-0.222 (-0.768)		-0.00604** (-2.127)
<i>Constant</i>	0.0169 (0.887)	0.0322 (1.472)	0.0523*** (3.957)	0.0106 (0.165)	0.0199 (1.015)	0.0751*** (3.508)
Observations	3,653	2,535	1,363	981	1,224	844
R-squared	0.104	0.109	0.278	0.287	0.129	0.152
Number of country1	114	106	31	31	37	35

*Notes:* t-statistics are in parentheses, \*, \*\*, and \*\*\* show the significance level at 10%, 5% and 1% respectively. Fixed effect estimator used, including time fixed effects in all regressions.

#### 4.2. GMM estimations

In the presence of lagged dependent variable, the fixed effects estimator controls for country effects but biases the coefficients while the GMM estimators provide consistent and unbiased estimates. The GMM system also



helps to deal with endogeneity issues since the explanatory variables can be treated as potentially endogenous. We consider all explanatory variables of interest as predetermined and instrument them using their one-period to third lags. The choice of three lags ensures that the number of instruments is large enough for efficiency, but lower than or equal to the number of country groups. A problem of the GMM estimator is that too many instruments can overfit the endogenous variable. As a rule of thumb, the number of instruments should be smaller or equal to the number of countries ([Roodman, 2009](#)).

In table (2), the interaction variable enters with a significant and negative coefficient as it was the case in the fixed effect specifications. With the GMM system estimations, there are good reasons to think that remittances flows mitigate the impact of the business cycle on the nature of the fiscal policy in developing countries. However, this results can be biased by the omitted variables. Following the literature, a set of control variables is introduced in the estimations. In Column (2), the Chinn-Ito financial openness index ([Chinn and Ito, 2008](#)) interacted with the business cycle is not significant in presence of the interaction variable of interest (remittances with business cycle). In column (3) the domestic credit to private sector as percentage of GDP is added to take into account the financial depth, another key factor. The expected sign is observed on the coefficient of the interaction of this variable with the business cycle, but not significant at the conventional level. To make allowance for the role played by institutions, the polity 2 variable is added in column (4) and checks and balances thereafter in column (5). These variables also fail to be significant. Overall, the range of other variables have

a tenuous impact. One possible explanation is that these other determinants of cyclicalities seem to be deteriorated with the business cycle.

Table 2: GOVERNMENT CONSUMPTION REGRESSION WITH REMITTANCES

VARIABLES	NON OECD					Africa				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ldlexpensec	-0.0214 (-0.583)	-0.0287 (-0.772)	0.00784 (0.272)	0.0163 (0.553)	0.0279 (1.016)	-0.0499 (-1.086)	-0.0607 (-1.425)	-0.00394 (-0.125)	0.00202 (0.0641)	0.0236 (0.807)
dlgdpc	0.689*** (6.000)	0.736*** (5.032)	0.789*** (3.838)	0.759*** (3.904)	0.823*** (3.883)	0.990*** (6.937)	0.907*** (4.449)	1.285*** (3.030)	1.083*** (3.234)	1.495*** (4.119)
remitgdp	-0.000231 (-1.211)	-0.000109 (-0.680)	-0.000259* (-1.953)	-0.000318** (-2.237)	-0.000402*** (-2.993)	-0.000164 (-0.975)	-8.59e-05 (-0.589)	-0.000161 (-0.819)	-0.000183 (-0.926)	-0.000426** (-2.421)
interaction	-0.00563** (-2.180)	-0.00828*** (-3.564)	-0.00568** (-2.440)	-0.00419* (-1.690)	-0.00444* (-1.783)	-0.00774*** (-3.746)	-0.00925*** (-4.324)	-0.00956** (-2.404)	-0.00715* (-1.931)	-0.00497 (-1.259)
ka_open		-0.0520*** (-3.549)	-0.0341*** (-2.922)	-0.0201* (-1.910)	-0.0181* (-1.883)		-0.0894*** (-3.604)	-0.0554** (-2.192)	-0.0441 (-1.555)	-0.0212 (-0.886)
interkaopen_nor		0.0684 (0.298)	-0.0144 (-0.0648)	-0.221 (-0.946)	-0.186 (-0.749)		0.326 (0.603)	0.0364 (0.0541)	-0.370 (-0.478)	-0.961 (-1.321)
credit_private_to_gdp			0.000204** (2.201)	0.000231* (1.857)	0.000249* (1.949)			0.000716 (1.193)	0.000832 (1.115)	0.000340 (0.528)
intercredit_private_to_gdp			-0.00341 (-1.483)	-0.00374 (-1.290)	-0.00473 (-1.435)			-0.0215 (-1.466)	-0.0221 (-1.434)	-0.0114 (-0.944)
Npolity2				-0.000703 (-0.927)	-0.000190 (-0.273)				-0.00157 (-0.615)	0.00245 (1.402)
interNpolity2				0.0137 (0.719)	0.000860 (0.0589)				0.0399 (0.743)	-0.0655 (-1.595)
nor_checks					-0.00383 (-0.867)					-0.0315* (-1.935)
interNorchercks					0.0705 (0.787)					0.682 (1.489)
Constant	-0.0354* (-1.757)	0.0389* (1.913)	-0.0399 (-1.633)	0.0209 (1.437)	0.100*** (3.736)	-0.00919 (-0.967)	0.0167 (1.156)	0.0597*** (3.640)	0.0582*** (3.584)	0.104** (2.181)
Observations	2,535	2,431	2,080	1,935	1,870	844	814	676	653	627
Number of country1	106	100	99	94	94	35	35	34	33	33

