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Analysis of Asymmetries in the Tax-Spending Nexus in Burundi

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Abstract. This study examines the asymmetries in the tax-spending nexus for Burundi using a three-variable model. The study employs a threshold cointegration test with asymmetric adjustment advanced by Enders & Siklos (2001). The findings indicate that government spending, taxes and grants are cointegrated with asymmetric adjustment. Causality tests from the estimated asymmetric error correction model suggest that in the short run there is an independent relationship between government spending and taxes in Burundi. Pertaining to the impact of grants, the results show that grants encourage the government of Burundi to spend more, but, conversely, they also discourage tax revenue, which is known as the tax displacement hypothesis. The findings further show that only government spending responds to budgetary disequilibrium, and this occurs when the budget situation is worsening. This implies that in Burundi, to restore the equilibrium when the budget situation is worsening, the adjustment is made by reducing spending. A policy intuition arising from this study is that, to reduce budget deficits, Burundi should reduce its grant-dependence and improve its tax collection system as well as cut its spending in sectors where it is not productive and reallocate it to more productive sectors.
Keywords. Burundi, Spending, Taxes, Grants, Threshold cointegration, Asymmetric ECM.
JEL. C32, E32, H20, H50, H62.

1. Introduction

Burundi has experienced a number of episodes of civil war since its independence in 1962, which have affected the public finances of Burundi through increased military spending and reduced tax revenues due to the erosion of the tax base and tax administration capacity (Ndikumana, 2001; Nkurunziza, 2004). The 1993 civil war was the most devastating as it left the economic system paralyzed for more than a decade (1993-2005). The democratic elections of 2005 brought to an end a long period of political instability. The post-conflict period saw several changes in the public finances of Burundi in a number of ways. At the spending level, government expenditure increased because of the demobilization and reintegration of former combatants into the national security forces as well as the process of reconstruction which required an increase in recruitment in priority sectors such as health and education. The immediate consequence on the public finances of Burundi was a significant increase in the number of civil servants and current expenditure, especially expenditure on salaries. According to Debrun *et al.* (2011), between 2005 and 2010 the number of civil servants in Burundi increased by more than 50 percent and expenditure on salaries in real terms increased by 80 percent during the same period. On the revenue side, although some efforts were made to increase tax revenues by for instance creating the Burundi Revenue Authority and by replacing the transaction tax with VAT

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(which occurred in 2009), the increase in tax revenue has not matched the increase in spending and the budget deficits remained high. For example, for the period 2004-2012, the ratio of budget deficit to GDP averaged 5.8 percent and 21.6 percent[1], respectively, when including and excluding grants. This is too high compared to the convergence criterion[2] concerning fiscal balance for EAC and COMESA to which Burundi belongs. Therefore, there is a need to reduce the budget deficit in Burundi, which can be done by either cutting government spending or increasing government taxes, or a combination of the two (Bohn, 1991). However, choosing between these options is not an easy task because of the theoretical controversies in the literature surrounding the tax-spend nexus (tax-and-spend hypothesis, spend-and-tax hypothesis, fiscal synchronization hypothesis, institutional separation hypothesis)[3] (see Musgrave, 1966; Buchanan & Wagner, 1977; Friedman, 1978; Meltzer & Richard, 1981; Barro, 1986; Baghestani & McNown, 1994). Empirical analysis is therefore needed to understand the true relationship between them.

Until recently, the analysis of the tax-spending nexus was done under the assumption that taxes and spending respond symmetrically to budgetary disequilibrium. However, Ewing *et al.* (2006) point out that assuming symmetric adjustment of taxes and spending when it is actually asymmetric, would lead to misspecification, leading to false conclusions regarding the causal links between taxes and spending, hence inappropriate fiscal policy decisions. Ewing *et al.* (2006) give reasons as to why one should expect asymmetries in the budgetary adjustment process. First, they believe that policy makers do not respond in the same way to a budget surplus as they do to a budget deficit, and would respond more aggressively to a deficit than to a surplus. Second, they argue that budget and business cycle are closely related through automatic fiscal stabilizers and discretionary fiscal measures. Therefore, to the extent that the business cycle is asymmetric, the associated change in the budget may also be asymmetric. Third, they also argue that the way tax payers respond to the change in the tax rate or tax base may produce asymmetric variations in the budget.Very few studies so far have examined asymmetries in the tax-spending nexus (see Saunoris & Payne, 2010; Apergis *et al.,* 2012; Keho, 2013). In addition, while there are many empirical studies on the tax-spending nexus of developing countries (see, for example, Narayan & Narayan, 2007; Sobhee, 2004; Keho, 2010; Aregbeyen & Taofik, 2012; Rethabile & Sephooko, 2012; Mehrara & Pahlavani, 2011; Keho, 2013), it is important to note that they often omit a key element in the analysis, which is grants[4]. It is common knowledge that most developing economies are grant-dependent; for instance in Burundi grants alone accounted for 36.4 percent, 44.5 percent and 34.6 percent of total revenue and grants, respectively, in 2006, 2007 and 2008, and for 30.1 percent for the period 2006–2012.[5] Ignoring grants in examining the tax-spending nexus would therefore be misleading since in grant-dependent economies, grants are likely to affect domestic fiscal behaviour.

This study analyzes asymmetries in the tax-spending nexus in Burundi by taking into account external grants. The causal relationship between government taxes and government spending in Burundi is examined. In regard to this, should Burundi balance its budget through tax increases or spending cuts, or both? Moreover, we examine how external grants affect government spending and tax revenue in Burundi. Furthermore, the study seeks to establish whether taxes and spending respond to the budgetary disequilibrium in Burundi; and if they do, does the adjustment occur when the budget situation improves as well as when it worsens? These are the critical questions addressed by the study. The novelty of this study is that the causality between taxes and spending is tested in a framework that allows for asymmetries in the adjustment of taxes and spending to the budgetary disequilibrium. In addition, in examining the tax-spending nexus, the study takes into account external grants that are more important in the public finances of most sub-Saharan countries.

The rest of the paper is organized as follows: Section 2 highlights the stylized facts. Section 3 presents the methodology used. Section 4 presents and discusses the results and section 5 gives the concluding remarks.

