

Tax Reforms, Civil Conflicts and Tax Revenue Performance in Burundi

Arcade Ndoricimpa

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Tax Reforms, Civil Conflicts and Tax Revenue Performance in Burundi

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Abstract

The aim of this study is to examine the effects of tax reforms and civil conflicts on tax performance in Burundi. The results from a regression analysis on a tax performance equation indicate that civil conflicts did not significantly affect total tax revenue, international trade taxes or income tax. One possible explanation for that finding is that, apart from the chaotic period 1993–1995, for the rest of the civil war period, conflicts affected mostly rural areas and had far less of an effect on the capital city Bujumbura, home to most industries and services. Consequently, after 1995, the civil war affected the agricultural sector to a much greater extent than the industrial and services sectors, which have the most taxpayers. However, civil conflicts have had significant negative effects on goods and services taxes. This is due to the negative effect of conflict on economic activity. The results of the effect on tax reforms suggest that tax reforms do not have a significant effect on total tax revenue or the tax categories. The reasons why tax reforms may not have had an effect on tax revenue performance include the prevalence of fiscal corruption, the negative effect of conflicts on the economy, abusive tax exemptions, and failure to focus on widening the tax base. Further results from the estimation of tax buoyancy and elasticity indicate that international trade tax is the strong point of the tax system in the short run, while tax on goods and services is the strong point in the long run. In addition, a high tax effort is estimated, which can be explained by the narrowness of the tax base comprised mainly of a few big taxpayers, coupled with a very large informal sector. However, it should be noted that while the tax system in Burundi is characterized by over-exploited taxable capacities, it still relies on foreign aid and grants to finance much of its expenditure requirements. There is a need to rethink the implementation of tax reforms in Burundi to enhance their effectiveness.

Keywords: tax reforms, civil conflicts, tax revenue performance, Burundi

1. Introduction

Improving tax revenue performance has become a priority for many developing countries in recent years due to increased financing needs for service delivery and reduced donor support (IMF, 2011). Realizing the full potential of domestic resource mobilization in developing countries is central to the financing of the Sustainable Development Goals (OECD, 2014). Burundi is a fragile, aid-dependent country with pressing development needs. While the country depends heavily on external aid,¹ aid inflows have been shrinking.² In addition, Burundi has limited access to alternatives for financing development such as remittances and foreign direct investment (FDI).³ As a consequence, improving domestic tax revenue is the most reliable way to mobilize resources for development. Indeed, over the period 2005–2014 tax revenues represent 90% of total government revenues.⁴

As in many other developing countries, tax revenue performance has been weak in Burundi, with an average ratio of 13.7% for total tax-to-GDP over the period 1982–2013. This is low compared to the African average of about 20%.⁵ To improve tax collection in Burundi, and with the help of the International Monetary Fund (IMF) and other development partners, a number of tax and administration reforms have been undertaken since the 1980s. Some of the recent major reforms include the replacement of the traditional transaction tax with value added tax (VAT) and the creation of the Burundi Revenue Authority in 2009. Despite the tax reforms, the total tax-to-GDP ratio did not improve much over the study period. Similarly, GDP ratios of the tax categories did not vary much⁶ over the sample period. For some of the period, from 2003 to 2008 for example, there was even a decrease in the ratio of total tax revenue. An important question arising from this is: what has been the effect of tax reforms on tax performance in Burundi?

However, it should also be noted that Burundi has experienced several episodes of civil conflict since independence in 1962.⁷ Civil conflicts can harm a country's tax performance by eroding the tax base and tax administration capacity (Ndikumana, 2001), and by disrupting economic activity and institutions, hence making tax compliance and tax collection difficult (Nkurunziza, 2004). Civil conflicts can also affect a country's tax performance by affecting its economic structure. For example, during the 1993 civil war in Burundi, the agriculture value added declined, while the industry and services value added increased.⁸ By affecting the economic structure, civil conflicts also have an effect on the tax structure as tax categories are

affected differently. As Addison et al. (2002) point out, in conflict-affected countries, indirect taxes fall as economic activity shrinks; international trade taxes may also decline as the quality and honesty of customs services deteriorate. However, as Addison et al. (2002) also note, in periods of conflict tax revenues may also increase as governments seek to maximize resource mobilization for their military needs. Indeed, while the total tax-to-GDP ratio was 13.4% in the period before the 1993 civil war (1982–1992), paradoxically it increased to 14.7% during the civil war period (1993–2003) and stood at 13.1% after the civil war (2004–2014). The tax administration in Burundi continued to be functional throughout the civil war, and conflicts mostly affected rural areas and less so the capital city Bujumbura. During the periods of civil conflict, a sharp drop in the total tax-to-GDP ratio can only be seen in 1996 and 1997 (13.5% and 12.8%, respectively), probably due to the sanctions that were imposed on the country in the form of an economic embargo after the 1996 military coup.

Thus, another issue to explore is the effect of civil conflicts on tax revenue performance in Burundi. Avis (2016) argues that fragile or conflict-affected countries represent challenging environments for implementing taxation reform programmes, while Addison et al. (2002) point out that tax reforms will have more positive effects when complemented by conflict-reducing measures. This shows that conflicts can have an influence on the effectiveness of tax reforms because of the negative impact that conflicts have on the economy including, among other things, the disruption of economic activities and undermining the tax administration.

Two approaches to the impact of tax reforms on tax performance are found in the empirical literature. The first approach estimates tax buoyancy⁹ and tax elasticity,¹⁰ while the second approach estimates a tax equation, including a tax reform dummy variable among the regressors (see, for example, Ndiaye, 2015). This study applies both approaches to analyze the impact of tax reforms in Burundi. Olufemi et al. (2015), Ndiaye (2015) and Arindam et al. (2016) analyze the impact of tax reforms on aggregate tax revenue, however, this might not be very informative as tax reforms may affect one tax category and not another. This study, therefore, disaggregates and examines the impact of tax reforms on tax performance in Burundi by tax category. Although a number of studies have been undertaken on the impact of tax reforms in sub-Saharan African countries (see, for example, Osoro, 1993; Muriithi and Moyi, 2003; Ayoki et al., 2005; Kargbo and Egwaikhede, 2012; Omondi et al., 2014; and Bekoe et al., 2016), such studies are scarce for Burundi. To my knowledge, the only study on Burundi is by Ndenzako (1999), who estimated the tax elasticity and buoyancy for Burundi. However, since the study of Ndenzako (1999), much has changed in the sphere of public finances in Burundi, with a number of tax reforms undertaken since then. In addition, given the episodes of civil conflicts that have characterized Burundi's landscape since independence, this study also considers the impact of civil conflicts on tax revenue performance, which remains to be assessed. Indeed, political instability is one of the reasons for lower tax revenues (Amin et al., 2014) and the impact of civil conflicts on tax revenue can differ from one tax category to the next. As Addison et al. (2002) point out, indirect taxes and income taxes tend to shrink during civil conflict periods, while

international trade taxes may increase.

This study seeks to examine the effects of tax reforms on tax performance in Burundi. The effect of civil conflicts is also analyzed. This paper intends to highlight the importance of political stability for tax revenue collection and informing the Government of Burundi of the effectiveness of tax reforms undertaken, as well as of the need to continue implementing them.

The rest of this paper is organized as follows: Section 2 highlights recent tax reforms in Burundi, Section 3 analyzes tax performance in Burundi and Section 4 provides an institutional analysis of the latter. Section 5 reviews the literature and Section 6 presents the methodology. Section 7 presents and discusses the results, and Section 8 concludes.

2. Recent Tax Reforms in Burundi

Before 2009, the Ministry of Finance was responsible for tax collection in Burundi. Different tax categories (such as income taxes, customs duties, and non-fiscal revenues) were collected by different tax administrations; in fact, more than 20 tax collection agencies existed (Holmes et al., 2013). This resulted in high costs, complex procedures for both the tax administration and taxpayers, and significant tax arrears because of taxes that went uncollected. With its admission to the East African Community (EAC) in 2007, Burundi initiated several administrative and tax reforms in order to harmonize its tax regime with those of the other EAC countries. With the help of international development partners (the World Bank, International Monetary Fund and the UK's Department for International Development), the Semi-Autonomous Revenue Authority (SARA) (Office Burundais des Recettes, OBR) was created in 2009. Among other things, it was created to: assess and collect all tax and customs revenues, advise government on all aspects of tax policy, promote tax compliance and good tax citizenship, and combat tax fraud and evasion. To boost its effectiveness, a number of conditions were put in place, including the adoption of a performance contract between the Ministry of Finance and the OBR, a rigorous code of conduct for employees, an anti-corruption policy, the implementation of an automated customs IT system, and the reinforcement of staff capacity building. The objective of the administrative reform was to strengthen the collection of domestic tax and customs revenues to enable the government to implement its poverty reduction strategy through expenditure on social services (Holmes et al., 2013).

However, as Holmes et al. (2013) point out, when the OBR was created in 2009, the legal framework for tax collection was outdated and not aligned to regional or international standards, so some tax laws needed to be reformed. The value added tax (VAT) law was introduced in 2009 to replace the transaction tax. Depending on the type of goods and services, three different transaction tax rates were levied. They are: 7% (agriculture, fishery and livestock products as well as real estate sales), 17% (imports, manufacturing and services), and 20% (telecommunications and sales of cigarettes). Under the new law, an 18% VAT was introduced on the sale and import of all goods and services, with some exceptions including financial transactions, agricultural products, property rental, hotels, medical care and pharmaceutical products, university activities and social security organizations, who are not liable to pay VAT (World Bank, 2013). According to the IMF (2008), the objective of introducing

VAT was to raise the tax collection efficiency and offset potential losses on customs revenue due to Burundi's accession to the EAC. Some technical problems with the VAT law led to its revision in 2013 to align it with regional and international best practice. A new income tax law was also introduced in 2013. The complex 1963 income tax law that had 10 different tax rates was replaced with a new income tax law in 2013 that had a simplified three-tier system of taxation, with rates of 0%, 20% and 30%. Also, to harmonize with other EAC countries, personal and corporate income tax rates were reduced to 30%, from 60% and 35%, respectively. A new tax procedures law was also introduced in 2013. Holmes et al. (2013) argue that while the past tax procedures law was sometimes ambiguous and often inconsistent across tax categories, the new tax procedures law created common standards for all taxes.

Regarding other reforms, in June 2012 domestic taxpayers were divided into three categories: large, medium, and small and micro. A new investment code providing tax incentives was enacted in 2008, and the Investment Promotion Agency was created in 2009. The investment code has provisions concerning tax advantages for investors. For example, a registered investment entity that operates in a free trade zone and foreign companies that have their headquarters in Burundi pay corporate income tax at a rate of zero per cent (0%). Similarly, in June 2009 the EAC Common External Tariffs were adopted, with import duty rates fixed at 0% for raw materials, 10% for semi-finished goods and 25% for finished goods. The adoption of the common external tariffs showed Burundi's commitment to regional integration, and also improved the business environment within the EAC (AfDB, 2010).

Other recent tax reforms include the revision of the general tax code in 2006 and the institution of the new customs code in 2007 to make customs procedures more efficient (IMF, 2008).

However, the effectiveness of a revenue authority depends on a country's political economy of taxation. The idea behind the creation of an autonomous revenue authority is that, in weak states, revenue collection authorities are more effective when they operate autonomously from the state. Autonomy thereby protects revenue authorities from political interference. However, one can argue that in reality the OBR does not operate as independently as it is supposed to. First, the General Commissioner of the OBR is nominated by presidential decree and, as a consequence, may not act independently. An example of this is a general commissioner who was replaced after less than one year in post, and the reason behind it has never been disclosed to the public. Could it be that he colluded with powerful people to represent their interests? In addition, one should not forget the influence political parties can have on taxation. As Di John (2006) points out, political parties link the state and civil society and they can provide the necessary political support to legitimize the government's tax policies as well as organize demands for tax breaks or exemptions.

Second, economic agents have interests to protect and, consequently, the creation of an autonomous revenue authority in Burundi was not without obstacles. As Holmes et al. (2013) argue, not everyone in government or the private sector saw the need for a new tax authority in Burundi as a lot of people had interests in the old tax system

because of bribery and corruption that they benefited from. Holmes et al. (2013) point out that the new revenue authority (OBR) had to contend with a lot of lobbying against its existence, as powerful individuals in the public and private sectors complained to ministers that the revenue authority was acting against their interests.