Notes: t-statistics are in parentheses, \*, \*\*, and \*\*\* show the significance level at 10%, 5% and 1% respectively. Fixed effect estimator used, including time fixed effects in all regressions.

### *4.3. asymmetries effect of remittances to the business cycle*

The credit constraint argument to explain why fiscal policy is procyclical in many developing countries leads to focus on the cyclicity of fiscal policy in recessions periods. Indeed, if it is true that credit constraint is relevant among factors making fiscal policy procyclical, therefore its effect should be more important during recessions periods. Also, if the role played by remittances on the shift of fiscal policy from procyclical to countercyclical behavior posit in this study matters, one would therefore expect that the effect of remittances would be more important during recession periods. The appropriate way to account for the recessions or the bad times effect is to interact a dummy variable denoting recession periods with the interaction variable between remittances to GDP and the log change of real GDP. There exists several approaches to determine recession periods in the literature. Two approaches will be adopted here. The first approach follows [Panizza and Jaimovich \(2007\)](#) who define bad times as periods in which country  $i$ 's GDP growth is below the country's median GDP growth. The dummy variable created take the value of 1 in bad times and 0 if not. A concurrent approach is used by [Caldern and Hebbel \(2008\)](#) and [Hercowitz and Strawczynski \(2004\)](#). They create a dummy variable representing bad times if the growth rate of the country  $i$  at time  $t$  is lower than the world sample average of the growth rate minus the world standard deviation of the growth in real GDP In doing so, what emerged as we can see in table (3) is that the interaction variable has is highly significant. More interestingly, compared to the result in table (3), the coefficient on the interaction variable has increased in absolute value by 0,0325 (column 1). We can also see in table (3) that the interaction variable

has increased for the all specifications. As we can see in table , results are broadly similar if another indicator of bad times is used. The results are not sensitive to the way that recession periods are defined since in table (4) where the definition of bad periods changed, the interaction variable remain strongly significant.