2. Government Spending, Tax Revenue and External Grants in Burundi: Stylized Facts

2.1. Structure of Government Spending and Revenue in Burundi: Some Trends

Table A.1 in the appendix shows the structure of government spending in Burundi for the period 2006-2012. It indicates that current expenditure on average accounted for about 75 percent of total government spending and capital expenditure for 25 percent for the period under consideration, suggesting that the government of Burundi spends more on recurrent expenses and less on investments. Expenditure on goods and services accounted for 50.8 percent of total government spending of which salaries alone accounted for 32.9 percent, indicating that a big part of recurrent spending is on salaries. Important to note also is the fact that government expenses on salaries have increased significantly over the period 2006-2012. Expenses on salaries increased by 24.4 percent in 2007, 38.9 percent in 2008, 22.8 percent in 2010, 23.6 percent in 2011 and from 2006 to 2012, they increased by 214.3 percent. The increase in the wage bill can be attributed to some events which occurred during that period, including the creation of the national police in 2006 after the demobilization and reintegration of former combatants into the national security forces, which led to an increase in the number of civil servants. There were also recruitments in priority sectors such as health and education to support the process of reconstruction, which further increased the number of civil servants. Increase in government expenses on salaries was also due to the decision of the president to increase salaries of all civil servants by 15 percent in July 2006 and by 34 percent at the end of 2007. The decomposition of spending further shows that transfers and subsidies account for 17.0 percent, interest payments account for 5.4 percent and special fund expenditure accounts for1.6 percent of the total government expenditures.

Table A.2 in the appendix shows the structure of government revenues in Burundi for the period 2006-2012. It indicates that on average, out of the total government revenue and grants, tax revenues accounted for 65.7 percent, non-tax revenues accounted for 5.2 percent and grants accounted for 30.1 percent and, the ratio of grants in total government revenues is at 45.3 percent. This suggests that grants play an important role in the public finance of Burundi. The table also shows that a bulk of the tax revenues come from domestic trade with a share of 52.42 percent, followed by income tax with a share of 29.16 percent, tax on international trade with a share of 12.30 percent and other tax revenues with a share of 6.11 percent. In 2009, there was creation of the Burundi Revenue Authority "Office Burundais des Recettes", a move that seems to have had a positive impact on tax collection. While across the period 2006-2009, the ratio of tax revenue as a percentage of GDP was on average 12.8 percent, it increased to 14.6 percent for the period 2010-2012. It is to be noted that the ratio of grants to GDP fluctuated during the period 2006-2012. While it stood at 8.2 percent (percentage of GDP) in 2006, it increased to 11.3 percent in 2007 and fell to 7.2 percent in 2008 and fell further to 2.9 percent in 2009 and was at 4.5 percent in 2012. The trend in grants is discussed in detail in the next subsection.

2.2. Trend in External Grants in Burundi: Understanding the Donor Behavior

Table 1 shows the trend in total grants (in real terms) in Burundi and their decomposition between current and capital grants for the period 1992-2012. Total grants varied year after year with some periods experiencing an increase in grants and others a decrease. Some years such as 1995, 1996 and 2009 experienced sharp

falls where grants fell respectively by 56.3 percent, 60.5 percent and 58.1 percent; for some other years, a remarkable increase is observed, 38.9 percent in 1993, 148.9 percent in 2001, 54 percent in 2004 and 95.4 percent in 2010. Concerning the decomposition, on average for the period 1992-2012, current grants accounted for 56.3 percent and capital grants, 43.7 percent of the total grants, implying that a big portion of grants was intended for the budgetary support. It is to be noted however that capital grants were of 77.5 percent in 1994, 62.1 percent in 2002 and 64.0 percent in 2003 where a big portion of grants were directed at supporting the reconstruction and rehabilitation of infrastructure destroyed by the war.

According to Nath & Sobhee (2007), foreign grants are determined by the donor self-interest and the recipient country's needs. They also argue that donors may also respond to fungibility, the extent to which the grants are used as intended, i.e. to designated projects, behavior known as, "recipient fungibility behavior". In this regard, fungibility discourages donors. In addition, as Alesina & Dollar (2000) point out, factors determining aid (grant)-giving vary from donor to donor. For some, poverty levels, political and economic regimes do not matter a lot; provided it is a former colony politically friendly to its former colonizer, it does not matter whether the recipient country is inefficient, economically closed, mismanaged and non-democratic, grants will surely flow. For other donors, good institutions, political openness (democratization), good governance and respect for human rights, are key factors determining the flow of aid (grants). Donor behavior hence the flow of grants is therefore explained by the above mentioned factors which vary from country to country. In this subsection, we dig in the recent political history of Burundi and try to explain the variation of external grants in Burundi.

Table 1. *Trend of Real Grants and their Decomposition (1992-2012) (in Millions of BIF, Constant 2005 Prices)*

Year	Total Grants	Per cent Change	Current Grants	Percentage Ratio of Total Grants	Capital Grants	Percentage Ratio of Total Grants
1992	84089.51	-	38627.47	45.9	45462.04	54.1
1993	116792	38.9	51782.69	44.3	65009.26	55.7
1994	117617.9	0.7	26499.98	22.5	91117.95	77.5
1995	51376.96	-56.3	25505.66	49.6	25871.30	50.4
1996	20317.25	-60.5	10086.33	49.6	10230.92	50.4
1997	21698.97	6.8	12836.63	59.2	8862.339	40.8
1998	19670.63	-9.3	12772.78	64.9	6897.859	35.1
1999	20625.57	4.9	12158.89	59.0	8466.68	41.0
2000	23195.8	12.5	14017.89	60.4	9177.909	39.6
2001	57726.47	148.9	21869.62	37.9	35856.84	62.1
2002	85457.38	48.0	57634.51	67.4	27822.87	32.6
2003	79931.29	-6.5	28806.29	36.0	51125.00	64.0
2004	123059.7	54.0	81169.43	66.0	41890.24	34.0
2005	103000	-16.3	79000.00	76.7	24000.00	23.3
2006	101754.2	-1.2	69740.97	68.5	32013.24	31.5
2007	145140.1	42.6	84856.20	58.5	60283.24	41.5
2008	99467.84	-31.5	84698.54	85.2	14769.30	14.8
2009	41638.68	-58.1	29908.04	71.8	11730.64	28.2
2010	81377.07	95.4	41334.28	50.8	40042.79	49.2
2011	114086.3	40.2	67629.35	59.3	46456.95	40.7
2012	73298.13	-35.8	35329.34	48.2	37968.79	51.8

Source: Author using data collected from various reports of Central Bank of Burundi.

An initial observation of Table 1 indicates that there was an increase in grants of 38.9 percent in 1993, a sharp decrease in 1995 and 1996 respectively of 56.3 percent and 60.5 percent. The increase in grants in 1993 was probably due to support by the international community of the first democratic elections in Burundi and later on support of the first democratically elected government. Unfortunately, it did not last since the president was killed in a military coup a few months later, and a long civil war ensued and lasted up to 2005. The sharp fall in grants in 1995 and 1996 can be explained by the political instability which was prevailing after the military coup of 1993. Moreover in July 1996, the situation was worsened by another military coup which was condemned by the international community and organizations such as United Nations (UN), Organization of African Unity (OAU),

etc. and sanctions in the form of an economic embargo were imposed on the country. As a consequence, Burundi received barely any external grant in the third and fourth quarter of 1996. The ruling regime of 1996 went up to 2000 when an agreement was reached in Arusha (Tanzania) for a transitional government. Noticeably, apart from 1997 where one sees a recovery in the flow of grants (increase of 6.8 percent), the flow of grants in 1997-1999 did not vary much and stabilized at around BIF 20 billion; for 1998, grants declined by 9.3 percent and increased by 4.9 percent in 1999. In fact, during this period, the main donors were NGOs and UN agencies such as UNDP, UNICEF, UNHCR, FAO and ICRC, since Burundi was under sanctions and aid had been suspended by the donor community. Grants resumed later in December 2000 after the Arusha Peace Process Agreement (Câmara & Ferreira, 2001).