3. Analysis of Tax Performance in Burundi

A recent tax structure (for 2002–2016) shows that taxes on goods and services account for 51.2% of total tax revenues; taxes on income, profits, and capital gains for 27.4%; taxes on international trade for 13.6%; and other tax revenues for 7.8%. For the period of analysis (1982–2014), the total tax-to-GDP ratio is 13.7%, of which direct and indirect taxes represent 3.8% and 9.9% of GDP, respectively. While in absolute terms changes in tax revenues are noticeable (see Table A2), in relative terms the total tax-to-GDP ratio has not changed much. From 13.1% in the 1980s, it increased to 14.7% in the 1990s before falling to 13.4% during the period 2000–2008, and paradoxically remained at 13.4% during the period of major tax reforms (2009–2014) (see Table 1). An analysis of tax categories indicates that the ratio of income taxes to GDP did not vary much in the 1980s and stood at around 3.1%, on average. The ratio increased to 4% in 1991 and then to 4.7% in 1993, but became highly volatile during the civil war up to 2001, whereafter it remained flat until 2008. From 3.4% in 2008, the ratio of income taxes to GDP rose to 4.6% in 2012, then fell because of the alignment of corporate income tax rates with those of the EAC. The ratio of international trade taxes (as % of GDP) was volatile until 1998 and then followed a downward trend until 2014, while the ratio of taxes on goods and services followed an upward trend from 1985 to 1994. The ratio of taxes on goods and services did not fluctuate much from 2001 to 2008, but has been following an upward trend since 2008 with the introduction of VAT.

Table 1: Tax-revenue-to-GDP ratio (per cent)

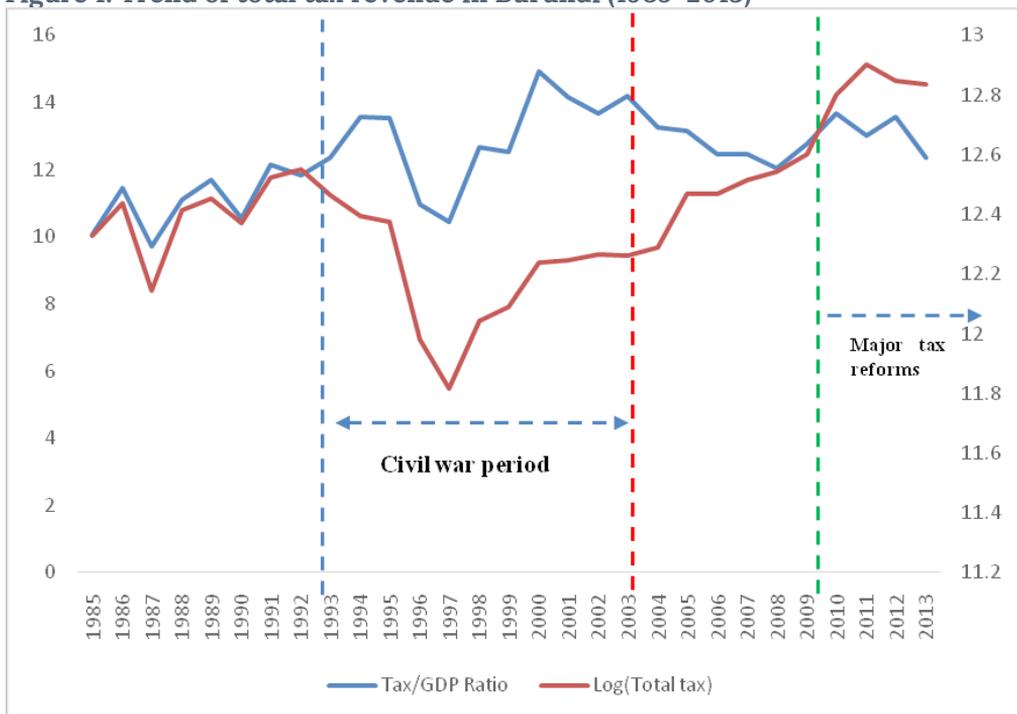
Period	Total taxes	Direct taxes	Income taxes	Indirect taxes	Taxes on goods and services	Taxes on international trade
1980s	13.1	3.5	3.1	9.7	5.0	4.5
1990s	14.7	4.2	3.9	10.5	6.8	3.7
2000–2008	13.4	3.6	3.6	9.8	6.7	2.9
2009–2014	13.4	4.0	4.0	9.5	7.9	1.5
1982–2014	13.7	3.8	3.7	9.9	6.5	3.3
1982–1992 (pre-war period)	13.4	3.7	3.3	9.7	5.4	4.1
1993–2003 (civil war period)	14.7	3.9	3.9	10.8	6.9	3.7
2004–2014 (post-war period)	13.1	3.8	3.8	9.3	R	2.0

Source: Author's computation using data from Government Revenue Dataset of the International Centre for Tax and Development (ICTD/UNU-WIDER, 2017).

During the civil war period, the ratio of total tax revenue to GDP did not immediately drop at the start of the war; instead it increased from 14.5% in 1992 to 15.2% and 16.7% in 1993 and 1994, respectively, and remained at 16.6% in 1995. It is only in 1996 and 1997 that a sharp drop is observed in the total tax-to-GDP ratio (13.5% and 12.8%, respectively). The ratio of taxes on international trade fell drastically from 5.1% in 1995 to 2.8% in 1996, and to 2.6% in 1997. In fact, in 1996 the GDP ratios of all the tax components fell (direct tax, indirect tax, tax on revenue and tax on goods and services) (see Figure 1). While the ratio of total tax revenue to GDP was 14.3% in 1999, it increased to 14.9% in 2000, stabilized at an average of 13.7% up to 2005, and did not vary much thereafter as the total tax-to-GDP ratio remains, on average, 13.0% for the period 2006–2014. For the period 2000–2008, a downward trend in the ratio of total tax and indirect tax is evident, while the income tax ratio and the ratio of taxes on goods and services seem to have remained flat.

It should be noted that, unlike some other fragile countries like Liberia and Mozambique¹¹ that managed to improve their tax performance after civil conflicts, tax performance in Burundi has not improved after the civil war. While the total tax-to-GDP ratio was 13.4% before the 1993 civil war (1982–1992), and paradoxically increased to 14.7% during the civil war period (1993–2003), it declined to 13.1% after the civil war (2004–2014). In fact, a decrease in the ratio of total tax revenue is observed from 2003 up to 2008, probably due to corruption¹² and poor governance that characterized this period (Rufyikiri, 2016). As Holmes et al. (2013) argue, during that period, bribery and corruption were often reported at border crossings and Bujumbura port.

Figure 1: Trend of total tax revenue in Burundi (1985–2013)

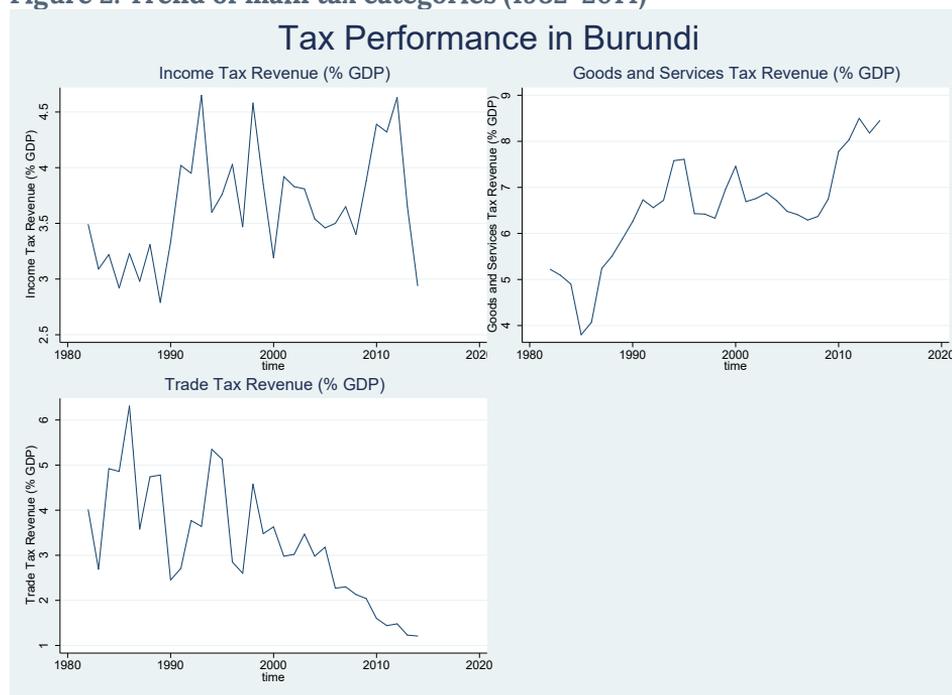


Source: Author, using data from the Central Bank of Burundi and the Government Revenue Dataset (GRD 2017).

4. Institutional Analysis of Tax Revenue Performance in Burundi

In this section, the observed trend of tax performance during the period of study (1982–2014) will be analyzed. Factors that can affect the tax performance of a country include, among other things, a country's level of development, quality of institutions, political and economic stability, economic structure, openness to trade, financial development, and foreign resources (Gupta, 2007).

Figure 1 shows that Burundi's tax performance followed an upward trend up to 1995, a downward trend until 2008, and again trended upwards from 2009 until 2012. Despite the civil war that had started in 1993, the tax-to-GDP ratio continued its upward trend until 1995. The tax-to-GDP ratio dropped sharply in 1996 to 13.5%, and further to 12.8% in 1997 from 16.6% in 1995. This fall can be explained by sanctions that were imposed on Burundi by the international community in the form of an economic embargo in 1996, coupled with the civil war that had intensified from 1995. The shock produced by instabilities and the economic embargo disrupted all sectors of production, especially the industry and services sectors,¹³ and reduced the tax base. Also, during the first years of the embargo, Burundi's international trade shrank, which caused a drop in taxes on international trade from 5.1% (GDP ratio) in 1995 to 2.8% in 1996 and to 2.6% in 1997. In addition, Nkurunziza and Ngaruko (2008) indicate that in 1996 discretionary tax exemptions were estimated at US\$10 million, representing 42% of total import tax revenues. As Figure 2 indicates, the reduction in tax performance in 1996 was a result of a reduction in taxes on goods and services, and taxes on international trade. However, the tax performance reduction in 1997 was caused by the fall in all tax categories (income tax, tax on goods and services, and tax on international trade). The year 1997 saw the full¹⁴ impact of the embargo.

Figure 2: Trend of main tax categories (1982–2014)

In 1998, a political agreement was reached to form a transitional government. The economy recovered and grew at 4.8% after a cumulative economic contraction of 27.6% from 1993 to 1997. This economic recovery led to an improved tax base. In addition, to compensate for the loss in budget support from donors, the government increased taxes on goods and services as well as on international trade, specifically coffee exports (Catherine and Stefaan, 1999). Similarly, in 1998 the government introduced a new tax of 6% on employees' income called "war effort" (Catherine and Stefaan, 1999). As a result, in 1998 the total tax-to-GDP ratio rose to 15.6% from 12.8% in 1997, due to an increase in both income taxes and taxes on international trade (see Figure 2).

In 1999, the total tax-to-GDP ratio declined by 1.2% from 1998. This was due to the removal of the "war effort" tax, as well as the introduction of a law that allowed exemption from taxes and customs duties on goods and funds for non-governmental organizations, which caused a fall in income tax and tax on international trade (see Figure 2). From 1999 to 2001, the total tax-to-GDP ratio remained at around 14.5% and then followed a downward trend up to 2008. While the total tax-to-GDP ratio stood at around 15% in 2000, it dropped to 12% in 2008. Several factors can explain this trend. For example, with a view to full participation in the Common Market for Eastern and Southern Africa (COMESA) Free Trade Area, the Government of Burundi introduced a law in April 2004 that reduced tariffs on goods from other COMESA countries. The application of COMESA's Common External Tariffs towards the end of 2004 was expected to reduce import duties. In addition, the 2006 budget law included some

reforms to abolish distorting taxes and to lower tariffs. In early 2006, the levies on beer, non-alcoholic beverages and sugar, which had been used to finance the war effort, were abolished (IMF, 2006). In addition, the post-conflict period was characterized by weak governance and corruption tendencies, and a number of financial scandals were reported (Ndoricimpa, 2018). That institutional crisis led to a lack of transparency in the way tax exemptions were granted. As Holmes et al. (2013) note, in that period customs duties were systematically evaded and multiple tax exemptions invoked. It is estimated that in 2006, 60% of imports entered the country with partial or total exemptions (Holmes et al., 2013).

In 2007, tax on petroleum products was reduced from a level of 20% to 10% (IMF, 2007), while in 2008 an increase in tax on non-alcoholic beverages and the restoration of the tax rate on petroleum products to 16% caused an increase in the GDP ratio of taxes on goods and services. However, that was not enough to improve the total tax-to-GDP ratio, which dropped to 12% as income taxes fell due to large fiscal exemptions accorded to private foreign companies by the new investment code, and exemptions which were granted through discretionary presidential decree or ministerial ordinance, as reported by the US Department of State (2019).

