

**African Tax
Administration Paper 33**

Digital Tax Policy and Tax Revenue Collection in Cameroon

Fossong Derrick
and Ashu Mc Moi Ndi

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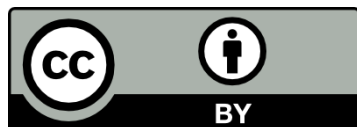
AFRICAN TAX ADMINISTRATION PAPER 33

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Fossong Derrick and Ashu Mc Moi Ndi

Summary

Cameroon adopted a digital tax policy some eight years ago. Before full implementation of the digital tax policy in 2016, councils in Cameroon, especially local councils, reported many challenges due to delays and irregularities in central government revenue-sharing (shared taxes). The direct taxes and fees collected by the councils were felt to be low, given the effort needed to collect them. It is important to understand whether adoption of the digital tax policy has increased the much-needed tax revenue for local council projects, and enhanced general tax revenue. General tax revenue refers to compulsory transfers to the central government for public purposes, and is made up of resource rent, direct and indirect taxes, and trade taxes.

This study examines the impact of the digital tax policy on tax revenue collection in Cameroon using quarterly data from 2010 to 2021, employing an autoregressive distributed lag (ARDL) estimation technique. The results reveal that the digital tax policy put in place in 2016 had a positive and significant long-term impact on general tax revenue, but a negative and significant short-term impact on general tax revenue. The impact was positive but insignificant on council tax revenue in both the long and short term.

Findings indicate that full positive gains from the digital tax policy in Cameroon have not yet been achieved due to local constraints in rural areas. Based on our findings, we recommend that business owners should be trained to use the online declaration and payment system. This will improve ease of use, reduce dependence on agents, and boost collection of general and council tax revenue.

Keywords: digitalisation; local tax revenue; general tax revenue; ARDL; Cameroon.

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Contents

	Summary	3
	Acknowledgements	5
	Acronyms	5
1	Introduction	6
2	Context of the study	8
	2.1 Digital tax policy	8
	2.2 Why focus on local councils?	9
3	Data and methodology	9
	3.1 Source of data	9
	3.2 Model specification	10
	3.3 Estimation techniques	10
4	Results and discussion	11
	4.1 ARDL regression results	11
	4.1.1 Augmented Dickey Fuller (ADF) unit root test	11
	4.1.2 Descriptive statistics of data used	11
	4.1.3 ARDL bounds test for co-integration	13
	4.1.4 ARDL regression short- and long-term results	13
5	Conclusion and policy implications	16
	Appendix	18
	References	20
Tables		
Table 4.1	ADF unit root test	11
Table 4.2	Descriptive statistics (F.CFA million)	12
Table 4.3	ARDL bounds test for co-integration for GTR	13
Table 4.4	ARDL bounds test for co-integration for CTR	13
Table 4.5	ARDL regression short- and long-term results	14

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Acronyms

ARDL	Autoregressive distributed lag
CAC	Council additional tax on taxes
CEFAM	Centre de Formation pour l'Administration Municipale (local government training centre)
CTR	Council tax revenue
DGT	Directorate General of Taxation
DTP	Digital tax policy
ECT	Error correction term
F.CFA	Central African CFA franc
FEICOM	Special Council Support Fund for Mutual Assistance
GDP	Gross domestic product
GTR	General tax revenue
MTN	Mobile telephone network
OECD	Organisation for Economic Cooperation and Development
SME	Small- and medium-size enterprise
VAT	Value added tax

1 Introduction

Many developing countries have made significant progress in improving their digital infrastructure in recent years.

Many studies focus on adoption of electronic tax (e-tax), and show there has been significant improvement in the adoption and usage of e-tax systems (Mas'ud 2019; Mas'ud et al. 2023 Okunogbe and Santoro 2022; Efobi et al. 2019; Czajka et al. 2022; Occhiali et al. 2022).

Research has also focused on the impact of digital solutions, such as electronic filing, on tax compliance (Ofurum et al. 2018). Research shows that there have been positive and significant improvements in tax compliance (Fossung and Warah 2022; Akinboade 2014; Kiringa and Jagongo 2017; Etim et al. 2020).

But research on the impact of digital tax policy on tax revenue gives mixed results. Some studies show that IT adoption significantly increases tax revenue (Iheduru and Ajaero 2018; Ezugwu and Agbaji 2014; Olaoye and Awe 2018; Santoro et al. 2022). Olaoye et al. (2019) find that the e-tax system has improved tax productivity in Nigeria. Monica et al. (2017) show that the e-tax system also had a significant effect on tax collection in Kenya.