The agreement for the transitional government signed in 2000 resulted in a considerable amount of grants which were BIF 5474.8 million [6] higher than expected. Important to note is also that the transitional government which started from 2001 to 2005 was supported by the international community; the flow of real grants increased by 148.9 percent in 2001, 48.0 percent in 2002 and 54.0 percent in 2004 in support of the peace process. Moreover, in 2001 there was a debt relief from China to Burundi, most of which was allocated to investments (capital grants)[7] hence a huge increase of grants in 2001 of 148.9 percent. In 2003, while the transitional government needed money to implement the reforms of the Arusha Peace Agreements, donors were still anxious to see how things would go and were demanding a complete stop to violence and a progress in the implementation of the Arusha Peace Agreement which had been slow, in order to release the promised grants (Campbell, 2003). Was president Buyoya going to accept to hand over the presidency to Mr. Ndayizeye (who was the vice-president) as agreed? The international community kept wondering. Thus, in 2003, real grants decreased by 6.5 percent. In addition, in 2003, there was a ceasefire agreement between the government of Burundi and the major rebel group, which ended the long period of civil war and revived the hope of political stability in Burundi. This was to be followed later by democratic elections in 2005 and 2010 from which successive governments emerged. In 2010, real grants increased by 95.4 percent probably in support to the new elected government. And although in 2005 real grants fell by 16.3 percent from 2004, compared to the expectations (BIF 82367.4 million), they increased by BIF 20632.6 million[8]. A decrease in the flow of grants can be observed in 2008, 2009 and 2012, respectively by 31.5 percent, 58.1 percent and 35.8 percent. This has been largely due to massive human right violations, persecutions of political opponents, corruption and poor governance which the donors are not in agreement with. And in 2011, although, real grants increased by 40.2 percent from 2010, compared to the expectations (grants promises of BIF 469105.4 million), the disbursement of grants was achieved only up 43.6 percent [9], this is as well attributable to the same reasons mentioned above. One expects also a low disbursement of grants and a sharp fall in grants even in 2013 for the same reasons mentioned above, reasons which have led the donors to freeze their grant promises. Hence, in Burundi, donors seem to respond to factors such as political stability, democratization, good governance and respect for human rights.

3. Methodology

The objective of this paper is to analyze the nexus among government spending, taxes and grants and to examine the asymmetries in the budgetary adjustment process in Burundi. As shown in the next section, government spending, tax revenue and grants are non-stationary processes, integrated of order one. We can therefore test for cointegration between them since they are integrated of the same order. Instead of using a linear cointegration, which assumes symmetric adjustment, in TAR (Threshold Autoregressive) and M-TAR (Momentum Threshold Autoregressive) frameworks, this study employs the threshold cointegration test initiated by Enders & Granger (1998) and Enders & Siklos

(2001), a procedure which allows the examination of asymmetries in the budgetary adjustment process. Engle & Granger (1987) developed a test of linear cointegration, a residual-based test, and when the cointegrating relation exists between the variables, the Granger representation theorem says that the variables can be represented in the form of an error correction mechanism in which the variables can adjust towards the equilibrium when there is a deviation from it. However, the assumption made here is that the adjustment is symmetric and occurs instantaneously at each period which can be misleading because of the presence of fixed costs of adjustment [10] (Balke & Fomby, 1997). It is because of this shortcoming that Enders & Granger (1998) and Enders & Siklos (2001) developed the threshold cointegration, in which adjustment occurs only if the deviation is above some threshold, moreover the adjustment is asymmetric since negative and positive deviations are not corrected in the same way (Stigler, 2012). To test for cointegration, the Engle & Granger (1987) procedure involves checking whether the residual series from the long-run equation is stationary. Let G_t be real government spending, R_t, real government tax revenue and GR_t, real grants. The long-run equilibrium relationship is written as follows[11]:

$$G_t = \alpha + \beta R_t + \gamma GR_t + \varepsilon_t \tag{1}$$

In Equation 1, α, β and γ are cointegrating coefficients and ε_t are residuals that reflect the budgetary disequilibrium between G_t and R_t and GR_t.

According to Engle & Granger (1987), testing for linear cointegration involves testing for the unit root using the following Augmented Dickey Fuller (ADF[12]) equation:

$$\Delta\varepsilon_t = \rho\varepsilon_{t-1} + \sum_{i=1}^{k} \alpha_i \Delta\varepsilon_{t-i} + \eta_t , \tag{2}$$

where the number of lags (k) is chosen so that there is no serial correlation. If the null hypothesis of $\rho = 0$ is rejected, the residual series from the long-run equation is stationary and the variables, G_t, R_t and GR_t, are cointegrated.

According to Enders & Granger (1998), and Enders & Siklos (2001), using threshold autoregressive models, Threshold Autoregressive model (TAR) and Momentum Threshold Autoregressive model (M-TAR), Equation 2 can be rewritten as:

$$\Delta\varepsilon_t = I_t \rho_1 \varepsilon_{t-1} + (1 - I_t)\rho_2 \varepsilon_{t-1} + \sum_{i=1}^{k} \alpha_i \Delta\varepsilon_{t-i} + \eta_t , \tag{3}$$

where I_t is the Heaviside indicator function such that:

$$I_t = \begin{cases} 1 \; if \; \varepsilon_{t-1} \geq \lambda \\ 0 \; if \; \varepsilon_{t-1} < \lambda \end{cases} \text{ for TAR model} \tag{4}$$

$$I_t = \begin{cases} 1 \; if \; \Delta\varepsilon_{t-1} \geq \lambda \\ 0 \; if \; \Delta\varepsilon_{t-1} < \lambda \end{cases} \text{ for M-TAR model} \tag{5}$$

where λ is the threshold value to be estimated. λ is estimated by considering only the middle 70% values of the threshold variable (which is ε_{t-1} for the TAR model

and $\Delta\varepsilon_{t-1}$ for the M-TAR model), where TAR and M-TAR models are estimated using each of the 70% values and each being a potential threshold value. The optimum threshold value to be selected is the one which minimizes the residuals sum of squares (Sun, 2011). According to Ewing *et al.* (2006), Equation 4 (the TAR model) can give the following insights. If the previous budgetary disequilibrium (ε_{t-1}) is above the threshold (λ), it is the positive phase of budgetary disequilibrium (improvement of the budget position), and in this case the adjustment is $\rho_1\varepsilon_{t-1}$.