From 2009 to 2012, tax performance improved: from a GDP ratio of 12% in 2008, total tax reached 14.6% in 2012. This was due to major tax reforms that the government initiated, including the creation of a semi-autonomous revenue authority in 2009, although it only became effectively operational in the second half of 2010, and the introduction of value added tax in 2009, which replaced the transaction tax. However, the ratio of tax on international trade to GDP fell to 1.2% in 2014. Burundi joined the EAC in 2007 and started implementing common external tariffs in 2009. In addition, to attract investors, customs duty exemptions on all imports of capital goods were granted to investors in June 2010. Tax performance could have been even better in that period; as the IMF (2010) points out, tax exemptions on imports, the lack of monitoring companies to whom incentives had been granted, as well as abuse of the use of certificates granted by the investment regime to purchase goods and services locally without paying taxes, eroded the tax base. Similarly, to limit inflationary pressure, the government eliminated taxes on food products from May to December 2012, and reduced fuel excise taxes (World Bank, 2013). According to the IMF (2012), that emergency waiver is estimated to have generated a loss of tax revenues at an estimated 0.3% of GDP. To address the loss of tax revenue, the government increased income taxes, excise duties on alcohol, and tobacco and telecommunications, as well as taxes on used cars, which generated revenues estimated at 0.8% of GDP (IMF, 2012).

From 14.6% in 2012, tax performance declined to 13.1% and 12.6% in 2013 and 2014, respectively. In 2013, it was the result of external shocks and slippages due to economic policy (IMF, 2013), while in 2014 the fall in tax performance was a result of the combined effects of the alignment of corporate income tax rates with those of the East African Community (EAC) and the elimination of the 1% minimum tax in case of losses of corporations. In 2014 about a third of large taxpayers (70 companies) reported losses (IMF, 2014).

5. Literature Review

A number of studies have examined the impact of institutional quality on tax performance. Some examine the impact of corruption or governance, others analyze the effect of institutional reforms such as tax and administration reforms, while others consider the impact of conflicts on tax revenue. Some studies (for example Tanzi and Davoodi, 2000; Imam and Jacobs, 2007; Ajaz and Ahmad, 2010) examined the impact of corruption on tax revenue. According to Nawaz (2010), corruption reduces tax revenue collection as an extractive force from the economy by: eroding the tax revenue base in the long run, corroding the tax morality of tax payers, distorting tax structures, increasing the size of the shadow economy, and hampering overall growth of the economy. Ghura (1998), for a panel of 39 sub-Saharan countries (over the period 1985–1996), and Ajaz and Ahmad (2010), for a panel of 25 developing countries (over the period 1990–2005), find evidence that corruption significantly reduces tax revenue. Because of corruption, some taxes paid are diverted away from public accounts. Thus, according to Tanzi (1999), a distinction must be made between taxes collected by the tax administrators and taxes received by the treasury. A study by Tanzi and Davoodi (2000) on a sample of 90 developed and developing countries (over the period 1980–1997) concluded that a one-point increase in the Corruption Perceptions Index is associated with a 1.5-percentage-point decline in revenue–GDP ratio, a 2.7-percentage-point decline in tax–GDP ratio and a 1.3-percentage-point increase in non-tax revenue. In a sample of 12 Middle Eastern countries (over the period 1990–2003), Imam and Jacobs (2007) find that corruption does not have a significant impact on direct and indirect taxes, or on total tax revenues. However, when broken down by tax category, they find that corruption negatively affects taxes on exports, customs and other import duties, and international trade taxes. In a sample of 66 countries (over the period 1980–1995), Hwang (2002) finds that corruption is positively associated with taxes on international trade, but negatively related to domestic tax revenue and to total government tax revenue.

The level of governance is another important factor affecting tax revenue performance, according to the literature (see, for example, Benno, 2003; Dioda, 2012; Velasquez and Torgler, 2004; Mahdavi, 2008; Profeta and Scabrosetti, 2010; Ehrhart, 2009). Using survey data for Canada, Benno (2003) finds that direct democratic rights, local autonomy, trust in government, and the courts and the legal system have a significant and positive effect on tax morale. Bird et al. (2004) find that civil

liberties and political rights, political stability, and the rule of law positively affect tax revenue. From a sample of 32 Latin American countries (over the period 1990–2009), Dioda (2012) finds that civil liberties and the degree of political stability significantly affect tax revenue. In a pool of 30 Asian and Latin American countries (over the period 1990–2004), Profeta and Scabrosetti (2010) find that civil liberties and political rights positively affect tax performance.

Conflicts also affect tax performance by weakening state capacity. Besley and Persson (2008) find that external wars positively affect tax revenue, while internal wars reduce tax revenue. In a panel of 188 countries (over the period 1975–2004), Cárdenas et al. (2010) also find that internal conflicts negatively affect the total tax-to-GDP ratio and income-tax-to-GDP ratio. In a panel of 60 countries (over the period 1980–1999), Gupta et al. (2002) find a significant negative relationship between conflicts and the share of government revenue and grants in a sample of low- and middle- income countries. Addison et al. (2002) find that conflict has significant and negative effects on the tax/GDP ratio, and this rises as the intensity of conflict rises.

Institutional reforms (tax and administration reforms) are another important factor of tax revenue performance. According to Ehrhart (2009), institutional reforms are more likely to occur in democracies than autocracies. A number of studies examined the impact of tax reforms on tax revenues. Terkper (1995) shows that changes to Ghana's tax administration played a key role in improving the country's revenue mobilization and overall fiscal health over the period 1985–1993.

To examine the effect of tax reforms, some studies have used tax buoyancy and tax elasticity (see, for example, Muriithi and Moyi, 2003; Ayoki et al., 2005; Bekoe et al., 2016). Tax buoyancy is defined as the measure of how tax revenues vary with changes in output, while tax elasticity measures the responsiveness of tax revenue to changes in national income, keeping all other parameters, including tax legislation, constant (Dudine and Jalles, 2017). Tax elasticity shows what tax revenue would have been if there had been no changes in the tax laws. The estimation of elasticity involves adjusting the revenue series to remove discretionary tax measures. The approaches used in the literature to adjust the revenue series include the Proportional Adjustment Method, the Constant Rate Structure Method, the Dummy Variable Approach and the Divisia Index Approach (see, for example, Bekoe et al., 2016).

Muriithi and Moyi (2003) analyze the impact of tax reforms on revenue mobilization in Kenya for the period 1973–1999. Their estimates of tax buoyancy and elasticity for the pre-reform period, as well as the post-reform period, indicate that reforms had a positive impact on the overall tax structure and on individual taxes. However, the results suggest that VAT does not respond to changes in income, despite the reforms. Ayoki et al. (2005) examine the impact of tax reforms on tax revenue in Uganda. They estimate tax buoyancy and elasticity and conclude that tax reforms had a positive impact on direct taxes and VAT/sales tax. However, the yield of import duties deteriorated after the reform. Omondi et al. (2014) examine the impact of the revenue administration reforms and modernization programme (RARMP), and tax modernization programme (TMP) in Kenya over the period 1963–2010. The results

indicate that Kenya had a buoyant but inelastic tax system. Bekoe et al. (2016) examine the impact of tax reforms on revenue mobilization capacity in Ghana. By estimating the tax buoyancy and elasticity of individual taxes and the overall tax system, they find that tax reforms enhanced tax revenue mobilization in Ghana from 1982 to 2013. Olufemi et al. (2015) use quarterly data covering the period 1999–2012 and conclude that tax reforms significantly contributed to revenue generation in Lagos State in Nigeria. Ndiaye (2015) finds that institutional reforms undertaken in the tax administration have contributed to increase significantly the tax revenue performance in Senegal over the period 1970–2013. Arindam et al. (2016) assess the impact of tax administration effectiveness on tax revenues in India and find it to be both statistically significant and large.

The main observation from the above literature review is that most studies looked at the impact of corruption and other institutional factors such as civil liberties and political rights, the degree of political stability, rule of law, the level of democratization and other factors on tax revenue, and less attention has been given to the impact of tax and administrative reforms. In addition, in the African context most existing studies (for example, Muriithi and Moyi, 2003; Ayoki et al., 2005; Omondi et al., 2014; Bekoe et al., 2016) analyze the effect of tax reforms on aggregate tax revenue, which is less informative as tax reforms can affect one tax category and not others. That is the gap this study attempts to fill.

6. Methodology

6.1 Examining the Effect of Tax Reforms and Civil Conflicts on Tax Revenue Performance

The effects of tax reforms and civil conflicts on tax revenue performance in Burundi are assessed by estimating the following equation:

$$\text{Log}T_t = \beta_0 + \beta_1 \text{CIVCO}_t + \beta_2 \text{TREF}_{t-i} + \beta_3 \text{LogTB} + X'_t \theta + \varepsilon_t$$

LogT is the logarithm of real tax revenue (total tax or disaggregated tax), TREF stands for tax reforms; a lag is included to capture the fact that tax reform effects materialize with a lag. CIVCO stands for civil conflicts, it is a dummy variable taking the value of 1 for the periods where civil conflicts occurred, and 0 otherwise. LogTB stands for the logarithm of the tax base, and X is the vector of control variables; ε_t is the error term. GDP is used as base for total tax revenue and income taxes, total trade (exports + imports) is used as base for international trade taxes, while household consumption expenditure is used as base for taxes on goods and services. For the baseline results, tax reforms (TREF) are captured by a generic dummy variable taking a value of 1 for the years the reforms were undertaken, and 0 otherwise.

Brun et al. (2010) highlight factors affecting a country's tax performance found in the literature (see also Lucotte, 2010; Ajaz and Ahmad, 2010; Ebeke, 2010; Wawire, 2011; IMF, 2011; Dioda, 2012; Drummond et al., 2012; Benedek et al., 2012). These include, among other things, economic structural determinants (income per capita, agricultural value added as % of GDP, industrial value added as % of GDP, services value added as % of GDP, and trade openness), macroeconomic policy variables (including debt service as a percentage of GDP, inflation rate, and real effective exchange rate), institutional variables (corruption, quality of bureaucracy and democratic accountability), and aid variables (official development assistance, or ODA, and the instability of ODA).

This study considers the following control variables: the share of the agriculture sector, the share of industrial value added, ODA, trade openness, population growth, and primary school enrolment. The definition, description and descriptive statistics of the variables are reported in Table A4 in the Annex.

For robustness checks, this study also considers individual dummy variables for some specific key tax reforms. The following tax reforms are considered:

- (1) The 1987 reduction in the corporate tax from 45% to 35%. For this, a dummy variable is created taking the value of 1 for 1987–2014, and 0 otherwise.
- (2) The establishment of the tax on transactions in 1989. The dummy variable here takes the value of 1 for 1989–2009 (VAT was introduced in 2009), and 0 otherwise.
- (3) The introduction in 1992 of an ad valorem tax on petroleum products as well as on beer and soft drinks, and an ad valorem export duty on coffee. The dummy variable takes 1 for 1992–2002, and 0 otherwise.
- (4) In 2002 setting the ad valorem tax on the consumption of Amstel beer at 50%, and that of cigarettes at 58%, and in the same year setting an excise duty on sugar of 50 Burundi Franc (BIF) per kilogram, and a tax on the transaction of telecommunication operations at 20%. The dummy variable takes 1 for 2002–2009 (VAT was introduced in 2009), and 0 otherwise.
- (5) A dummy variable for the creation of the COMESA Common External Tariffs in 2004, taking the value of 1 for 2004–2014, and 0 otherwise.
- (6) A dummy variable for the introduction of tax identification numbers in 2005 (1 for 2005–2014, and 0 otherwise).
- (7) A dummy variable for the enactment in 2008 of a new investment code offering tax incentives for companies operating in a free trade zone and those that have headquarters in Burundi (1 for 2008–2014, and 0 otherwise)
- (8) A dummy variable for the creation of the OBR in 2009 and the shift from a transaction tax to VAT, and in the same year the creation of the EAC Common External Tariffs (1 for 2009–2014, and 0 otherwise)
- (9) A dummy variable for the introduction of a new tax income law in 2013 to replace the 1963 income tax law.

6.2 Estimating Tax Buoyancy and Elasticity

Tax buoyancy is the total response of tax revenue to changes in the tax base and discretionary changes in tax policy over time (Bekoe et al, 2016), while tax elasticity is the response of tax revenue to changes in the tax base, holding other parameters constant. Estimating tax buoyancy is important as it helps to assess the efficiency of the tax system in terms of its revenue mobilization capacity (Bekoe et al, 2016). According to Dudine and Jalles (2017), tax elasticity is used to estimate the impact on tax revenues from an unexpected change in the tax base, while buoyancy measures past revenue developments or the combined effects of a package of reforms. The comparison of the values of tax buoyancy and elasticity gives an indication of the effect of tax reforms on the tax performance.