In contrast, some studies, such as Ofurum et al. (2018), show that the introduction of e-tax drastically decreased both tax revenue and the tax-to-GDP ratio in Nigeria. Olaoye and Atilola (2018) find that there was no significant difference in tax revenue between the period before and after the introduction of e-tax in Nigeria. Other empirical studies show that digitalisation has both a negative and positive effect on tax revenue (Hanrahan 2021; Wadesango et al 2020; Allahverdi et al. 2017). The presence of the mixed and controversial findings of this impact highlights the need for more country-specific studies.

A digital tax policy was adopted in Cameroon in 2014 (Directorate General of Taxation 2014), and fully put into effect in 2016 (Directorate General of Taxation 2016).¹ The DGT's web portal hosts an online income tax declaration and payment system, which only allows companies to make their payment through a bank or electronically. The tax administration issues a pre-filled tax return form to taxpayers using information it has on their activities, income and assets to calculate the tax due – the form is sent to taxpayers through the DGT web portal. If they agree with the assessment, they can confirm the information and pay the tax due through a bank or electronically. The taxpayer can request for the assessment to be corrected. To secure revenue and harmonise procedures, in December 2020 the Minister of Finance prohibited the payment of taxes and duty in cash to tax offices. Many taxpayers still have difficulty using the online system effectively, and prefer to visit a tax office to declare their taxes manually.

Before the DTP was fully implemented, councils in Cameroon, especially local councils, reported many challenges due to delays and irregularities in the transfer of shared taxes.² The councils felt that the amount of direct taxes and fees they collected was low, given the effort needed to collect them (World Bank 2012). A report by the Directorate General of Taxation (DGT) indicates that the DTP has had a positive impact on tax performance in

¹ The pilot phase of this process began in 2014, with taxpayers of the Large Tax Unit. Since 30 December 2016, 100% of companies in the Large Tax Unit filed their returns electronically (Kakdeu et al. 2021).

² Shared taxes are taxes that are collected by the central government through the Ministry of Finance, and partly redistributed to local councils.

Cameroon – both quantitatively and qualitatively (Kum and Noussi 2022). It is important to know if this increase in tax performance has been reflected in the amount of shared taxes transferred to local councils, as the introduction of the DTP means that they now have more responsibility for implementation.

To our knowledge, there is no comprehensive study assessing the impact of the DTP on tax revenue collection in Cameroon. Our study adds to existing knowledge by examining the causal impact of the DTP on collection of local council and general tax revenue in Cameroon.

The key research question that this study seeks to answer is: what impact has Cameroon's digital tax policy had on tax revenue collection? Specifically, the study seeks to answer two key research questions. How has the DTP impacted the amount of general tax revenue collected? And what impact has the DTP had on the amount of shared and other taxes received by local councils? To answer these questions, we use secondary quarterly data collected from Special Council Support Fund for Mutual Assistance (FEICOM) regional head offices in all ten regions of Cameroon, and data on general tax revenue and gross domestic product (GDP) from world development indicators. We used an autoregressive distributed lag (ARDL) estimation technique and bounds testing co-integration procedure, developed by Pesaran et al. (2001).

There are two key findings in this research. First, results on the impact of the DTP on general tax revenue show that, in the long term, the DTP put in place in 2016 had a positive significant impact on general tax revenue. The short-term results show that the DTP registered mixed results on general tax revenue, which is negative and significant. This may be because most taxpayers are struggling to adapt to the DTP. Second, the results on the impact of the DTP on council tax revenue show a positive yet insignificant impact on council tax revenue in both the long and short term. These findings indicate that the full positive gains of the DTP in increasing council and general tax revenue in Cameroon have not been achieved due to local constraints in rural areas.

The findings from this study have important policy implications for formulating and strengthening digital tax policy in Cameroon. The extent and speed of change due to digital transformation raises many public policy challenges, and digital tax policies must provide enough clarity and certainty to facilitate sustainable, long-term economic growth (OECD 2018).

The DTP should be further strengthened to address the lack of infrastructure in local areas. This will help to reduce the corrupt practices that come from the use of paper-based declaration and payment of taxes, and eventually increase general and council tax revenue. The state should find a way to monitor the DTP system by constant auditing of taxpayers, as some individuals and companies do not declare all relevant information about their activities in order to pay less tax. This will increase the tax base, and ensure that what they declare corresponds with their business status.

This rest of this paper is organised as follows. Section 2 provides the context of the study, and section 3 presents the data and methodology. Section 4 gives the results and discussion, and section 5 provides the conclusion and policy implications.