If the previous budgetary disequilibrium (ε_{t-1}) is below the threshold (λ), it is the negative phase of budgetary disequilibrium (the worsening of the budget position) and the adjustment is $\rho_2\varepsilon_{t-1}$ in this case. Thus, the TAR model captures how the budgetary disequilibrium responds to positive and negative deviations from the threshold. Under the TAR model, it is therefore possible to examine how government spending and taxes respond to the positive phase (surplus) and negative phase (deficit) of the budgetary disequilibrium. Contrary to the TAR model, the M-TAR model would enable us to examine the behaviour of government spending and taxes in response to positive and negative phases of changes in the budgetary equilibrium, $\Delta\varepsilon_{t-1}$.

While from TAR model one can examine how government taxes and spending respond to budgetary disequilibrium (ε_{t-1}), from the M-TAR model one can check how taxes and spending respond to the change in budgetary disequilibrium ($\Delta\varepsilon_{t-1}$). According to Enders & Granger (1998) and Enders & Siklos (2001), using the TAR or M-TAR models, two tests can be conducted; testing for threshold cointegration and testing for asymmetric adjustment in the long-run equilibrium.

Testing for threshold cointegration involves testing the following null hypothesis of no threshold cointegration: $H0:\rho_1=\rho_2=0$

The test statistic used here is known as the Φ statistic and the critical values are from Enders & Siklos (2001). If the null hypothesis is rejected, the presence of threshold cointegration is confirmed and we can then test whether the adjustment is asymmetric.

Testing for asymmetric adjustment towards the long-run equilibrium involves testing the following null hypothesis of symmetric adjustment:

$H0:\rho_1=\rho_2$. If the hypothesis is rejected, the adjustment process is asymmetric.

The study uses monthly data on real government spending, real tax revenue and real grants for Burundi covering the period 1997:1–2013:5. Data for these variables were collected from various monthly reports from the Central Bank of Burundi. Figure 1 shows the trend of these variables for the period of study.

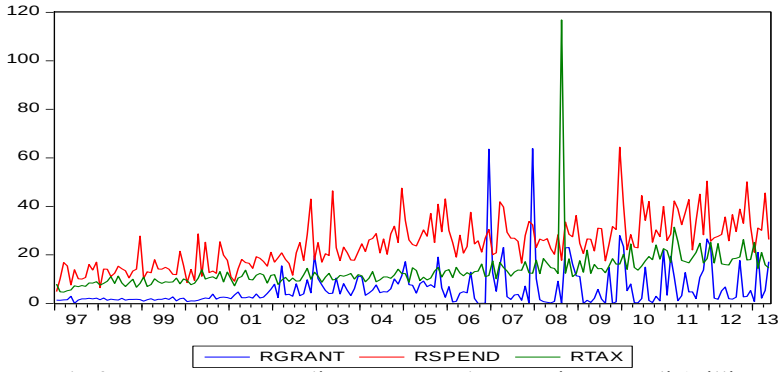

Figure 1. *Trend of Government Spending, Taxes and Grants in Burundi (Billions of BIF, in Constant 2005 Prices)*

4. Empirical Analysis

Since high frequency data (monthly data) is used in this study, it is advised to test for seasonality in the series prior to any detailed analysis. The results are reported in Table 2. All the tests used, namely, F-test, nonparametric test and moving seasonality test, indeed reject the null hypothesis of no seasonality in the data, although no moving seasonality could be found for real government spending (G) and real tax revenue (R) at the 5% level. Since the tests results give evidence of the presence of seasonality in the data, data were deseasonalized. Seasonally adjusted variables are therefore considered for the rest of the analysis.

Table 2. *Results of Seasonality Tests*

Variables	F-test	Nonparametric Test (Kruskal-Wallis Test)	Moving Seasonality Test
G	4.519***	40.36***	0.985
R	5.844***	86.23***	1.635
GR	2.726**	23.85**	6.448***

Note: Seasonality tests are conducted using X-12 ARIMA installed in Eviews 8. ** and *** denote rejection of the null hypothesis of no seasonality at 5% and 1% level respectively.

The order of integration of the series is examined using a unit root test with one regime shift proposed by Lanne, Saikkonen & Lutkepohl (2003), denoted hereafter as LSL test, and a stationarity test, KPSS test. These tests are conducted on seasonally adjusted series. The results reported in Table 3 indicate that the LSL test detects the break in March 2007, August 2008 and December 2007 respectively for government spending, tax and grants. After taking into account the break, the LSL test fails to reject the null hypothesis of a unit root in the series, real government spending, real tax revenue and real grants (all transformed in logarithm). However, when differenced once, the same test strongly rejects the presence of a unit root at the 1% level.

Table 3. *KPSS Test and Lanne et al. (2003) Unit Root Test with One Structural Break*

		LSL Unit Root Test with one Break			KPSS Stationarity test	
Variables	Lag	Deterministic Part	Break Dates	LSL Value	KPSS value	Bandwidth
G	11	C, SD	2007 M3	-2.084	1.691***	10
ΔG	10	C, SD		-5.267***	0.369	101
R	9	C, ID	2008 M8	-1.403	1.774***	10
ΔR	8	C, ID		-7.095***	0.085	26
GR	0	C, SD	2007 M12	-2.213	1.134*	5
ΔGR	12	C, ID		-7.073***	0.142	45

Notes: JMulTi software (version 4.23) is used to perform the *Lanne et al.* (2003) Unit Root Test. LSL stands for Lanne, Saikkonen & Lutkepohl (2003) test. Δ is the difference operator. C is the constant, SD stands for shift dummy and ID is the impulse dummy. The lag length is selected using Akaike Information Criterion (AIC). For L.S test, break dates are selected automatically by the software. * and *** denote rejection of the null hypothesis at 10% and 1% level respectively. Critical values are from Lanne et al. 2002): C.V (1%) = -3.48, C.V (5%) = -2.88 and C.V (10%) = -2.58. KPSS test is conducted using Eviews 8 and the critical values are C.V (1%) = 0.739, C.V (5%) = 0.463 and C.V (10%) = 0.347. For KPSS test, the bandwidth is selected automatically using Bartlett Kernel method.

In addition, the results indicate that the KPSS test rejects the null hypothesis of stationarity in the series at the 1% level for real government spending and real tax revenue, and at the 10% level for real grants, but fails to reject the stationarity of the variables for the first difference of all the variables. The LSL and KPSS tests therefore suggest that the variables used in this study, real government spending, real tax revenue and real grants, are non-stationary processes, integrated of order one, denoted I(1).