Dudine and Jalles (2017) give two reasons why estimating tax buoyancy is crucial for tax policy formulation. The first reason is that tax buoyancy shows the role that tax policy plays in ensuring fiscal sustainability in the long run, and in stabilizing the economy over the business cycle in the short run. The second reason is that assessing a country's tax buoyancy helps to check if the government is keeping tax mobilization in line with economic activity. In addition, estimating individual tax

buoyancy by tax category helps identify the weak and strong points of the tax system.

In this study, the following proxies for the tax base are used: GDP is used as the proxy base for total tax revenue and income tax revenue,¹⁵ total international trade (sum of exports and imports of goods and services) is used as the proxy base for taxes on international trade, while household final consumption expenditure is used as the proxy base for taxes on goods and services.

Following Osoro (1993), Muriithi and Moyi (2003), Ayoki et al. (2005), Kargbo and Egwaikhide (2012), Omondi et al. (2014) and Bekoe et al. (2016), tax buoyancy and elasticity are estimated as follows:

i. Tax buoyancy

Tax buoyancy is estimated through the following regression, where T is the unadjusted tax/components, B the tax base (GDP), β the tax buoyancy, and ε the disturbance term:

$$\text{Ln}T_t = \alpha + \beta \ln B_t + \varepsilon_t$$

ii. Tax elasticity

Tax elasticity, or the responsiveness of revenue yields to changes in the bases, is estimated using a similar model specified as follows:

$$\text{Ln}T_t^* = \alpha + \beta \ln B_t + \varepsilon_t ,$$

where T* is the adjusted taxes to discretionary tax changes, B is the tax base (captured by GDP), β is the tax elasticity, and ε is the error term.

To eliminate discretionary effects from the tax revenue series, the proportional adjustment method is usually used. It consists of deducing from the actual tax collected each year, an amount attributable to discretionary fiscal policies.

Another approach to estimating tax elasticity is a dummy variable approach introduced by Singer (1968). It consists of introducing a dummy variable into the model for each exogenous tax policy change:

$$\text{Ln}T = \alpha + \beta \ln B + \sum_{i=1}^k \delta_{it} D_i + \varepsilon$$

The dummy variable D takes on the value 1 after the change and 0 before the discretionary change. β is the tax elasticity. While this approach is simple, it is limited for a large number of tax discretionary changes.

Because of the difficulty in getting data on discretionary tax changes, this study adopts the dummy variable approach in estimating tax elasticity. To minimize the number of dummies in the equation, only recent reforms, undertaken from 2006, are considered for this exercise.

The sources of data are as follows: tax revenue is from the various reports of the Central Bank of Burundi; “tax reforms” as a dummy variable is compiled using the Burundian General Tax Code, different IMF country reports on Burundi, reports from the Ministry of Finance, and Burundi Revenue Authority (see Table A3); “civil conflicts” is compiled using the political history of Burundi (Ngaruko and Nkurunziza, 2005). The rest of the variables, agriculture value added (% GDP), industrial value added (% GDP), services value added (% GDP), per capita GDP, inflation rate, ratio of ODA, trade openness, population growth rate and primary school enrolment are from the World Development Indicators (World Bank, 2016).

It should be noted that in estimating the tax potential, data on tax revenue used are from the Government Revenue Dataset (GRD) of the International Centre for Tax and Development (ICTD), because other African countries are involved in the analysis.

The period of study is 1972–2015, but the taxable capacity is estimated for the period 1985 to 2013 due to data availability.

7. Results

7.1 Baseline Results on Effect of Tax Reforms and Civil Conflicts on Tax Revenue Performance

An Augmented Dickey-Fuller (ADF) unit root test is used to examine the properties of the variables used in the analysis. The results presented in Table A5 indicate that all variables are non-stationary, integrated of order one, $I(1)$, except for international trade tax (log) which is integrated of order 0. The baseline estimation results¹⁶ for total tax revenue are reported in Table 2, while Tables 3, 4 and 5 report the baseline estimation results for individual taxes (tax on goods and services, income tax, and international trade tax).

Table 2: Estimation results for total tax revenue (log)

REGRESSOR	MODEL A	MODEL B	MODEL C	MODEL D	MODEL E	MODEL F	MODEL G	MODEL H	MODEL J	
<i>Const</i>	-0.012	-0.013	-0.013	-0.013	-0.015	-0.014	-0.007	0.005	0.020	0.003
<i>Civcon_t</i>	0.049	0.022	0.022	0.022	0.023	0.021	0.039	0.055	-	0.055
<i>Taxref_{t-3}</i>	0.039	0.021	0.022	0.021	0.022	0.026	0.010	-	-0.002	0.006
<i>LnTbase_t</i>	0.903***	1.008***	1.001***	1.009***	1.013***	0.974***	0.864***	0.776**	-	0.784**
<i>Open_t</i>	-	0.007*	0.006*	0.006*	0.006*	0.007*	0.004	0.005	0.005	0.005
<i>Oda_t</i>	-	-	0.0009	-	-	-	-	-0.005	-0.004	-0.005
<i>Indva_t</i>	-	-	-	0.00008	-	-	-	-0.029	-0.026	-0.028
<i>Agva_t</i>	-	-	-	-	-0.003	-	-	-0.022*	-0.018	-0.021
<i>Popgr_t</i>	-	-	-	-	-	0.031	-	-0.023	0.008	-0.020
<i>Primsch_t</i>	-	-	-	-	-	-	0.0007	-0.002	-0.002	-0.002
<i>Embargo</i>	-0.152*	-	-	-	-	-	-0.193*	-0.359**	-	-0.355**

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. *, **, *** stand for significance at 10%, 5%, and 1% level, respectively.

Table 3: Estimation results for goods and services tax revenue (log)

REGRESSOR	MODEL A	MODEL B	MODEL C	MODEL D	MODEL E	MODEL F	MODEL G	MODEL H	MODEL I	MODEL J
<i>Const</i>	0.053**	0.055**	0.051**	0.054***	0.052***	0.044**	0.040*	0.013	0.038*	0.037
<i>Civcon_t</i>	-0.076**	-0.078**	-0.070**	-0.077**	-0.078**	-0.077**	-0.073**	-	-0.072**	-0.074**
<i>Taxref_{t-1}</i>	0.049	0.044	0.052	0.045	0.051	0.012	-	0.016	0.017	0.020
<i>LnTbase_t</i>	0.535***	0.477***	0.526***	0.511***	0.518***	0.449***	0.426***	0.475***	0.450***	0.450***
<i>Agva_t</i>	-0.008*	-0.007	-0.003	-0.007	-0.008	-0.005	0.005	0.005	0.004	0.005
<i>Open_t</i>	-	0.003	-	-	-	-	-0.0001	-0.0006	-0.0002	-0.002
<i>Indva_t</i>	-	-	0.012	-	-	-	0.021	0.023	0.020	0.021
<i>Oda_t</i>	-	-	-	0.002	-	-	-0.0005	-0.0001	-0.0004	-0.0009
<i>Popgr_t</i>	-	-	-	-	0.038	-	0.014	-0.016	-	0.025
<i>Primsch_t</i>	-	-	-	-	-	0.006*	0.008*	0.007*	0.007*	0.007*

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. *, **, *** stand for significance at 10%, 5%, and 1% level, respectively.

Table 4: Estimation results for international trade taxes (log)

REGRESSOR	MODEL A	MODEL B	MODEL C	MODEL D	MODEL E	MODEL F	MODEL G	MODEL H	MODEL I	MODEL J
<i>Const</i>	-0.057	-0.081	-0.057	-0.052	-0.059	-0.044	-0.068	-0.010	-0.047	-0.054
<i>Civcon_t</i>	0.097	0.121	0.098	0.081	0.096	0.128	0.158	-	0.177	0.171
<i>Taxref_{t-1}</i>	-0.092	-0.080	-0.106	-0.111	-0.087	-0.078	-	-0.188	-0.225	-0.214
<i>LnTbase_t</i>	0.886***	1.549**	0.919***	0.932***	0.868***	0.729**	1.525**	1.506**	1.445**	1.457**
<i>Agva_t</i>	0.007	0.007	0.005	-0.006	0.007	0.004	-0.025	-0.024	-0.033	-0.032
<i>Open_t</i>	-	-0.025	-	-	-	-	-0.026	-0.025	-0.021	-0.024

Odat_t	-	-	-0.003	-	-	-0.014	-0.019	-0.017	-0.024
Indvat_t	-	-	-0.033	-	-	-0.054	-0.056	-0.075	-0.062
Popgr_t	-	-	-	0.049	-	-	-	-0.129	-
Primsch_t	-	-	-	-	-0.003	-0.008	-0.0004	-	-0.0007
Embargo	-	-	-	-	-0.379	-0.620*	-0.534	-0.533*	-0.745**

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. *, **, *** stand for significance at 10%, 5%, and 1% level, respectively.

Table 5: Estimation results income tax revenue (log)

REGRESSOR	MODEL A	MODEL B	MODEL C	MODEL D	MODEL E	MODEL F	MODEL G	MODEL H
Const	0.004	0.005	0.006	0.006	0.008	0.012	0.005	0.008
Civcon_t	0.0002	0.0003	-0.0005	-0.0002	-0.008	-0.012	-	-0.009
Taxref_{t-1}	0.037	0.042	0.045	0.047	0.025	-	0.029	0.027
LnTbase_t	0.681**	0.677**	0.649**	0.645**	0.730**	0.724**	0.709**	0.699**
Agvat	-	0.003	0.004	0.005	-0.004	-0.004	-0.003	-0.003
Open_t	-	-	0.002	-	-	0.002	0.002	0.002
Odat_t	-	-	-	0.002	-	-	-	-
Indvat_t	-	-	-	-	-0.016	-0.019	-0.016	-0.017

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. **, *** stands for significance at 5% level.

The regression results suggest that the coefficient of the “civil conflicts” dummy variable is positive but not statistically significant at a 5% significance level. This implies that civil conflict did not significantly affect total tax revenue. This finding confirms what some international organizations, such as the African Development Bank (2010) and World Bank (2013) had already noticed. The tax administration in Burundi continued to be functional throughout the period of civil war and the tax-to-GDP ratio did not drop (see Table 1 and Table A1). The explanation given by the World Bank (2013) for that paradox is the “symbiosis of interests between the political and the administrative elites”. Indeed, tax collection had to continue to maintain privileges and cover salaries as well as being able to finance the war, especially with reduced external support in the period of civil war. Similarly, according to the AfDB (2010), the elites in Burundi saw the need to preserve the tax administration institutions in order to facilitate their rent-seeking behaviour and extractions from individuals as well as from the state. In addition, the AfDB (2010) added that “the public administrators strategized by keeping paying adequate royalties to the ruling elite in return for preserving the system and retaining their jobs and associated perks”. Also, as Rodriguez-Franco (2016) points out, “internal wars can lead to increased taxation when they enhance solidarity toward the State among the elite and motivate the State to strengthen and territorially expand the tax administration”. However, the positive effects of internal wars can be hampered due to the existence of insurgent actors with taxing capacity (Rodriguez-Franco, 2016). Another explanation is that, apart from the chaotic periods of 1993–1996,¹⁷ for the rest of the civil war, conflicts affected mostly the rural areas and to a lesser extent the capital city Bujumbura, home to most industries and services. Consequently, after 1996, the civil war mostly affected the agricultural sector and less so the industrial and services sectors, in which most taxpayers operate.

Regarding international trade taxes and income taxes, the results also show that the coefficient of “civil conflicts” dummy variable is not statistically significant although it is positive for international trade taxes, while it is found to be ambiguous for income taxes. However, for taxes on goods and services, the results indicate that the coefficient of the civil conflict dummy variable is negative and statistically significant at 5%, implying a negative effect of civil conflicts on goods and services taxes. The negative effect of civil conflicts on goods and services taxes is due to conflicts’ negative effects on economic activity, the tax base, tax collection efforts and investment in effective public administration (Boogaard et al., 2018). As Addison et al. (2002) point out, in conflict-affected countries, indirect taxes fall as the economic activity shrinks. Indeed, from 1993 to 1997 Burundi recorded only negative growth rates, and the economy contracted by 6% on average per year during the period 1993–1997.

On the effect of tax reforms on tax performance, as the effect may materialize with lags, we consider tax reforms with lags¹⁸ in the estimation. The estimation results suggest that tax reforms do not have a significant effect on neither total tax revenue nor individual taxes, although the effect is found to be positive for total tax revenue, taxes on goods and services, and income taxes, while it is found to be negative for

international trade taxes. This suggests that tax reforms in Burundi have not been effective in raising tax revenue. Some types of reform undertaken could provide an explanation of their negative effect on international trade taxes, although not significant. In 2004, with a view to full participation in the COMESA free trade area, a law reduced tariffs on goods from other COMESA countries, and towards the end of 2004 Burundi started applying COMESA's Common External Tariffs. Similarly, Burundi joined the EAC in 2007 and started implementing the common external tariffs in 2009. The African Development Bank (2010) reports that by adopting the EAC Common External Tariffs, it was expected that Burundi would lose resources amounting to between US\$2.2 million and US\$2.5 million a year, the average tariff declining from 15% to 11.7%.