Table 3: GOVERNMENT CONSUMPTION REGRESSION WITH REMITTANCES

VARIABLES	NON OECD					Africa				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ldlexpensec	-0.0229 (-0.622)	-0.0279 (-0.746)	0.00710 (0.252)	0.0156 (0.537)	0.0272 (0.983)	-0.0401 (-0.886)	-0.0582 (-1.335)	-0.00447 (-0.146)	0.000947 (0.0306)	0.0223 (0.745)
dlgdp	0.878*** (6.249)	0.903*** (5.847)	0.962*** (4.255)	0.894*** (4.714)	0.956*** (4.429)	1.200*** (6.940)	1.145*** (5.225)	1.436*** (3.209)	1.215*** (3.872)	1.624*** (4.590)
remitgdp	-0.000537** (-2.551)	-0.000421*** (-2.760)	-0.000551*** (-3.651)	-0.000596*** (-3.674)	-0.000679*** (-4.312)	-0.000461** (-2.461)	-0.000407** (-2.503)	-0.000521*** (-2.794)	-0.000567*** (-2.958)	-0.000837*** (-4.648)
interaction	0.00234 (0.965)	0.000312 (0.124)	0.00357 (1.533)	0.00529* (1.877)	0.00558** (1.987)	0.00243 (0.785)	0.00174 (0.560)	0.00195 (0.502)	0.00510 (1.138)	0.00737* (1.646)
badjaim	0.0316*** (2.893)	0.0332*** (3.396)	0.0259*** (2.632)	0.0274** (2.394)	0.0283** (2.465)	0.0461*** (2.868)	0.0505*** (3.225)	0.0408** (2.163)	0.0467** (2.013)	0.0512** (2.449)
interbadJ	-0.0325*** (-6.379)	-0.0332*** (-5.993)	-0.0374*** (-5.986)	-0.0365*** (-5.751)	-0.0382*** (-6.218)	-0.0373*** (-5.421)	-0.0392*** (-5.536)	-0.0429*** (-6.311)	-0.0433*** (-6.597)	-0.0430*** (-7.120)
ka_open		-0.0498*** (-3.957)	-0.0337*** (-2.966)	-0.0178* (-1.786)	-0.0169* (-1.762)		-0.0927*** (-3.865)	-0.0607** (-2.332)	-0.0468* (-1.733)	-0.0231 (-0.972)
interkaopen_nor		0.119 (0.551)	0.0120 (0.0533)	-0.261 (-1.114)	-0.246 (-1.012)		0.282 (0.551)	0.0588 (0.0864)	-0.437 (-0.564)	-1.017 (-1.397)
credit_private_to_gdp			0.000191** (2.193)	0.000193* (1.684)	0.000209* (1.800)			0.000575 (1.004)	0.000639 (0.939)	8.44e-05 (0.147)
intercredit_private_to_gdp			-0.00366 (-1.611)	-0.00360 (-1.294)	-0.00428 (-1.414)			-0.0177 (-1.267)	-0.0175 (-1.227)	-0.00646 (-0.589)
Npolity2				-0.000895 (-1.170)	-0.000306 (-0.431)				-0.00167 (-0.668)	0.00240 (1.437)
interNpolity2				0.0183 (0.929)	0.00636 (0.436)				0.0476 (0.863)	-0.0549 (-1.451)
nor_checks					-0.00399 (-0.948)					-0.0328** (-2.104)
interNorchercks					0.0654 (0.786)					0.671 (1.526)
Constant	-0.0621*** (-2.694)	0.0200 (0.846)	0.0265 (0.864)	0.0133 (0.890)	0.0537* (1.770)	0.0334** (2.574)	0.00591 (0.381)	0.0405*** (3.099)	0.0354*** (2.841)	-0.0160 (-0.710)
Observations	2,535	2,431	2,080	1,935	1,870	844	814	676	653	627
Number of country1	106	100	99	94	94	35	35	34	33	33

Notes: t-statistics are in parentheses, \*, \*\*, and \*\*\* show the significance level at 10%, 5% and 1% respectively. Fixed effect estimator used, including time fixed effects in all regressions.