Since the series, real government spending, real tax revenue and real grants are found to be non-stationary, integrated of the same order, one, the cointegration relationship among them is tested. A nonlinear cointegration test, the threshold cointegration test initiated by Enders & Siklos (2001) is used, a test which allows for asymmetries in the adjustment process towards the long-run equilibrium. An R software package, "apt" package (version 2.4) developed by Sun (2015) is used to conduct the threshold cointegration. The threshold cointegration test results are

presented in Table 4. The threshold value is estimated for both TAR and M-TAR using Chan's (1993) method. The threshold value for which the residuals sum of squares is the lowest was found to be $\lambda^* = -0.284$ for the TAR model and $\lambda^* = -0.334$ for the M-TAR. The Bayesian information criterion (BIC) is used to select the appropriate lag k to include in the TAR and M-TAR models. Out of a maximum of 12 lags, a lag of 2 was selected for both TAR and M-TAR models. The Ljung-Box (LB) test fails to reject the hypothesis of no serial correlation of order 4, 8 and 12 for all the models.

The estimated TAR model can be written as follows, where the t-values are in parentheses:

$$\Delta\hat{\varepsilon}_t = \underset{(-3.640)}{-0.403}\, I_t\hat{\varepsilon}_{t-1} - \underset{(-4.500)}{0.559}\,(1-I_t)\hat{\varepsilon}_{t-1} - \underset{(-5.045)}{0.460}\,\Delta\hat{\varepsilon}_{t-1} - \underset{(-2.523)}{0.177}\,\Delta\hat{\varepsilon}_{t-2} + \eta_t$$

$$\text{where } I_t = \begin{cases} 1 \text{ if } \varepsilon_{t-1} \geq -0.284 \\ 0 \text{ if } \varepsilon_{t-1} < -0.284 \end{cases}$$

and for the M-TAR, the estimated model is written as:

$$\Delta\hat{\varepsilon}_t = \underset{(-3.916)}{-0.397}\, I_t\hat{\varepsilon}_{t-1} - \underset{(-4.731)}{0.683}\,(1-I_t)\hat{\varepsilon}_{t-1} - \underset{(-4.728)}{0.433}\,\Delta\hat{\varepsilon}_{t-1} - \underset{(-2.517)}{0.175}\,\Delta\hat{\varepsilon}_{t-2} + \eta_t$$

$$\text{where } I_t = \begin{cases} 1 \text{ if } \Delta\varepsilon_{t-1} \geq -0.334 \\ 0 \text{ if } \Delta\varepsilon_{t-1} < -0.334 \end{cases}$$

The threshold value λ and the selected lag length were taken into account to test for threshold cointegration among real government spending, real tax revenue and real grants. The results reported in Table 3 indicate that the Φ test strongly rejects the null hypothesis of no threshold cointegration, $(H0: \rho_1 = \rho_2 = 0)$ at the 1% level for both the models, since $\Phi^* = 12.587$ with a p-value of 0.000 for TAR model and $\Phi^* = 14.050$ with a p-value of 0.000 for M-TAR. Thus, the results suggest that in Burundi, real government spending, real tax revenue and real grants are cointegrated with threshold adjustment.

Since the hypothesis of no threshold cointegration among the variables is rejected, the study proceeds to test whether the adjustment towards the long-run equilibrium is asymmetric. The F-test is used to test whether $\rho_1 = \rho_2$ from TAR and M-TAR equations. The results indicate that the value of the F-statistic is F = 1.347 with a p-value of 0.247 for the TAR model, and $F = 3.949$ with a p-value of 0.048 for the M-TAR model. This suggests that the null hypothesis of symmetric adjustment $(H0: \rho_1 = \rho_2)$ can only be rejected at the 5% level for the M-TAR model.

Table 4. *Test Results for Threshold Cointegration and Symmetry*

	Model	
Estimates	TAR	M-TAR
Threshold λ	-0.284	-0.334
ρ_1	-0.403*** [-3.640]	-0.397*** [-3.916]
ρ_2	-0.559*** [-4.500]	-0.683*** [-4.731]
Diagnostic tests		
AIC	54.458	51.838
BIC	70.797	68.177
LB(4)	0.906	0.858
LB(8)	0.162	0.226
LB(12)	0.157	0.204
Hypothesis Testing		
H0: No Cointegration $\Phi(H0:\rho_1=\rho_2=0)$	12.587*** (0.000)	14.050*** (0.000)
H0: Symmetry $F(H0:\rho_1=\rho_2)$	1.347 (0.247)	3.949** (0.048)

Cointegrating Equation based on OLS

$G_t = 2.991 + 0.712R_t + 0.039GR_t + \varepsilon_t$
(5.256) (11.672) (2.787)

Cointegrating Equation based on Dynamic OLS

$G_t = 1.783 + 0.830R_t + 0.050GR_t + \varepsilon_t$
(9.610) (2.305) (2.232)

Notes: Below the estimated coefficients (or the test statistic values) and between parentheses (.) are the p-values and ** and *** denote rejection of the null of hypothesis respectively at 5% and 1% level. Between brackets [.] are t-values. The values reported for Ljung-Box (LB) test are p-values. AIC stands for Akaike Information Criterion while BIC stands for Bayesian Information Criterion.

The adjustment towards the long-run equilibrium is asymmetric only for the M-TAR model. The results from the M-TAR model suggest, therefore, that real government spending, real tax revenue and real grants are cointegrated and that the adjustment mechanism is asymmetric, that is, real government spending, real tax revenue and real grants respond differently to positive and negative deviations from the long-run equilibrium. Moreover, for both models, the results show that $|\rho_1| < |\rho_2|$, indicating that the adjustment towards the long-run equilibrium tends to persist more for positive deviations and reverts more quickly for negative deviations. According to Saunoris & Payne (2010), this would mean that the adjustment is faster when the budget is worsening than when it is improving.

The finding that real government spending, real tax revenue and real grants are cointegrated with asymmetric adjustment, justifies the estimation of an asymmetric error correction model. It is to be noted that in the estimation of asymmetric error correction model and for subsequent analysis, only M-TAR model is considered since for TAR model, the adjustment was found to be symmetric instead of asymmetric. Moreover, Table 4 shows that M-TAR model is better than TAR model since the values of AIC (Akaike Information Criterion) and BIC (Bayesian Information Criterion) are lower for the M-TAR model than TAR model. Following Chang *et al.* (2011) and Lu *et al.* (2011), the following asymmetric error correction model (AECM) is estimated for our three variables, real government spending (G_t), real tax revenue (R_t) and real grants (GR_t), in order to examine the causal links between them in the short and the long run:

$$\Delta G_t = c_g + \delta_g^+ e_{t-1}^+ + \delta_g^- e_{t-1}^- + \sum_{i=1}^{p} \phi_{gi} \Delta G_{t-i} + \sum_{i=1}^{p} \omega_{gi} \Delta R_{t-i} + \sum_{i=1}^{p} \varphi_{gi} \Delta GR_{t-i} + \upsilon_{gt} \quad (6)$$