Some reasons can be given as to why tax reforms in Burundi have failed to be effective in increasing tax revenues. The first reason is the negative effect of conflicts on the economy, by disrupting economic activity and undermining the tax administration. Second, the OBR is characterized by rampant corruption. Corruption can harm tax morale through various channels, for instance as a reaction related to perceived unfairness in fiscal exchange or siphoning of resources (Bjoern and Weisser, 2019). Even with relatively high wages and good working conditions, corruption has thrived in the OBR because of the high demand for corrupt services. Corrupt tax officers easily accept bribes to lower the value of goods and taxes, and accept false invoices. Some of their practices are suspicious; for example, how can one person oversee assessing and setting the value of imported cars, and also determine the import duties to be paid? In a seemingly zero corruption institution, corruption is organized in such a complex way that it is not detected, and corrupt tax officers often operate in networks. Indeed, Afrobarometer (2014) reports a high level of perceived corruption among tax officials in Burundi. In round five of surveys conducted in 2011–2013, Afrobarometer (2014) indicates that 46% of respondents said that “most” or “all” tax officials are corrupt in Burundi. As Fjeldstad and Rakner (2003) point out, if lack of a taxpaying culture is a big obstacle for tax collection, the problem is exacerbated if the tax administration culture is perceived to be influenced by sectarianism, nepotism and corruption.

The third reason why tax reforms do not improve tax performance in Burundi is abusive tax exemptions, especially discretionary exemptions. Tax exemptions are exceptionally high in Burundi. They represented 21% and 18.3% of total revenues, respectively, in 2009 and 2014 (see Table A6). The IMF (2010) reported that in Burundi “tax exemptions on imports, the lack of monitoring of companies to whom incentives have been granted, as well as abuse of the use of certificates granted by the investment regime to purchase goods and services locally without paying taxes, have eroded the tax base”. In addition, the World Bank (2013) indicated that in 2006, 60% of imports entered with partial or total exemptions, representing an estimated tax revenue loss of 11% of GDP and 66% of tax revenue. Holmes et al. (2013) report that in 2012, about US\$70 million (equivalent to 20% of total revenue collected by the Burundi revenue authority) of tax revenue was lost to exemptions. According to a report by the US Department of State,¹⁹ since 2008 members of the executive branch have granted

large discretionary exemptions to private foreign companies by presidential decree or ministerial ordinance in order to attract FDI. However, the problem is that most officials allowing these tax exemptions do not hesitate to monetize them (Nkurunziza and Ngaruko, 2008).

The last explanation is that most of the tax reforms were formulated and imposed by international donor institutions, especially the IMF and the World Bank. The focus has been on increasing tax collection and compliance rather than attempting to widen the tax base. Hence, the result of the recent tax and administration reforms in Burundi has been only a short-term tax revenue increase. With the OBR starting its operations in 2010, total tax revenue in real terms saw a 22.4% and 10.7% increase in 2010 and 2011, respectively, but fell sharply in 2012 and 2013, by 5.5% and 1.2%, respectively. In 2014 the growth rate was only 4.5%, which is smaller compared to those of 2010 and 2011 (see Table A2). It should also be noted that recent changes in tax laws were also made in that period: the VAT law was introduced in 2009 to replace the transaction tax, a new income tax law was introduced in 2013, as well as a new tax procedures law. Given the observed trend of tax revenue, the new tax laws do not seem to have affected tax revenue performance.

On the impact of the control variables, the results suggest that the tax base²⁰ has a robust significant positive effect on total tax revenue as well as on all individual taxes. This indicates the importance of expanding the tax base to increase tax revenue in Burundi. The estimated results suggest that a one-per-cent increase in the tax base would lead to a 0.90% increase in total tax revenue, 0.50% for taxes on goods and services, 0.90% for international trade taxes, and 0.65% for income taxes. The results also show that openness to trade has a significant and positive effect on total tax revenue. The positive effect of trade openness comes from the associated higher economic growth, which in turn increases the tax base that leads to more revenue taxes collected (Rodrik, 1998). However, trade openness is found to affect negatively taxes on international trade, although not significantly. The negative effect of trade openness can be explained as follows: higher trade openness could be the result of trade liberalization through tariff reduction, which lowers export and import taxes (Rodrik, 1998).

Literacy rate has a significant positive effect on goods and services taxes. A higher literacy rate increases tax compliance (Kasipillai et al., 2003). Agricultural value added is found to be negatively associated with goods and services taxes. As Gupta (2007) points out, the agricultural sector is hard to tax and a large part of it is subsistence. Therefore, a big part of the agricultural sector is associated with lower tax revenue performance. Last, the estimation results indicate that the economic embargo imposed on Burundi in 1996 had a significant negative effect on total tax revenue, and on international trade taxes. Indeed, the value of international trade declined by 53% in 1996, and by 11.5% on average per year for the period 1996–1999. The remaining variables, official development assistance (ODA), industrial value added, and population growth do not seem to be related to tax revenue in Burundi.

7.2 Robustness Checks

Two robustness checks are used in this study. First, we add a linear trend to the baseline regression. Second, instead of considering a generic dummy variable for all tax reforms, we consider individual dummy variables for some specific key tax reforms.

The estimation results, including a linear trend, are reported in Tables A8–A11 in the Annex, while the results considering individual dummy variables for specific tax reforms are given in Tables A12–A15 in the Annex. Tables A8–A11 show that for total tax revenue, the coefficient for the civil conflict dummy variable remains positive but not statistically significant, except for one case where it becomes significant at the 10% level. The effect of tax reforms is also positive, but not statistically significant for all cases considered. On the effects of tax reforms and civil conflicts on taxes on goods and services, the findings still point to the significant negative effect of civil conflicts, and a positive but insignificant positive effect of tax reforms. The results for income tax do not change either, pointing to insignificant effects on tax reforms and civil conflicts. For international trade tax, the coefficient for the civil conflict dummy variable remains positive but becomes statistically significant (at the 10% level) in two cases. As Addison et al. (2002) point out, international trade taxes may increase during civil conflict periods as governments tend to rely on them during conflicts.

As noted above, the second robustness check consists of considering individual dummy variables for some specific tax reforms that seem to be important. The results of that exercise are reported in Tables A12–A15. On the effect of civil conflicts, the results indicate the same findings as in the first robustness check. On the effect of individual tax reforms dummies, the results show that all of the specified tax reforms undertaken in 1987, 1989, 1992, 2002, 2004, 2005, 2008, 2009 and 2013 did not have any significant effect on total taxes, goods and services taxes, or international trade taxes. On income tax, only the tax reform of 2013 (introduction of a new income tax law) is statistically significant at 5%. As the coefficient is negative, this shows a negative effect. Indeed, to harmonize with other EAC countries, the new income tax law reduced personal and corporate income tax rates to 30%, from 60% and 35%, respectively.

However, when a dummy variable taking the value of 1 is considered only for the year a specific tax reform was implemented, the results²¹ show that the 1987 tax reform, which gave tax incentives to investors, had a significant negative effect on total tax revenue and international trade taxes. Also, the 2009 tax reform, which consisted of the creation of the semi-autonomous revenue authority and replaced the transaction tax with VAT, had a significant positive effect on taxes on goods and services. The tax reforms of 1993 and 1994 that allowed profit tax exemptions for companies in free trade zones had a significant negative effect on income tax revenue. In relation to the findings above, it shows that the above-mentioned tax reforms had only a short-run effect, as the effect vanishes if the dummy variable takes the value of 1 even for subsequent years following the introduction of the tax reform.

7.3 Estimating Tax Buoyancy and Elasticity

7.3.1 Estimates of Tax Buoyancy and Elasticity 1972–2015

Analysis of the properties of the variables used shows that they are non-stationary, becoming stationary after one differentiation. We test for cointegration between the logarithm of tax revenue and the logarithm of the tax base using an Engle-Granger test. Results indicate that there exists a level relationship between tax revenue and tax base for all cases considered (see Tables 6 and 7). The long-run relationship is estimated using the fully modified OLS (FMOLS) approach. An error correction model is estimated if the presence of a long-run relationship is confirmed. Short-run buoyancy and elasticity, the long-run buoyancy and elasticity, as well as the speed of adjustment are reported in Tables 6 and 7.

The results suggest that total tax revenue is buoyant in the long run as the buoyancy exceeds one (1.032), and not buoyant in the short run total (0.831). The results further show that in the long run, taxes on goods and services, and income taxes are also buoyant, with long-run buoyancies of 1.223 and 1.069, respectively. However, in the short run, none of the tax categories is buoyant. In addition, the long run results suggest that tax on goods and services is the most buoyant tax category, with a buoyancy of 1.223, followed by income taxes. In the short run, international trade tax is the most buoyant. This indicates that in the long run goods and services tax is the strong point of the tax system, while international trade tax is the weakest. In the short run the reverse applies, where international trade tax is the strong point of the tax system.

A comparison of tax buoyancy and elasticity shows that for total tax revenue tax buoyancy is higher than elasticity in the short run, but lower in the long run. This suggests that in the short run tax reforms could have a positive effect on tax performance, but in the long run tax reforms could be ineffective in raising tax revenue. For taxes on goods and services, income taxes, and international trade taxes, the results indicate that tax buoyancy is lower than elasticity both in the short and long run, implying that for those two tax categories, tax reforms have been ineffective in raising more tax revenue.

This finding corroborates the trend of total tax revenue observed in Table A2. With the OBR starting its operations in 2010, total tax revenue in real terms saw a 22.4% and 10.7% increase in 2010 and 2011, respectively, but fell in 2012 and 2013 by 5.5% and 1.2%, respectively. In 2014, the growth rate was only 4.5%, which is low compared to 2010 and 2011.

Table 6: Tax buoyancy 1972–2015

	Total tax	Taxes on goods and services	Taxes on international trade	Income taxes
P-value (ADF test)	0.001	0.050	0.000	0.014
P-value (PP test)	0.001	0.062	0.000	0.013

Long-run buoyancy	1.032***(0.000)	1.223***(0.000)	0.672***(0.000)	1.069***(0.000)
Short-run buoyancy	0.831***(0.000)	0.451***(0.000)	0.768***(0.001)	0.481**(0.047)
Speed of adjustment	-0.499***(0.001)	-0.147**(0.043)	-0.537***(0.000)	-0.338***(0.009)

Note: ADF and PP tests are on residual series from the long-run relationship following the Engle and Granger (1987) cointegration test. **, *** indicate significance at 5% and 1%, respectively.

Table 7: Tax elasticity 1972–2015

	Total tax	Taxes on goods and services	Taxes on international trade	Income taxes
P-value (ADF test)	0.000	0.050	0.000	0.005
P-value (PP Test)	0.000	0.042	0.000	0.005
Long-run elasticity	1.063***(0.000)	1.263***(0.000)	0.807***(0.000)	1.107***(0.000)
Short-run elasticity	0.739***(0.005)	0.454***(0.006)	0.775***(0.001)	0.298(0.172)
Speed of adjustment	-0.614***(0.000)	-0.142(0.108)	-0.835***(0.000)	-0.603***(0.000)

Note: ADF and PP tests are on residual series from the long-run relationship following the Engle and Granger (1987) cointegration test. *** indicates significance at 1%.

7.3.2 Estimates of Tax Buoyancy before and during Tax Reforms Periods

Are taxes more buoyant in tax reform periods? This subsection estimates tax buoyancy for a pre-tax reform period, 1972–1985, and for a tax reform period, 1986–2015. Tables 8 and 9 present the short-run buoyancy and long-run buoyancy, as well as the speed of adjustment.

Table 8: Estimated tax buoyancy for pre-tax reform period 1972–1985

	Total tax	Taxes on goods and services	Taxes on international trade	Income taxes
P-value (ADF test)	0.001	0.002	0.001	0.019
P-value (PP test)	0.001	0.017	0.036	0.019
Long-run buoyancy	1.098***(0.000)	1.385***(0.000)	0.799***(0.000)	1.242***(0.000)
Short-run buoyancy	1.429**(0.017)	0.263(0.460)	1.161**(0.048)	0.065(0.857)
Speed of adjustment	-1.148***(0.000)	-0.320(0.217)	-0.557*(0.080)	-0.800***(0.005)

Note: ADF and PP tests are on residual series from the long-run relationship following the Engle and Granger (1987) cointegration test. *, **, *** indicate significance at 10%, 5% and 1%, respectively.