Table 4: GOVERNMENT CONSUMPTION REGRESSION WITH REMITTANCES

VARIABLES	NON OECD					Africa				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
LDLEXPENSEC	-0.0190 (-0.534)	-0.0269 (-0.743)	0.0107 (0.390)	0.0191 (0.676)	0.0293 (1.107)	-0.0435 (-0.973)	-0.0598 (-1.392)	-0.00273 (-0.0893)	0.00317 (0.103)	0.0252 (0.857)
dlgdpc	0.774*** (4.951)	0.792*** (4.484)	0.849*** (3.355)	0.806*** (3.701)	0.873*** (3.436)	1.034*** (4.920)	0.950*** (3.674)	1.318*** (2.815)	1.125*** (3.350)	1.549*** (3.580)
remitgdp	-0.000329 (-1.491)	-0.000260 (-1.238)	-0.000563*** (-3.049)	-0.000606*** (-3.349)	-0.000663*** (-3.459)	-0.000326 (-1.412)	-0.000277 (-1.290)	-0.000481* (-1.753)	-0.000496* (-1.743)	-0.000698*** (-2.584)
interaction	-0.00359 (-0.904)	-0.00587 (-1.554)	-0.000399 (-0.130)	0.000761 (0.254)	0.000598 (0.193)	-0.00483 (-1.549)	-0.00585** (-2.026)	-0.00386 (-0.830)	-0.00168 (-0.392)	-0.000127 (-0.0286)
badcalderon	0.0175 (0.815)	0.0170 (0.781)	0.0119 (0.520)	0.0171 (0.649)	0.0193 (0.691)	0.0143 (0.368)	0.0205 (0.504)	0.0262 (0.565)	0.0226 (0.524)	0.0288 (0.588)
interbadC	-0.0101 (-1.476)	-0.00957 (-1.364)	-0.0186*** (-4.490)	-0.0164*** (-4.646)	-0.0172*** (-4.101)	-0.0115* (-1.782)	-0.0125* (-1.934)	-0.0200*** (-4.214)	-0.0196*** (-3.932)	-0.0175*** (-2.707)
ka_open		-0.0512*** (-4.172)	-0.0338*** (-3.183)	-0.0179* (-1.789)	-0.0161 (-1.583)		-0.0921*** (-3.732)	-0.0599** (-2.214)	-0.0496 (-1.629)	-0.0274 (-1.138)
interkaopen_nor		0.0897 (0.434)	-0.0451 (-0.208)	-0.288 (-1.220)	-0.248 (-0.986)		0.340 (0.640)	0.0649 (0.0971)	-0.325 (-0.427)	-0.910 (-1.323)
credit_private_to_gdp			0.000217** (2.523)	0.000194 (1.641)	0.000237* (1.851)			0.000740 (1.250)	0.000852 (1.144)	0.000359 (0.577)
intercredit_private_to_gdp			-0.00383* (-1.707)	-0.00339 (-1.187)	-0.00437 (-1.382)			-0.0203 (-1.510)	-0.0210 (-1.455)	-0.0101 (-0.864)
Npolity2				-0.000665 (-0.857)	-0.000190 (-0.261)				-0.00145 (-0.580)	0.00255 (1.411)
interNpolity2				0.0145 (0.728)	0.00201 (0.135)				0.0377 (0.728)	-0.0681 (-1.528)
nor_checks					-0.00396 (-0.852)					-0.0313* (-1.883)
interNorchercks					0.0705 (0.776)					0.683 (1.468)
Constant	0.0273 (1.160)	-0.0390 (-1.500)	-0.0443 (-1.623)	0.0180 (1.106)	0.0873*** (3.341)	-0.0117 (-0.932)	0.0150 (0.881)	0.0452 (1.550)	0.0455* (1.790)	0.000699 (0.0290)
Observations	2,535	2,431	2,080	1,935	1,870	844	814	676	653	627
Number of country1	106	100	99	94	94	35	35	34	33	33

Notes: t-statistics are in parentheses, \*, \*\*, and \*\*\* show the significance level at 10%, 5% and 1% respectively. Fixed effect estimator used, including time fixed effects in all regressions.

## 5. Conclusion

Remittances mean considerably more than just helping households to smooth consumption, cover education or health's expenses. In this paper I show that remittances complement the efforts in developing countries to implement an appropriate fiscal policy. Recent studies emphasize the fundamental role of institutions in the transition of procyclical fiscal policies to the countercyclical ones in many developing countries. Although the quality of institutions matters, this is the part of the story because resources are needed to pay for public spending when a government wants to implement countercyclical fiscal policy. Indeed, the lack of financial resources may frame the will to implement a countercyclical fiscal policy. I show that remittances could also help with the implementation of the countercyclical fiscal policy in many developing countries.

## 6. Appendixes

### 6.1. Definition of variables and sources

Variablo	Definitions and sources
<i>DLNEXPENSEC</i>	Difference $x_t - x_{t-1}$ of the natural log of general government final consumption expenditure (constant 2005 US\$). The data source is WDI
<i>GDPR</i>	GDP growth (annual %). WDI
<i>GDPCAPC</i>	GDP per capita (constant 2005 US\$). WDI
<i>GDPCAPGR</i>	GDP per capita growth
<i>EXPENSEOGDP</i>	General government final consumption expenditure (% of GDP)