$$\Delta R_t = c_r + \delta_r^+ e_{t-1}^+ + \delta_r^- e_{t-1}^- + \sum_{i=1}^{p} \phi_{ri} \Delta G_{t-i} + \sum_{i=1}^{p} \omega_{ri} \Delta R_{t-i} + \sum_{i=1}^{p} \varphi_{ri} \Delta GR_{t-i} + \upsilon_{rt} \quad (7)$$

$$\Delta GR_t = c_{gr} + \delta_{gr}^+ e_{t-1}^+ + \delta_{gr}^- e_{t-1}^- + \sum_{i=1}^{p} \phi_{gri} \Delta G_{t-i} + \sum_{i=1}^{p} \omega_{gri} \Delta R_{t-i} + \sum_{i=1}^{p} \varphi_{gri} \Delta GR_{t-i} + \upsilon_{grt} \quad (8)$$

where $e_{t-1}^+ = I_t \varepsilon_{t-1}$ and $e_{t-1}^- = (1 - I_t)\varepsilon_{t-1}$ are positive and negative deviations from the long-run equilibrium, and ε_{t-1} are the lagged residuals from Equation 1, that is, $\varepsilon_{t-1} = G_{t-1} - \alpha - \beta R_{t-1} - \gamma GR_{t-1}$. δ^+ and δ^- show how real government spending, real taxes and real grants respond asymmetrically to positive and negative deviations from the long-run equilibrium, respectively. More precisely, δ^+ shows how tax and spending respond to an improving budget while δ^- indicates how tax and spending respond to a worsening budget.

From Equations 6, 7 and 8, the following hypotheses are tested:

(i) Whether government taxes Granger cause government spending: $H0: \omega_{g1} = \omega_{g2} = ... = \omega_{gp} = 0$

(ii) Whether government spending Granger-cause government taxes: $H0: \phi_{r1} = \phi_{r2} = ... = \phi_{rp} = 0$

(iii) Whether grants affect government spending: $H0: \varphi_{g1} = \varphi_{g2} = ... = \varphi_{gp} = 0$

(iv) Whether grants affect government taxes: $H0: \varphi_{r1} = \varphi_{r2} = ... = \varphi_{rp} = 0$

From Equations 6, 7 and 8, therefore, one can check which hypothesis is valid for Burundi, whether it's the tax-and-spend hypothesis, spend-and-tax hypothesis, fiscal synchronization hypothesis or institutional separation hypothesis, as well as how external grants affect government spending and taxes, and how taxes and spending respond to the budgetary disequilibrium. The estimation results of the AECM are reported in Table 5.

The AIC (Akaike Information Criterion) and FPE (Final Prediction Error) were used to select the lag p to include in the equations and out of 12 lags; AIC and FPE selected 9 lags. Diagnostic tests show that the Breusch-Godfrey test fails to reject the hypothesis of no serial correlation of order 2, 4 and 6 for all the equations. From Table 4, the results of estimation for the AECM for the three variables can be written in the form of equations as follows, with t-statistics in parentheses and between brackets is the p-value for the F-statistics (denoted P_F) for the null hypothesis that the coefficients are equal to 0:

$$\Delta G_t = 0.028 - 0.125\, I_t \hat{\varepsilon}_{t-1} - 0.330\, (1 - I_t)\hat{\varepsilon}_{t-1} + \sum_{i=1}^{9} \phi_i \Delta G_{t-i} + \sum_{i=1}^{9} \omega_i \Delta R_{t-i} + \sum_{i=1}^{9} \varphi_i \Delta GR_{t-i} + u_{1t}$$
$$(1.607)\quad (-1.294)\quad (-2.094) \qquad [p_F = 0.00]\ [p_F = 0.82]\ [p_F = 0.01]$$

$$\Delta R_t = 0.022 + 0.043\, I_t \hat{\varepsilon}_{t-1} + 0.132\, (1 - I_t)\hat{\varepsilon}_{t-1} + \sum_{i=1}^{9} \phi_i \Delta G_{t-i} + \sum_{i=1}^{9} \omega_i \Delta R_{t-i} + \sum_{i=1}^{9} \varphi_i \Delta GR_{t-i} + u_{2t}$$
$$(1.529)\quad (0.525)\quad (0.986) \qquad [p_F = 0.91]\ [p_F = 0.00]\ [p_F = 0.00]$$

$$\Delta GR_t = -0.076 - 0.043\, I_t \hat{\varepsilon}_{t-1} - 2.074\, (1 - I_t)\hat{\varepsilon}_{t-1} + \sum_{i=1}^{9} \phi_i \Delta G_{t-i} + \sum_{i=1}^{9} \omega_i \Delta R_{t-i} + \sum_{i=1}^{9} \varphi_i \Delta GR_{t-i} + u_{3t}$$
$$(-0.634)\quad (-0.064)\quad (-1.899) \qquad [p_F = 0.77]\ [p_F = 0.58]\ [p_F = 0.00]$$

where $\hat{\varepsilon}_{t-1}$ is derived from the cointegrating equation $G_t = 2.991 + 0.712 R_t + 0.039 GR_t + \varepsilon_t$ and the Heaviside indicator I_t is such that

$$I_t = \begin{cases} 1 \; if \; \Delta\varepsilon_{t-1} \geq -0.334 \\ 0 \; if \; \Delta\varepsilon_{t-1} < -0.334 \end{cases}.$$

Table 5. *Results of Asymmetric Error Correction Model with Threshold Cointegration*

	Spending Equation		Tax Equation		Grant Equation	
Coefficients	Estimates	t-ratio	Estimates	t-ratio	Estimates	t-ratio
c	0.028	1.607	0.022	1.529	-0.076	-0.634
δ^+	-0.125	-1.294	0.043	0.525	-0.043	-0.064
δ^-	-0.330**	-2.094	0.132	0.986	-2.074*	-1.899
ϕ_1	-0.804***	-7.010	0.042	0.438	1.076	1.354
ϕ_2	-0.672***	-5.149	0.055	0.495	0.465	0.515
ϕ_3	-0.672***	-4.865	-0.049	-0.424	-0.026	-0.027
ϕ_4	-0.664***	-4.687	-0.050	-0.415	0.189	0.193
ϕ_5	-0.603***	-4.405	-0.032	-0.282	0.198	0.209
ϕ_6	-0.427***	-3.243	0.047	0.426	0.606	0.664
ϕ_7	-0.231*	-1.913	-0.072	-0.709	0.376	0.450
ϕ_8	-0.133	-1.256	-0.034	-0.388	-0.258	-0.352
ϕ_9	-0.087	-1.131	0.013	0.199	0.223	0.415
ω_1	0.034	0.275	-0.705***	-6.683	-0.720	-0.838
ω_2	-0.025	-0.178	-0.589***	-4.884	-0.286	-0.291
ω_3	-0.145	-0.965	-0.494***	-3.868	0.589	0.566
ω_4	-0.230	-1.504	-0.340***	-2.612	0.789	0.743
ω_5	-0.210	-1.407	-0.258**	-2.030	0.609	0.588
ω_6	-0.214	-1.478	-0.180	-1.460	0.707	0.704
ω_7	-0.133	-1.004	-0.149	-1.323	0.658	0.715
ω_8	-0.096	-0.837	-0.158	-1.614	0.258	0.324
ω_9	-0.089	-1.053	-0.063	-0.878	0.325	0.555
φ_1	0.014	1.144	0.014	1.401	-0.575***	-6.819
φ_2	0.019	1.365	0.002	0.237	-0.478***	-4.932
φ_3	0.017	1.188	-0.006	-0.537	-0.545***	-5.338
φ_4	0.037**	2.360	-0.003	-0.216	-0.429***	-3.938
φ_5	0.031*	1.945	-0.007	-0.511	-0.427***	-3.846
φ_6	-0.005	-0.331	-0.013	-0.947	-0.372***	-3.359
φ_7	0.009	0.653	-0.008	-0.685	-0.230**	-2.243
φ_8	-0.001	-0.076	0.025**	2.193	-0.183*	-1.911
φ_9	-0.029**	-2.260	-0.034***	-3.176	-0.093	-1.049
R^2	0.57		0.60		0.32	
AIC	-0.077		-0.402		3.791	
SC	0.440		0.116		4.310	
BG(2)	0.844 [0.655]		0.590 [0.744]		3.743 [0.153]	
BG(4)	3.061 [0.547]		2.709 [0.607]		9.904 [0.042]	
BG(6)	8.550 [0.200]		4.074 [0.666]		10.740 [0.096]	