Table 9: Estimated tax buoyancy for tax reform period 1986–2015

	Total tax	Taxes on goods and services	Taxes on international trade	Income taxes
P-value (ADF test)	0.000	0.023	0.000	0.010
P-value (PP Test)	0.000	0.017	0.000	0.008
Long-run buoyancy	0.969***(0.000)	1.097***(0.000)	0.571***(0.000)	1.014***(0.000)
Short-run buoyancy	1.020***(0.000)	0.540***(0.001)	0.754***(0.002)	0.707***(0.027)
Speed of adjustment	-0.726***(0.001)	-0.174(0.172)	-0.813***(0.000)	-0.442***(0.025)

Note: ADF and PP tests are on residual series from the long-run relationship following the Engle and Granger (1987) cointegration test. **, *** indicate significance at 5% and 1%, respectively.

All the buoyancy estimates are found to be statistically significant except for the short-run buoyancy of tax on goods and services, and income taxes. The results show that for the estimates of buoyancy that are statistically significant, tax buoyancy is higher in the pre-tax reform period than in the tax reform period, both in the short and the long run, and this applies for total tax. For the overall tax system, for example, the short-run buoyancy is 1.43 and 1.02, respectively, in the pre-tax reform and the tax reform periods, while the long-run buoyancy is 1.09 and 0.97, respectively. This suggests that for a 1% increase in GDP in the short run, total tax revenue increased by 1.43% and 1.02%, respectively, in the pre-tax reform and the tax reform periods. The same observation is made for tax categories. The long-run buoyancy for taxes on goods and services is 1.38 and 1.09, respectively, in the pre-tax reform and the tax reform periods. For taxes on international trade, the short-run buoyancy is 1.16 and 0.75, respectively, in the pre-tax reform and the tax reform periods, while the long-run buoyancy is 0.79 and 0.57, respectively. For income taxes, the long-run buoyancy is 1.24 and 1.01, respectively, for both the pre-tax reform and the tax reform periods.

This implies that the responsiveness of tax revenues to their bases is lower during the tax reform period than in the pre-tax reform period, suggesting that the tax reforms undertaken have been ineffective in raising tax revenues. In addition, taxes on goods and services are more buoyant than the other tax categories, followed by income taxes.

In the pre-tax reform period (1972–1985), long-run buoyancy exceeds one for the overall tax system, taxes on goods and services as well as income taxes, while short-run buoyancy is more than one for the overall tax system and taxes on international trade. In the tax reform period (1986–2015), buoyancy is slightly more than one for taxes on goods and services and income taxes in the long run, as well as total taxes in the short run.

7.4 Estimating Taxable Capacity

Le et al. (2012) define taxable capacity as the predicted (fitted) value of the tax-to-GDP ratio that can be estimated empirically by considering a country's macroeconomic, demographic, and institutional specific characteristics. A tax effort index is then

obtained by dividing the actual tax-to-GDP ratio by the taxable capacity. If the tax effort index is above 1 tax effort is said to be high, implying that the country utilizes its tax base well to increase tax revenues. Tax effort is low if the tax effort index is below 1, indicating that the country may have relatively substantial scope or potential to raise tax revenues (Le et al., 2012). This study follows Teera and Hudson (2004) and Le et al. (2012), where tax effort is analyzed in comparison with the average performance in a panel of countries with similar characteristics. We therefore estimate the following tax-to-GDP equation with a panel of 21 sub-Saharan low-income countries²² with agricultural value added (% GDP), openness to trade (% GDP), population growth, logarithm of GDP per capita, gross fixed capital formation (% GDP) and ODA (% GDP) as explanatory variables (see, for example, Bird et al., 2004).

$$(Tax/GDP)_{it} = \beta_{i0} + \beta_1 open_{it} + \beta_2 oda_{it} + \beta_3 popgr_{it} + \beta_4 gfcf_{it} + \beta_5 agva_{it} + \beta_6 lngdp_{it} + \varepsilon_{it}$$

We estimate the above equation with both the fixed and random effects models, but the Hausman test points to the random effects model as the most appropriate (see Table A7 in the Annex). The predicted (fitted) value of the tax-to-GDP ratio (taxable capacity) is therefore calculated using the estimated random effects model. Table 10 presents the estimated taxable capacity, the actual tax-to-GDP ratio, and the tax effort index. The first thing to note is that Burundi has the lowest tax potential compared to other low-income countries in the sample. The results show that the actual tax-to-GDP ratio for Burundi is much higher than the tax potential, and the estimated tax effort index is 1.98. For comparison, Cyan et al. (2013) also estimated a high tax effort for Burundi, of between 1.4 and 1.5. In this study, the estimated tax effort for Burundi is far above the average of 1.01 for all countries included. While a high tax effort could imply that Burundi is utilizing its tax base well to increase tax revenues, the following should be kept in mind: Burundi has a very narrow tax base, with the bulk of domestic tax revenue being collected from large taxpayers. Around 75% of domestic tax revenue is collected from that group, while the rest, 20% and 5%, are from medium, and small and micro taxpayers, respectively (Holmes et al., 2013). In addition, Burundi has a large informal sector, accounting for an estimated 70% of all economic activity (Holmes et al., 2013). With a high prevalence of poverty in Burundi and low salary levels for civil servants, most people are engaged in some informal activities that can earn them some cash to be able to provide for their families. Most do not make any significant profit as they are mainly for survival purposes. Therefore, taxing the informal sector becomes difficult given the economic realities, let alone the usual difficulty in taxing any informal sector.

The fact that actual tax is greater than the tax potential would mean that Burundi has been collecting higher actual taxes relative to the predicted value of tax revenues, and that the tax system in Burundi is characterized by over-exploited taxable capacities. However, it should be noted that while the actual tax is greater

than the potential, it is still not enough as Burundi must rely on foreign aid and grants to finance much of its expenditure needs. As a fragile, low-income country, Burundi has, therefore, less opportunity to increase tax revenues without possibly creating distortions. The existing low level of tax intake in Burundi, albeit with a high tax effort index, is due to rampant evasion, a narrow base, inefficient revenue administration and high compliance costs (Le et al., 2012). Le et al. (2012) argue that this situation can be explained by the over-exploitation of some revenue sources through high tax rates used as a tool to overcome tax erosion.

Table 10: Taxable capacity, actual tax rate and tax effort (averages, 1985–2013)

Countries	Tax potential	Actual tax rate	Tax effort
Burundi	6.26	12.42	1.98
Benin	12.41	12.86	1.04
Burkina Faso	10.38	10.45	1.01
Central African Rep.	7.52	8.45	1.12
Chad	10.92	5.19	0.48
Comoros	11.29	11.27	1.00
DRC	9.38	5.37	0.57
Guinea	13.25	7.87	0.59
Gambia, The	12.13	12.82	1.06
Guinea-Bissau	8.78	4.86	0.55
Madagascar	11.06	9.66	0.87
Mozambique	8.55	10.35	1.21
Malawi	9.5	14.57	1.53
Niger	8.97	9.03	1.01
Rwanda	8.74	10.08	1.15
Senegal	14.98	16.02	1.07
Sierra Leone	7.14	7	0.98
Togo	10.88	13.78	1.27
Tanzania	11.25	8.36	0.74
Uganda	13.28	7.73	0.58
Zimbabwe	15.19	20.05	1.32
Average			1.01

Source: Author's estimates using data from ICTD/UNU-WIDER (2017) and World Bank (2017).

8. Concluding Remarks

This study sought to examine the effects of tax reforms and civil conflicts on tax performance in Burundi. The results from the estimation of a tax equation indicate that civil conflicts did not significantly affect total tax revenue, international trade taxes or income taxes. One plausible explanation to that finding is that, apart from the chaotic period in 1993–1996, in the rest of the civil war period conflicts affected mostly rural areas and less the capital city Bujumbura, home to most industries and services. Consequently, after 1996 the civil war affected mostly the agricultural sector and less so the industrial and services sectors, which host most taxpayers. However, civil conflicts have had significant negative effects on goods and services taxes. The negative effect of civil conflicts on goods and services taxes is due to the negative effects of conflicts on economic activity, the tax base, and tax collection efforts. The results from robustness checks point to the same conclusion for the effect of civil conflicts.

Regarding the effect of tax reforms, the results suggest that tax reforms, captured by a generic dummy variable, do not have a significant effect on the total tax revenue or individual taxes, although the effect is found to be positive for total tax revenue, taxes on goods and services, and income taxes, while it is found to be negative for international trade taxes. For robustness check purposes we also considered individual dummy variables for some key specific tax reforms. The results show that all tax reforms considered, undertaken in 1987, 1989, 1992, 2002, 2004, 2005, 2008, 2009 and 2013, did not have any significant effect on total taxes, goods and services taxes, and international trade taxes. Regarding income tax, only the tax reform of 2013 (introduction of a new income tax law) had a significant negative effect at the 5% level. Indeed, the new income tax law reduced personal and corporate income tax rates to harmonize with other EAC countries. In addition, the results indicate the importance of expanding the tax base to increase tax revenue in Burundi. Furthermore, a comparison of tax buoyancy and tax elasticity shows that for total tax revenue, tax buoyancy is higher than elasticity in the short run, but lower in the long run. This suggests that in the short run, tax reforms could be effective in raising more tax revenue, but in the long run tax reforms are ineffective in raising tax revenue; the same applies to income taxes. For taxes on goods and services and international trade taxes, the results indicate that both in the short and long run, tax buoyancy is lower than elasticity, implying that for those two tax categories, tax reforms are not effective.

Regarding the estimation of tax capacity, the results show that the actual tax-to-GDP ratio is much higher than the estimated tax potential. The calculated tax effort index for Burundi is 1.98. The fact that actual tax is greater than the tax potential would indicate that Burundi has been collecting higher actual taxes relative to the predicted value of tax revenues, and that the tax system in Burundi is characterized by over-exploited taxable capacities. However, it should be noted that while the actual tax is greater than the potential, it is still not enough as Burundi must rely on foreign aid and grants to finance much of its expenditure needs. Being a fragile, low-income country, Burundi has, therefore, less opportunity to increase tax revenues without possibly creating distortions or incurring high compliance costs. Le et al. (2012) argue that the situation of low tax intake and high tax effort is explained by the over-exploitation of some revenue sources through high tax rates that is used as a tool to overcome tax erosion. To avoid that trap, a favourable legal and regulatory environment should be created to attract private investment and, at the same time, the tax system should be revamped to cut collection costs and minimize tax-induced economic distortions that create a hurdle to investment. In addition, there should be a focus on expanding the tax base, which is still narrow, and on rethinking the implementation of tax reforms to enhance their effectiveness.

The effect of corruption on tax revenue and how corruption can affect the effectiveness of tax reforms were not examined in this study. This can be an area for further research.

Notes

- 1 An analysis of the Burundi budget structure for the period 2005–2015 indicates that 48.8% of expected government resources were supposed to come from external grants, 46.1% from taxes and 4.2% from non-tax revenue. In addition, the ongoing political crisis that started in April 2015 has shown the danger of too much reliance on external aid, with development partners withdrawing their support while the expected external grants in the 2015 budget was 48.4% of total expected resources.
- 2 Net ODA received (% GDP) reduced from 31.1% in 2010 to 20.1% in 2013, while grants (as % of GDP) reduced from 28.3% in 2008 to 16.6% in 2013.
- 3 On average, net inflows of foreign direct investment represented 0.11% of GDP over the period 1985–2013, while remittances represented 0.9% for the period 2004–2013.
- 4 Data are from the Ministry of Finance of Burundi.
- 5 The average total tax-to-GDP ratio for sub-Saharan Africa was 20.8% over the period 1980–1984, 20.6% for the period 1985–1989, 19.8% for 1990–1994, 19.7% for 1995–1999, 20.1% for 2000–2003, and 22.1% for the period 2004–2007 (Brun et al., 2011).
- 6 Over the period 1982–2013, the standard deviation is 1.37 for the total tax-to-GDP ratio, 0.53 for the ratio of direct taxes, 1.13 for the ratio of indirect taxes, 0.56 for the ratio of income taxes, 1.29 for the ratio of taxes on goods and services and 0.95 for the ratio of taxes on international trade.
- 7 Burundi is generally known for its history of political instability and civil wars. Since its independence in 1962, Burundi has experienced five military coups, in 1966, 1976, 1987, 1993 and 1996, and has experienced a number of civil wars, in 1965, 1972, 1988, 1991, and 1993–2005. While the first four did not last long, the 1993 civil war lasted for more than a decade and was more devastating for the economy than the previous ones that were shorter.
- 8 From 1970–1992 to 1993–2003, on average, agriculture value added declined from 60.8% to 48.6%, while industry value added increased from 14.8% to 17.4%, and services value added rose from 24.3% to 33.9%.
- 9 Tax buoyancy is the total response of tax revenue to changes in national income and discretionary changes in tax policy over time.
- 10 Tax elasticity is the automatic response of tax revenue to gross domestic product (GDP) changes less discretionary tax changes.