Variablo	Definitions and sources
<i>EXPENSEGR</i>	General government final consumption expenditure (annual % growth)
<i>EDOGDP</i>	Cash surplus/deficit (% of GDP)
<i>GDPC</i>	GDP (constant 2005 US\$)
<i>REMITGDP</i>	Personal remittances, received (% of GDP)
<i>TOT</i>	Net barter terms of trade index (2000 = 100)
<i>OPEN</i>	Trade (% of GDP)
<i>LI_LIABILITIES_TO_GDP</i>	Liquid liabilities to GDP (%) also measure the financial depth according to <a href="#">Cihak et al. (2012)</a> . This variable also serves as a proxy to financial openness
<i>KA_OPEN</i>	This variable is the Chinn-Ito financial openness used as a proxy to the financial integration. In <a href="#">Chinn and Ito (2008)</a> , it measures a county's degree of capital account openness.
<i>CREDIT_PRIVATE_TO_GDP</i>	Private credit by deposit money banks to GDP (%) measures the financial depth. The variable is obtained from <a href="#">Cihak et al. (2012)</a>
<i>NOR_CHECKS</i>	The normalized checks and balances variable from <a href="#">Beck et al. (2001)</a> is used. A higher score corresponds to more political checks and balances.
<i>POLITY2</i>	Measure of democratic institutions of the polity IV data base ( <a href="#">Marshall and Jaggers, 2002</a> ). It ranges from -10 to +10, with higher values corresponding to more democratic institutions.
<i>wdireserve</i>	Total reserves in months of imports
<i>wdidebt</i>	External debt stocks (% of GNI)
<i>Portfolioequityassetsstock</i>	Portfolio equity assets (stock)
<i>Portfolioequityliabilitiesst</i>	Portfolio equity liabilities (stock)
<i>Portfoliodebtliabilities</i>	Portfolio debt liabilities

## 6.2. Additional tables

Table 6: GOVERNMENT CONSUMPTION REGRESSION WITH REMITTANCES

VARIABLES	FIXED EFFECTS					GMM				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ldlexpensec	-0.498*** (-419.1)	-0.499*** (-356.2)	-0.500*** (-400.7)	-0.500*** (-400.8)	-0.500*** (-390.6)	-0.499*** (-419.6)	-0.499*** (-361.0)	-0.500*** (-403.1)	-0.500*** (-414.9)	-0.500*** (-406.0)
dlgdpc	0.845 (1.230)	-0.117 (-0.248)	0.0933 (0.196)	-0.786*** (-2.942)	-0.792* (-1.762)	0.815 (1.515)	0.111 (0.282)	0.364 (1.151)	-0.664** (-2.348)	-0.727* (-1.903)
remitgdp	0.0115 (1.232)	0.00775 (0.816)	0.0136 (1.158)	0.0125 (1.236)	0.0151 (1.131)	0.0121 (1.454)	0.00730 (0.946)	0.0111 (1.246)	0.00975 (1.261)	0.0119 (1.161)
interaction	-0.222 (-0.768)	-0.167 (-0.595)	-0.281 (-0.810)	-0.262 (-0.820)	-0.349 (-0.798)	-0.244 (-0.925)	-0.178 (-0.706)	-0.290 (-0.927)	-0.267 (-0.908)	-0.362 (-0.896)
ka_open		-0.0313 (-0.997)	-0.0230 (-0.656)	-0.0254 (-0.530)	-0.0325 (-0.564)		-0.0402* (-1.729)	-0.0475 (-1.386)	-0.0545 (-1.153)	-0.0570 (-1.101)
interkaopen_nor		1.347 (1.404)	1.454 (0.990)	1.551 (0.825)	1.665 (0.804)		1.122 (1.303)	1.196 (0.951)	1.312 (0.804)	1.381 (0.767)
credit_private_to_gdp			0.000391 (1.090)	0.000455 (1.200)	0.000489 (1.119)			0.000345 (1.329)	0.000366 (1.343)	0.000400 (1.323)
intercredit_private_to_gdp			-0.000270 (-0.0733)	0.000822 (0.205)	-0.000182 (-0.0362)			-0.000476 (-0.144)	0.000336 (0.0880)	-0.000752 (-0.149)
Npolity2				-0.00179 (-1.218)	-0.00228 (-1.000)				-0.00378** (-2.361)	-0.00450*** (-2.681)
interNpolity2				0.0365 (1.275)	0.0542 (1.360)				0.0431 (1.511)	0.0677* (1.819)
nor_checks					-0.00271 (-0.465)					-0.000600 (-0.236)
interNorchercks					-0.0886 (-0.479)					-0.0977 (-0.571)
Constant	0.0106 (0.165)	0.0490 (1.052)	0.00807 (0.119)	0.0460 (0.921)	0.104** (2.223)	0.0129 (0.266)	0.0413 (1.100)	0.0209 (1.071)	0.104*** (3.236)	0.153*** (3.931)
Observations	981	936	806	772	741	981	936	806	772	741
R-squared	0.287	0.289	0.294	0.296	0.296					
Number of country1	31	30	29	28	28	31	30	29	28	28

Notes: t-statistics are in parentheses, \*, \*\*, and \*\*\* show the significance level at 10%, 5% and 1% respectively. Fixed effect estimator used, including time fixed effects in all regressions.