Notes: A lag length of 9 was used, selected by AIC out of a maximum of 12 lags; between brackets [.] are the p-values and *, ** and *** denote rejection of the null hypothesis respectively at 10%, 5% and 1% level. Between {.} is the sign of the sum of the causal coefficients. BG stands for Breusch-Godfrey serial correlation test.

The Granger causality test results from the estimated AECM reported in Table 6 suggest that in the short run, real government taxes do not Granger-cause real government spending since $\chi^2(9) = 5.093$ with a p-value of 0.826 and real

government spending does not Granger-cause real government taxes since $\chi^2(9) = 7.474$ with a p-value of 0.587. This implies that an independence relationship exists between real government spending and real taxes in Burundi. The Wald test of Granger non-causality shows that in both spending and tax equations, the null hypothesis that the coefficients of the lagged difference of grants are equal to 0, $H0: \varphi_1 = \varphi_2 = ... = \varphi_p = 0$ is rejected at the 5% $\left[\chi^2(9) = 20.545, p = 0.014\right]$ and 1% level $\left[\chi^2(9) = 39.325, p = 0.000\right]$, respectively. This indicates that real grants Granger-cause both real government spending and real tax revenue at the 5% and 1% level, respectively. The sign of the causal coefficients is found to be positive for the government spending equation and negative for the tax revenue equation. This suggests that an increase in grants leads to an increase in government spending but to a decrease in tax revenue in Burundi. This implies that grants encourage the government of Burundi to spend more, but discourage tax revenue collection. It should be noted that the F-statistic as reported in the AECM equations gives the same conclusion.

Table 6. *Causality Tests Results from Estimated Asymmetric Error Correction Model*

	Dependent variable		
	ΔG_t	ΔR_t	ΔGR_t
H0: No short-run causality			
$\chi^2(H0: \phi_1 = ... = \phi_p = 0)$	-	7.474 {-} [0.587]	5.671{+} [0.772]
$\chi^2(H0: \omega_1 = ... = \omega_p = 0)$	5.093 {-} [0.826]	-	3.962 {+} [0.913]
$\chi^2(H0: \varphi_1 = ... = \varphi_p = 0)$	20.545** {+} [0.014]	39.325***{-} [0.000]	-
Error Correction Terms			
δ^+	-0.125 (-1.294)	0.043 (0.525)	-0.043 (-0.064)
δ^-	-0.330** (-2.094)	0.132 (0.986)	-2.074* (-1.899)

Notes: Between brackets [.] are the p-values. Between parentheses (.) are the t-ratios. ** and *** denote rejection of the null of hypothesis respectively at 5% and 1% level. Between {.} is the sign of the sum of the causal coefficients.

The findings here support the claims of Gupta *et al.* (2004) and Morrissey (2012) and others, who argued that grants could actually crowd out tax revenue, supporting the tax displacement hypothesis. The findings also justify why the budget deficits persist in grant-dependent countries such as Burundi since grants seem to encourage government spending but discourage tax collection. Lastly, Granger causality tests results indicate that the Wald test fails to reject the null hypotheses that government spending does not Granger-cause grants and that tax revenue does not Granger-cause grants. This suggests that both government spending and taxes do not affect grants, which would imply that grants in Burundi are independent of the fiscal behaviour. It follows that the way in which the government of Burundi spends and taxes does not affect the donors' behaviour. The estimation results further show that the coefficient of the error correction term is statistically significant in the spending equation at the five-per-cent level and for negative deviations only. However, for the tax revenue equation, the coefficients of the error correction terms are statistically insignificant for both negative and positive deviations. This suggests that only spending responds to budgetary disequilibrium, and only when the budget is worsening. They adjust to the deviation from the long-run equilibrium if $\Delta\hat{\varepsilon}_{t-1} < -0.334$.

This finding implies that when the budget situation is worsening, to restore the equilibrium the adjustment is made by changing government spending but not taxes; specifically by reducing spending since the coefficient of δ^- is significantly negative.

5. Conclusion

The aim of this study was to examine asymmetries in the tax-spending nexus in Burundi using monthly data for the period 1997:1–2013:5. Since Burundi is a grant-dependent country, grants were included in the model. The paper employed TAR and M-TAR models to test for threshold cointegration, as advanced by Enders & Siklos (2001), between government spending, tax revenue and grants. The results support the presence of threshold cointegration with asymmetric adjustment. Causality tests from the estimated asymmetric error correction model suggest that in the short run there is an independence relationship between government spending and taxes in Burundi. In addition, the findings suggest that grants encourage the government of Burundi to spend more but discourage tax revenue; the latter case is the tax displacement hypothesis. The independence relationship between spending and taxes is probably due to the role grants play in the Burundian fiscal behaviour. However, the results suggest that while grants affect the fiscal behaviour in Burundi, they are independent of it. Furthermore, the findings indicate that only government spending responds to the budgetary disequilibrium and only when the budget situation is worsening. This finding shows that in Burundi, to restore the equilibrium when the budget situation is worsening, the adjustment is made by reducing spending. A policy intuition arising from this study is that, to reduce the budget deficits, Burundi should reduce its grant-dependency and improve its tax collection system as well as cut its spending in sectors where it is not productive and reallocate it to more productive sectors.