- 11 According to the IMF (2011), in Liberia taxes increased from 10.6% of GDP in 2003 to 21.3% in 2011, and in Mozambique, the tax-to-GDP ratio increased from 10.5% in 1994 to 17.7% in 2011.
- 12 In its corruption perception index, Transparency International usually ranks Burundi among the most corrupt countries in the world.
- 13 Between 1993 and 1997 agricultural value added reduced by 11% while the industrial and services value added reduced by 41.1% and 18%, respectively.
- 14 The economic sanctions imposed on Burundi started in August 1996.
- 15 “Domestic factor incomes” was the perfect proxy base for income taxes, but data were not available.
- 16 A linear trend is also included as a robustness check; the results are presented in the Annex (Tables A8–A11).
- 17 This was a period of high political instability and tension; in that short period, Burundi had three presidents. Attacks by rebel groups also intensified in that period.
- 18 A comparison of Akaike Information Criterion (AIC) values at different lags led us to choose 3 lags for total tax revenue, and one lag for individual taxes.
- 19 Burundi: Investment Climate Statement 2015, accessible at <https://www.state.gov/documents/organization/241714.pdf>
- 20 Real GDP is used as a base for total tax revenue and income taxes, real trade (imports + exports) as a base for international trade taxes, and real household consumption expenditure as a base for taxes on goods and services.
- 21 Not reported but available upon request.
- 22 Benin, Burundi, Burkina Faso, Central African Rep., Chad, Comoros, DRC, Gambia, Guinea, Guinea-Bissau, Madagascar, Malawi, Mozambique, Niger, Rwanda, Senegal, Sierra Leone, Tanzania, Togo, Uganda and Zimbabwe.

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Annex

Table A1: Tax revenue performance (% of GDP) with and without civil conflicts

Tax revenue performance (% GDP)												
With civil conflicts							Without civil conflicts					
	T1	T2	T3	T4	T5	T6	T1	T2	T3	T4	T5	T6
1982	-	-	-	-	-	-	13.37	4.5	3.49	9.3	5.22	4.01
1983	-	-	-	-	-	-	11.53	3.68	3.09	7.85	5.09	2.69
1984	-	-	-	-	-	-	13.32	3.47	3.22	9.85	4.9	4.92
1985	-	-	-	-	-	-	12.35	2.92	2.92	9.43	3.8	4.86
1986	-	-	-	-	-	-	14.08	3.23	3.23	10.85	4.07	6.31
1987	-	-	-	-	-	-	11.95	2.98	2.98	8.96	5.24	3.58
1988	13.65	3.32	3.31	10.33	5.51	4.74	-	-	-	-	-	-
1989	-	-	-	-	-	-	14.37	3.53	2.79	10.84	5.88	4.78
1990	-	-	-	-	-	-	12.95	4.07	3.33	8.88	6.26	2.45
1991	14.93	5.41	4.02	9.52	6.73	2.71	-	-	-	-	-	-
1992	-	-	-	-	-	-	14.55	4.04	3.95	10.47	6.56	3.77
1993	15.19	4.74	4.65	10.45	6.72	3.64	-	-	-	-	-	-
1994	16.66	3.68	3.6	12.97	7.58	5.35	-	-	-	-	-	-
1995	16.62	3.84	3.76	12.78	7.61	5.13	-	-	-	-	-	-
1996	13.47	4.11	4.03	9.36	6.43	2.85	-	-	-	-	-	-
1997	12.82	3.53	3.47	9.28	6.42	2.6	-	-	-	-	-	-
1998	15.58	4.63	4.58	10.95	6.33	4.58	-	-	-	-	-	-
1999	14.35	3.91	3.85	10.43	6.95	3.48	-	-	-	-	-	-
2000	14.94	3.22	3.19	11.72	7.46	3.63	-	-	-	-	-	-
2001	14.16	3.96	3.92	10.22	6.69	2.98	-	-	-	-	-	-
2002	13.66	3.87	3.83	9.79	6.76	3.02	-	-	-	-	-	-
2003	14.19	3.85	3.81	10.35	6.88	3.47	-	-	-	-	-	-
2004	-	-	-	-	-	-	13.26	3.57	3.54	9.69	6.71	2.98
2005	-	-	-	-	-	-	13.15	3.48	3.46	9.66	6.48	3.18
2006	-	-	-	-	-	-	12.47	3.5	3.5	8.97	6.41	2.27
2007	-	-	-	-	-	-	12.45	3.65	3.65	8.8	6.29	2.3
2008	-	-	-	-	-	-	12.02	3.4	3.4	8.62	6.37	2.13
2009	-	-	-	-	-	-	12.78	3.88	3.88	8.89	6.75	2.04
2010	-	-	-	-	-	-	13.67	4.39	4.39	9.38	7.78	1.6
2011	-	-	-	-	-	-	13.79	4.32	4.32	9.47	8.03	1.44
2012	-	-	-	-	-	-	14.61	4.63	4.63	9.98	8.5	1.48
2013	-	-	-	-	-	-	13.07	3.65	3.65	9.41	8.18	1.23
2014	-	-	-	-	-	-	12.6	2.94	2.94	9.66	8.45	1.21
Av.	14.63	4.01	3.85	10.63	6.77	3.71	13.12	3.69	3.52	9.45	6.35	2.96

Note: T1 stands for total tax revenue (% GDP), T2 for direct tax revenue (% GDP), T3 for income tax revenue (% GDP), T4 for indirect tax revenue (% GDP), T5 for taxes on goods and services (% GDP), and T6 for taxes on international trade (% GDP)

Table A2: Real total tax revenue in millions of FBU (2010 constant prices), % Change, and GDP growth rate (%)

Period	Real total tax revenue	% change	GDP growth (%)	Period	Real total tax revenue	% change	GDP growth (%)
1972	131180.43	-	-6.40	1994	241098.19	-6.99	-3.83
1973	126354.85	-3.68	6.89	1995	237007.34	-1.70	-7.92
1974	127470.43	0.88	-0.73	1996	159887.26	-32.54	-8.00
1975	112642.76	-11.63	0.70	1997	135355.10	-15.34	-1.59
1976	158318.16	40.55	7.94	1998	169973.41	25.58	4.75
1977	181885.38	14.89	11.47	1999	177783.92	4.60	-1.01
1978	192697.72	5.94	-0.94	2000	206548.41	16.18	-0.86
1979	184520.07	-4.24	1.66	2001	208542.62	0.97	2.06
1980	188075.35	1.93	0.99	2002	212314.31	1.81	4.45
1981	157715.35	-16.14	12.16	2003	211032.04	-0.60	-1.22
1982	183068.01	16.07	-1.05	2004	217298.27	2.97	4.83
1983	161209.60	-11.94	3.72	2005	259600.16	19.47	0.90
1984	193941.45	20.30	0.16	2006	259824.02	0.09	5.38
1985	225703.73	16.38	11.78	2007	272159.47	4.75	4.79
1986	252505.03	11.87	3.25	2008	279975.81	2.87	5.05
1987	188291.46	-25.43	5.50	2009	296647.21	5.95	3.47
1988	246203.04	30.76	5.03	2010	363087.30	22.40	3.79
1989	256387.17	4.14	1.35	2011	401854.12	10.68	4.19
1990	236236.62	-7.86	3.50	2012	379825.12	-5.48	4.02
1991	275047.71	16.43	5.00	2013	375213.54	-1.21	4.59
1992	281917.05	2.50	1.01	2014	392136.25	4.51	4.66
1993	259208.57	-8.06	-6.24	2015	352972.05	-9.99	-3.92

Source: Data on total tax revenue are from Annual Reports from Central Bank of Burundi, and data on GDP growth are from WDI (2018).

Table A3: Tax reforms in Burundi

Period	Reforms undertaken
1987	To encourage production the investment code was reformed, allowing a reduction of the tax rate on profits made by decentralized companies (from 45% to 35%). Also, in 1987 the flat tax rate on remunerations was removed.
1989	To improve the management of public resources, tax on transactions was established as a way of fighting tax fraud, and tax exemptions accorded to the state and public bodies were reduced.
1991	To encourage exports, in December a ministerial decree allowed a 50% reduction in the tax rate on profits.
1992	An ad valorem tax on petroleum products was introduced, and also on beer and soft drinks. An ad valorem export duty on coffee was also introduced in the same year.

1993	A February law authorized a ten-year exemption on profit tax for companies registered in the free trade zone, and then applying a tax rate of 15% for the rest of the company's life. In March the ad valorem tax was fixed based on the ex-factory price.
1994	A Ministerial Decree in March allowed tax exemptions on transactions related to agricultural inputs. Another law in that year eliminated tax on tourism.
1999	A June law allowed exemption from taxes and customs duties on goods and funds for non-governmental organizations.
2002	In January, the ad valorem tax on the consumption of beer was fixed at 50% and of cigarettes at 58% of the ex-factory price. An excise duty on sugar was also fixed at 50 BIF per kilogram. The tax rate on the transaction of telecommunications operations was fixed at 20%.
2004	In April, a law on fixed customs duties on imported products outside the COMESA member countries. The rates were fixed as follows from 2005: - Consumer goods: 30% - Intermediate products: 15% - Raw materials: 5% - Capital goods: 10%
2005	Tax Identification Number (TIN) was introduced.
2006	In January, the general tax code was revised.
2007	In January, the customs code was instituted.
2008	The 6% service tax levied on customs was removed. In September, a new investment code was enacted allowing some fiscal incentives. For example, a registered investment entity that operates in a free trade zone and foreign companies that have their headquarters in Burundi pay corporate income tax at a rate of zero per cent (0%). A registered investor shall be entitled to a profit tax discount of: - 2% if the investor employs between 50 and 200 Burundians; and - 5% if the investor employs more than 200 Burundians.
2009	In February, VAT was put in place and the standard rate of VAT was fixed at 18%. In June, the East African Community (EAC) Common External Tariffs were created. Under the East African Customs Union, import duty rates were fixed as follows: - 0% for raw materials, - 10% for semi-finished goods; and - 25% for finished goods. In July, the OBR was created to replace the Department of Tax Administration of the Ministry of Finance.
2010	In June some tax exemptions were granted to attract investors. Customs duty exemptions on all imports of capital goods, including raw materials, were granted to investors.
2012	In June, domestic taxpayers were classified according to three categories – large, medium, and small and micro.
2013	In January, a new income tax law was enacted replacing the 1963 income tax law. In July, the law instituting VAT was revised. A tax procedures code was also introduced in that year.

Source: Own compilation using reports from different IMF country reports on Burundi, reports from the Ministry of Finance, and Burundi Revenue Authority.

Table A4: Definition, description and descriptive statistics of some variables

Variables	Definition, description and source	Obs.	Mean	Std. Dev.	Min	Max
TOTAX	Total tax (Log) [Source: Annual and Monthly Reports of the Central Bank of Burundi]	44	12.3	0.3	11.6	12.9
INCTAX	Income tax (Log) [Source: Annual and Monthly Reports of the Central Bank of Burundi]	44	11.0	0.4	10.2	11.7
GSTAX	Tax on goods and services (Log) [(Source: Annual and Monthly Reports of the Central Bank of Burundi)]	44	11.4	0.6	10.3	12.4
ITTAX	Tax on international trade (Log) [Source: Annual and Monthly Reports of the Central Bank of Burundi]	44	10.9	0.3	10.1	11.5
Real GDP	Gross domestic product (2010 constant USD) (Log) [Source: WDI, 2018]	44	14.4	0.3	14.0	15.0
HHCONS	Household final consumption expenditure (2010 constant USD) (Log) [Source: WDI, 2018]	44	14.2	0.2	13.8	14.8
Trade	Total trade (imports + exports) (2010 constant USD) (Log) [Source: WDI, 2018]	44	13.3	0.5	12.4	14.1
INDVA	Industrial value added (% of total GDP) [Source: WDI, 2018]	44	16.4	2.6	11.6	22.5
PRIMSCH	Primary school enrolment (% net) [Source: WDI, 2018]	44	64.8	37.0	21.6	135.1
OPEN	Openness to trade, measured by the GDP ratio of the sum of exports and imports [Source: WDI, 2018]	44	34.6	8.2	20.9	54.1
ODA	Official development assistance (% GDP) [Source: WDI, 2018]	44	19.2	9.2	5.8	40.4
CIVCON	Political instability dummy capturing periods of civil conflicts. It takes 1 for the period of civil conflicts and 0 otherwise [Source: Author's construction]	44	0.4	0.5	0	1
POPGR	Population growth rate (%) [Source: WDI, 2018]	44	2.4	0.7	0.9	3.4
AGRVA	Agriculture value added (% of total GDP) [Source: WDI, 2018]	44	52.0	8.9	37.3	67.9
TRTOT	Dummy variable for tax reforms for total tax revenue	44	0.2	0.4	0	1
TRGS	Dummy variable for tax reforms for goods and services taxes	44	0.1	0.3	0	1
TRITR	Dummy variable for tax reforms for international trade taxes	44	0.1	0.3	0	1
TRINCT	Dummy variable for tax reforms for income taxes	44	0.1	0.3	0	1

Table A5: ADF unit root test results

Variables	p-value (Level)	p-value (first difference)	Order of integration
Real GDP (log)	0.958	0.000	I(1)
TOTTAX (log)	0.522	0.000	I(1)
GSTAX (log)	0.615	0.000	I(1)
INCTAX (log)	0.499	0.000	I(1)
ITTAX (log)	0.019	-	I(0)
TRADE (log)	0.657	0.000	I(1)
HHCONS (log)	0.808	0.000	I(1)
PRIMSCH	0.883	0.003	I(1)
ODA	0.246	0.000	I(1)
INDVA	0.074	0.000	I(1)
AGRVA	0.665	0.000	I(1)
OPEN	0.311	0.000	I(1)
POPGR*	0.197	0.141	I(2)

Note: * Population growth rate (POPGR) is found to be integrated of order one I (1) when a unit root test with a structural break (Zivot and Andrews test) is used. It is therefore considered as I(1) in the analysis.