Table 7: GOVERNMENT CONSUMPTION REGRESSION WITH REMITTANCES

VARIABLES	BAD times					Bad times				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
ldlexpensec	-0.500*** (-191.6)	-0.500*** (-179.8)	-0.502*** (-161.8)	-0.502*** (-159.0)	-0.502*** (-156.1)	-0.498*** (-448.8)	-0.499*** (-356.6)	-0.500*** (-407.6)	-0.500*** (-419.0)	-0.500*** (-405.7)
dlgdpc	0.138 (0.413)	-0.639 (-0.698)	-0.484 (-0.554)	-1.412* (-1.651)	-1.392 (-1.566)	0.635 (1.133)	0.159 (0.445)	0.369 (1.079)	-0.672** (-2.149)	-0.754** (-2.114)
remitgdp	0.0107 (1.230)	0.00662 (0.843)	0.0112 (1.240)	0.00883 (1.288)	0.00817 (1.230)	0.0114 (1.166)	0.00691 (0.763)	0.0105 (1.037)	0.00944 (1.084)	0.0112 (1.148)
interaction	-0.315 (-0.820)	-0.257 (-0.671)	-0.422 (-0.933)	-0.368 (-0.913)	-0.400 (-0.905)	-0.209 (-0.692)	-0.168 (-0.584)	-0.274 (-0.796)	-0.266 (-0.820)	-0.354 (-0.894)
badjaim	-0.0743 (-1.004)	-0.0772 (-0.990)	-0.0878 (-1.033)	-0.0941 (-1.035)	-0.0968 (-1.034)					
interbadJ	0.434 (0.700)	0.410 (0.612)	0.655 (0.895)	0.680 (0.906)	0.685 (0.921)					
badcalderon						0.0125 (0.348)	0.0331 (0.741)	0.0392 (1.022)	0.0659 (1.514)	0.0678 (1.605)
interbadC						0.148 (0.373)	-0.0190 (-0.0557)	-0.0470 (-0.149)	0.0632 (0.172)	-0.401 (-1.536)
ka_open		-0.0530 (-1.557)	-0.0563 (-1.368)	-0.0739 (-1.164)	-0.0804 (-1.126)		-0.0395* (-1.866)	-0.0454 (-1.435)	-0.0541 (-1.223)	-0.0603 (-1.173)
interkaopen_nor		0.985 (1.300)	0.943 (0.975)	1.443 (0.859)	1.553 (0.824)		1.170 (1.371)	1.193 (0.994)	1.302 (0.834)	1.488 (0.826)
credit_private_to_gdp			0.000326 (1.369)	0.000343 (1.393)	0.000367 (1.383)			0.000326 (1.385)	0.000335 (1.379)	0.000390 (1.399)
intercredit_private_to_gdp			4.21e-05 (0.0156)	0.00121 (0.384)	0.000530 (0.132)			0.000588 (0.194)	0.00249 (0.758)	0.00157 (0.359)
Npolity2				-0.00483** (-2.120)	-0.00443** (-1.963)				-0.00349* (-1.889)	-0.00425** (-2.529)
interNpolity2				0.0138 (0.272)	0.0226 (0.428)				0.0430 (1.498)	0.0713* (1.893)
nor_checks					-0.00280 (-0.589)					-3.57e-05 (-0.0164)
interNorchecks					-0.0682 (-0.400)					-0.123 (-0.705)
Constant	0.0616* (1.888)	0.130* (1.727)	0.0659* (1.941)	0.189** (2.245)	0.267** (2.019)	0.0291 (0.591)	0.0337 (0.814)	0.0186 (0.864)	0.0962*** (2.739)	0.147*** (4.011)
Observations	981	936	806	772	741	981	936	806	772	741
Number of country1	31	30	29	28	28	31	30	29	28	28

Notes: t-statistics are in parentheses, \*, \*\*, and \*\*\* show the significance level at 10%, 5% and 1% respectively. Fixed effect estimator used, including time fixed effects in all regressions.

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