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Notes

[1] Data from Regional Economic Outlook, Sub-Saharan Africa (IMF, 2012)

[2] According to the convergence criterion for fiscal balance for COMESA and EAC, the budget deficit ratio should not exceed 2% when including grants and 5% when excluding grants (Zhang, 2012).

[3] On the tax-and-spend hypothesis, Friedman (1978) suggests that an increase in taxes is associated with an increase in government spending while for Buchanan & Wagner (1978), an increase (decrease) in taxes is associated with a decrease (increase) in government spending. The spend-and-tax hypothesis suggests that an increase (decrease) in government spending is associated with an increase (decrease) in taxes (Barro, 1986). Fiscal synchronization hypothesis suggests that the desired level of government spending and government taxes is chosen simultaneously by the government. In other words, decisions to spend and to tax are made simultaneously (Musgrave, 1966) and Meltzer & Richard, 1981). The institutional separation hypothesis suggests an independent relationship between government taxes and spending (Baghestani & McNown, 1994).

[4] A number of studies such as Heller & Gupta (2002), Gupta *et al.* (2003), Morrissey (2012) and Benedek *et al.* (2012) explore the impact of grants on the recipient's tax revenue. According to them, the impact of external aid on tax revenue can be positive or negative depending on the form it takes, whether they are in the form of loans with repayment obligations, or pure grants with no repayment obligations. Loans are likely to strengthen the tax system and encourage tax revenue because of repayment obligations, while pure grants are likely to lead to a reduction in the recipient's tax revenue by lowering the government's incentive to increase the tax effort (Martins, 2007) or by undermining the development of domestic institutions (Benedek *et al.,* 2012). As Morrissey (2012) points out, this negative effect on tax revenue occurs particularly in the case of pure grants for which there is no repayment obligation. Grants in this case do not add to domestic resources but act as a substitute for tax revenue (Martins, 2007). The negative impact of grants on tax revenue is called the "tax displacement hypothesis". Concerning the impact of grants on government spending, Gramlich (1969) claims that an increase in grants leads to a more than proportional increase in government spending, that is, "a $1 increase in aid leads to more than one dollar increase in government spending" (Tarekegn, 2002).

[5] Data from Central Bank of Burundi (BRB), Annual Report (2008, 2013)

[6] Central Bank of Burundi, Annual Report, 2000

[7] Central Bank of Burundi, Annual Report, 2001

[8] Central Bank of Burundi, Annual Report, 2005

[9] Central Bank of Burundi, Annual Report, 2011

[10] Balke & Fomby (1997) use an example of "fixed costs of adjustment" to explain how adjustment can be asymmetric for many economic phenomena in general. They point out that the presence of fixed costs of adjustment may prevent economic agents from adjusting continuously. According to them, it is only when the deviation from the equilibrium exceeds a critical threshold that the benefits of adjustment exceed the costs and, hence, economic agents act to move the system back towards the equilibrium.

[11] Government spending (G) is endogenised since it makes sense to assume a priori that spending depends on tax and grants. In addition, G is endogenised following other studies on asymmetries in spend-tax nexus (see for instance Keho, 2013).

[12] Any unit root test can be used here.

Appendix

Table A.1: *Structure of Government Spending in Burundi in recent years [2006-2012]*

	2006			2007			2008			2009			2010			2011			2012		
	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Current Expenditures	71.3	17.8	-	67.4	18.6	16.7	82.6	18.9	36.9	80.5	19.5	19.7	77.0	19.2	10.3	72.1	18.9	15.7	71.7	17.2	6.8
Goods & Services	51.6	12.9	-	46.6	12.8	11.4	58.8	13.4	41.4	52.6	12.7	9.9	50.7	12.6	11.0	48.2	12.6	17.7	46.8	11.2	4.0
Of which: Salaries	28.2	7.1	-	28.4	7.8	24.4	35.3	8.1	38.9	33.3	8.1	15.9	35.5	8.9	22.8	35.5	9.3	23.6	34.2	8.2	3.4
Transfers & Subsidies	11.3	2.8	-	11.9	3.3	29.3	16.2	3.7	52.7	21.4	5.2	62.0	20.0	5.0	7.6	18.2	4.8	12.5	19.8	4.7	16.6
Interest Payments	6.4	1.6	-	7.6	2.1	47.5	6.2	1.4	-8.2	4.9	1.2	-4.4	4.6	1.1	9.3	4.2	1.1	13.3	3.7	0.9	-6.3
Special Fund Expend.	2.0	0.5	-	1.4	0.4	-15.2	1.3	0.3	5.4	1.6	0.4	53.7	1.7	0.4	24.4	1.4	0.4	-1.6	1.5	0.4	16.6
Capital Expenditures	28.7	7.2	-	32.6	9.0	40.1	17.4	4.0	-40.2	19.5	4.7	37.2	23.0	5.7	36.0	27.9	7.3	50.2	28.3	6.8	8.7

Notes: Own calculations using data from central bank of Burundi; [1] stands for the % ratio of total expenditures, [2] the % ratio of GDP and [3] the % change

Table A.2: *Structure of Government Revenues in Burundi in recent years [2006-2012]*

	2006			2007			2008			2009			2010			2011			2012		
	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]	[1]	[2]	[3]
Tax Revenues	56.9	12.9	-	51.1	13.0	13.5	59.6	12.3	27.7	77.3	12.9	21.9	69.0	14.6	25.6	65.1	15.0	21.5	72.2	14.3	11.5
Income Tax	15.5	3.5	-	14.6	3.7	19.1	16.9	3.5	26.6	22.2	3.7	23.3	21.7	4.6	38.0	18.3	4.2	8.4	22.9	4.5	25.8
Tax on Domestic Trade	28.9	6.5	-	25.5	6.5	11.3	29.5	6.1	26.7	39.5	6.6	25.8	37.1	7.8	32.3	36.3	8.4	26.0	40.6	8.0	12.5
Tax on Intern. Trade	9.0	2.0	-	6.8	1.7	-4.6	8.5	1.8	37.5	7.8	1.3	-13.6	7.1	1.5	26.7	8.0	1.8	45.2	7.3	1.4	-7.6
Other Tax Revenues	3.5	0.8	-	4.2	1.1	53.3	4.7	1.0	21.4	7.8	1.3	56.6	3.1	0.7	-43.8	2.5	0.6	4.2	1.4	0.3	-44.9
Non-Tax Revenue	6.7	1.5	-	4.4	1.1	-18.0	5.8	1.2	45.0	5.6	0.9	-9.4	5.7	1.2	43.5	4.8	1.1	7.4	5.1	1.0	8.4
Grants	36.4	8.2	-	44.5	11.3	54.5	34.6	7.2	-14.9	17.1	2.9	-53.5	25.3	5.3	107.9	30.2	7.0	53.8	22.7	4.5	-24.2

Notes: Own calculations using data from central bank of Burundi; [1] stands for the % ratio of total Revenues & Grants, [2] the % ratio of GDP and [3] the % change

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