Table A6: Recent tax exemptions in Burundi

Period	Tax exemptions (billions of FBU)	Ratio of tax exemptions (% GDP)	Ratio of tax exemptions (% total revenue)
2009	62.72	2.87	20.82
2010	42.77	1.71	11.79
2011	101.26	3.59	21.47
2012	106.36	3.02	19.01
2013	110.12	2.70	16.79
2014	120.28	2.57	18.34
2015	123.21	2.72	20.86
2016	89.92	1.89	14.09

Source: Annual Report, Burundi Revenue Authority (OBR), 2016

Table A7: Estimation results of fixed and random effects models

Variables	Fixed effects model		Random effects model	
	Coefficients	Probability	Coefficients	Probability
Constant	-13.417	0.000	-12.277	0.000
AgVA	-0.123	0.000	-0.124	0.000
OPENNESS	0.032	0.007	0.032	0.008
Pop. Growth	0.247	0.000	0.241	0.000
LnGDP	4.176	0.094	3.995	0.090
ODA	-0.018	0.000	-0.018	0.000
Hausman test	Chi2(5) = 19.75 (0.001)			

Table A8: Estimation results for total tax revenue (Log)

Regressor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H
<i>Const</i>	0.036	0.030	0.037	0.032	0.027	0.033	0.026	0.036
<i>Civcon_t</i>	0.078*	0.066	0.077	0.065	0.067	0.069	0.063	0.079
<i>Taxref_{t-3}</i>	0.076	0.064	0.068	0.062	0.065	0.061	0.042	0.041
<i>LnTbase_t</i>	0.989***	0.938***	0.929***	0.930***	0.942***	0.969***	0.927***	0.854**
<i>Open_t</i>		0.004	0.005	0.005	0.004	0.004	0.003	0.004
<i>Oda_t</i>	-	-	-0.004	-	-	-	-	-0.007
<i>Indva_t</i>	-	-	-	-0.004	-	-	-	-0.024
<i>Agva_t</i>	-	-	-	-	-0.002	-	-	-0.018
<i>Popgr_t</i>	-	-	-	-	-	-0.029	-	-
<i>Primsch_t</i>	-	-	-	-	-	-	0.001	-0.0005
<i>Trend</i>	-0.002	-0.002	-0.003	-0.002	-0.002	-0.002	-0.002	-0.002
<i>Embargo</i>	-0.161*	-0.133	-0.180*	-0.143	-0.133	-0.137	-0.192*	0.354**

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. *, **, *** stand for significance at 10%, 5% and 1% level, respectively.

Table A9: Estimation results for goods and services tax revenue (Log)

Regressor	Model A	Model B	Model C	Model D	Model E	Model F	Model G
<i>Const</i>	0.067**	0.067**	0.066**	0.067**	0.065**	0.063**	0.059*
<i>Civcon_t</i>	-0.069**	-0.072**	-0.063*	-0.071**	-0.071**	-0.067**	-0.061*
<i>Taxref_{t-1}</i>	0.058	0.051	0.061	0.053	0.058	0.022	0.027
<i>LnTbase_t</i>	0.552***	0.496***	0.544***	0.532***	0.537***	0.468***	0.479***
<i>Agva_t</i>	-0.008	-0.007	-0.002	-0.007	-0.007	-0.004	-0.005
<i>Open_t</i>	-	0.002	-	-	-	-	-0.009
<i>Indva_t</i>	-	-	0.012	-	-	-	0.021
<i>Oda_t</i>	-	-	-	0.001	-	-	-
<i>Popgr_t</i>	-	-	-	-	0.029	-	-0.0015
<i>Primsch_t</i>	-	-	-	-	-	0.007*	0.008**
<i>Trend</i>	-0.0008	-0.0006	-0.0008	-0.0006	-0.0007	-0.001	-0.001

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. *, **, *** stand for significance at 10%, 5% and 1% level, respectively.

Table A10: Estimation results for international trade taxes (Log)

Regressor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I
<i>Const</i>	-0.015	-0.013	-0.014	-0.014	-0.017	0.003	0.010	0.013	0.011
<i>Civcon_t</i>	0.116	0.153	0.117	0.098	0.114	0.183	0.154	0.201*	0.207*
<i>Taxref_{t-1}</i>	-0.062	-0.026	-0.076	-0.083	0.060	-0.171	-0.079	-0.161	-0.167
<i>LnTbase_t</i>	0.889***	1.677***	0.925***	0.933***	0.878***	0.752**	0.746**	1.482**	1.630***
<i>Agva_t</i>	0.008	0.009	0.006	-0.005	0.008	-0.002	-0.029	-0.030	-0.026
<i>Open_t</i>	-	-0.030	-	-	-	-	-	-0.023	-0.031
<i>Oda_t</i>	-	-	-0.004	-	-	-0.023	-	-0.018	-0.025
<i>Indva_t</i>	-	-	-	-0.032	-	-	-0.068	-0.071	-0.056
<i>Popgr_t</i>	-	-	-	-	0.030	-	-	-	-
<i>Primsch_t</i>	-	-	-	-	-	0.004	-0.008	-	0.001
<i>Trend</i>	-0.002	-0.004	-0.002	-0.002	-0.002	-0.003	-0.002	-0.004	-0.004
<i>Embargo_t</i>	-	-	-	-	-	-0.645*	-0.564*	-0.501	-0.725*

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. *, **, *** stand for significance at 10%, 5% and 1% level, respectively.

Table A11: Estimation results for income tax revenue (Log)

Regressor	Model A	Model B	Model C	Model D	Model E	Model F
<i>Const</i>	0.042	0.047	0.047	0.047	0.049	0.014
<i>Civcon_t</i>	0.026	0.029	0.028	0.028	0.022	0.001
<i>Taxref_{t-1}</i>	0.065	0.075	0.075	0.075	0.048	0.019
<i>LnTbase_t</i>	0.665**	0.654**	0.644**	0.655**	0.652**	0.593*
<i>Agva_t</i>	-	0.005	0.005	0.005	-0.005	-0.006
<i>Open_t</i>	-	-	0.001	-	-	0.001
<i>Oda_t</i>	-	-	-	0.0004	-	-
<i>Indva_t</i>	-	-	-	-	-0.023	-0.025
<i>Trend</i>	-0.002	-0.002	-0.002	-0.002	-0.002	-
<i>Embargo_t</i>	-0.048	-0.054	-0.049	-0.050	-0.105	-0.103

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. * and ** stand for significance at 10% and 5% level, respectively.

Table A12: Estimation results for total tax revenue (Log) – robustness checks

Regressor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I
Const	-0.003	0.001	-0.008	-0.004	-0.005	-0.009	-0.009	-0.010	-0.006
Civcon_t	0.027	0.044	0.032	0.024	0.018	0.019	0.019	0.020	0.019
LnTbase_t	0.994***	0.973***	0.962***	1.001***	1.000***	0.978***	0.979***	0.972***	1.002***
Open_t	0.007*	0.006*	0.006	0.007*	0.006*	0.006*	0.006*	0.006*	0.006
Oda_t	0.0002	0.0008	0.0002	0.0007	-0.00003	0.0003	0.0003	0.0004	-0.000
Agva_t	-0.003	-0.003	-0.003	-0.002	-0.003	-0.003	-0.003	-0.003	-0.003
TR87	-0.013	-	-	-	-	-	-	-	-
TR89	-	-0.041	-	-	-	-	-	-	-
TR92	-	-	-0.026	-	-	-	-	-	-
TR02	-	-	-	-0.039	-	-	-	-	-
TR04	-	-	-	-	-0.013	-	-	-	-
TR05	-	-	-	-	-	0.0009	-	-	-
TR08	-	-	-	-	-	-	0.0002	-	-
TR09	-	-	-	-	-	-	-	0.008	-
TR13	-	-	-	-	-	-	-	-	-0.045

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. *, **, *** stand for significance at 10%, 5% and 1% level, respectively.

Table A13: Estimation results for goods and services tax revenue (Log) – robustness checks

Regressor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I
Const	0.066**	0.063***	0.065***	0.064***	0.063***	0.063***	0.068***	0.067***	0.067***
Civcon_t	-0.079**	-0.083**	-0.072*	-0.081**	-0.090**	-0.080**	-0.083**	-0.082**	-0.080**
LnTbase_t	0.423***	0.423***	0.419***	0.423***	0.419***	0.419***	0.434***	0.437***	0.458***
Open_t	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002
Oda_t	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001
Agva_t	-0.006	-0.005	-0.006	-0.006	-0.006	-0.006	-0.005	-0.006	-0.006
TR87	-0.003	-	-	-	-	-	-	-	-
TR89	-	0.004	-	-	-	-	-	-	-
TR92	-	-	-0.016	-	-	-	-	-	-
TR02	-	-	-	0.004	-	-	-	-	-
TR04	-	-	-	-	0.004	-	-	-	-
TR05	-	-	-	-	-	0.003	-	-	-
TR08	-	-	-	-	-	-	-0.014	-	-
TR09	-	-	-	-	-	-	-	-0.013	-
TR13	-	-	-	-	-	-	-	-	-0.051

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. *, **, *** stand for significance at 10%, 5% and 1% level, respectively.

Table A14: Estimation results for income tax revenue (Log) – robustness checks

Regressor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I
Const	0.026	0.009	0.013	0.012	0.020	0.019	0.022	0.019	0.022
Civcon_t	0.013	-0.011	0.008	-0.004	-0.006	-0.008	-0.011	-0.008	-0.002
LnTbase_t	0.688**	0.671**	0.654**	0.668**	0.715**	0.702**	0.708**	0.703**	0.756**
Open_t	0.001	0.001	0.0009	0.001	0.001	0.001	0.001	0.001	-0.0002
Oda_t	0.001	0.001	0.001	0.002	0.001	0.0008	0.0007	0.0009	0.0005
Agva_t	0.004	0.005	0.004	0.005	0.005	0.004	0.005	0.005	0.005
TR87	-0.030	-	-	-	-	-	-	-	-
TR89	-	0.013	-	-	-	-	-	-	-
TR92			-0.023	-	-	-	-	-	-
TR02				0.001	-	-	-	-	-
TR04					-0.030	-	-	-	-
TR05						-0.025	-	-	-
TR08							-0.044	-	-
TR09								-0.037	-
TR13								-	-0.172**

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. **, * stands for significance at 10%, 5% and 1% level, respectively.

Table A15: Estimation results for international trade tax revenue (Log) – robustness checks

Regressor	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H	Model I
Const	-0.010	-0.050	-0.094	-0.072	-0.066	-0.075	-0.093	-0.091	-0.092
Civcon_t	0.221*	0.221*	0.124	0.144	0.114	0.113	0.123	0.122	0.124
LnTbase_t	1.652***	1.494***	1.572**	1.669***	1.716***	1.650**	1.577**	1.586**	1.591**
Open_t	-0.029	-0.024	-0.026	-0.026	-0.029	-0.028	-0.026	-0.027	-0.027
Oda_t	-0.003	0.0005	-0.002	-0.0003	-0.004	-0.004	-0.002	-0.002	-0.002
Agva_t	0.006	0.007	0.007	0.009	0.007	0.007	0.007	0.007	0.007
TR87	-0.181	-	-	-	-	-	-	-	-
TR89	-	-0.161	-	-	-	-	-	-	-
TR92			0.0005	-	-	-	-	-	-
TR02				-0.167	-	-	-	-	-
TR04					-0.101	-	-	-	-
TR05						-0.067	-	-	-
TR08							-0.005	-	-
TR09								-0.014	-
TR13								-	-0.031

Notes: All variables are stationary; non-stationary variables are expressed in first difference in the estimations. *, **, *** stand for significance at 10%, 5% and 1% level, respectively.



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