2 Context of the study

Many tax reforms have been carried out in Cameroon since independence. The tax code was revised and extended many times, and became one of the most complex and inequitable tax regimes in sub-Saharan Africa. Taxes include value added tax, personal income tax, company tax, mining tax, forestry tax, petroleum tax, tollgate fees and weight station fees. The tax system consists of three regimes:

1. Flat rate taxation system: sole proprietorships with an annual turnover of below F.CFA 10 million, except for logging companies, professional officers, and liberal professions.
2. Simplified taxation system: sole proprietorships and corporate bodies with an annual turnover equal to or above F.CFA 10 million and below F.CFA 50 million.
3. Actual earnings taxation system: sole proprietorships and corporate bodies with an annual turnover equal to or above F.CFA 50 million.

Each of these three regimes has its own tax administration with responsibility for identifying taxable individuals, companies and properties, assessing taxes that need to be levied, and collecting the taxes and remitting them to the respective governments as and when due. From 2016 taxpayers in Cameroon have two obligations regarding the tax system: (i) to declare taxes, and (ii) to pay taxes (Directorate General of Taxation 2020).

2.1 Digital tax policy

Cameroon adopted a digital tax policy (DTP) in 2014 (Directorate General of Taxation 2014). It went fully into effect in 2016, when the web portal of the Directorate General of Taxes (DGT) hosted an online declaration and payment system using a pre-filled tax return form. The web portal only permits companies to make their payments through a bank or electronically. Based on the information it has on their activities, income and assets, the tax administration automatically issues a pre-filled tax return form to taxpayers. The taxpayer receives this return form through the web portal, and only has to confirm the information on it. If they find the information is accurate, they can pay the tax due electronically. Taxpayers may ask for the assessment to be corrected (Directorate General of Tax 2016).

The pre-filled tax return reform initially applied to property tax. To obtain reliable information on landed property, the tax administration used existing land surveys, and property tax files at divisional taxation centres (Kakdeu et al. 2021). The pre-filled tax return (e-filing) simplifies the procedure – the taxpayer can declare their taxes and duty without using a paper form or going to a tax office. E-filing is meant to make it easier to comply with tax obligations, and reduce the cost of fiscal discipline. It also helps to raise the productivity of the tax administration, allowing agents to focus on more productive tasks (such as risk analysis, surveillance of filing risks and management). This filing process was piloted in 2014 for large tax taxpayers, and extended to all medium and large taxpayers in 2016.³ It introduced and consolidated e-filing of public contracts, and initiated e-filing of deeds of conveyance for landed properties (Kakdeu et al. 2021).

A digitalised tax auditing unit, the IT tool FUSION, was developed to help the Directorate General of Taxation perform risk analysis for tax audits in medium and large companies. This allows users to analyse the risk of tax fraud in a specific company, and if tax audits should be

³ The website of the Directorate General of Taxation is at <https://www.impots.cm/en>.

carried out – thus contributing towards improved tax collection. As part of the improvement of tax administration, the digitalised system helped set up the DGT website with up-to-date information for taxpayers.

The digital tax policy has gone a long way towards helping remove manual taxation procedures. This saves time in completing procedures, saves money by optimising costs and securing collection of resources, and eliminates physical interactions that can lead to corruption. The policy has also helped to rationalise the tax system by promoting better collaboration between the various administrations (such as the Ministry of Finance, Taxes and Customs).

2.2 Why focus on local councils?

Local councils are the hub of development at the grassroots level in Cameroon. They rely heavily on shared taxes, which are collected by the central government through the Ministry of Finance, and redistributed to them. Shared taxes collected by the government include council additional taxes (CAC), which come from timber, royalties and industrial activities like mining and petrol; advertisement tax from large companies like Brasseries du Cameroun, Guinness Cameroon, MTN and Orange; and all other shared taxes collected by regional tax services. All shared taxes are redistributed by FEICOM to councils through their bank accounts. The taxes the councils collect directly include parking fees, building fees, market fees, hygiene and sanitation fees, and impoundment fees, which are either paid in cash or digitally, depending on the taxpayer. With the DTP, shared taxes should be declared and paid digitally. Before the DTP taxes were declared and collected manually (taxes were paid to tax collectors in cash, especially by small taxpayers/companies), which exposed the process to corruption and embezzlement of much-needed funds.

It is important to note that local councils in Cameroon had serious financial problems before the DTP. A report from the Directorate General of Taxation shows that the DTP has registered a positive impact, both quantitatively and qualitatively, on tax performance in Cameroon (Kum and Noussi 2022). It is useful to know whether this increase in tax performance has been felt at local council level, in terms of the amount of shared taxes they receive. Given that local councils have more projects since the DTP was introduced, it is important to know whether the tax resources needed to complete these projects have also significantly increased.

3 Data and methodology

3.1 Source of data

Cameroon has 10 administrative regions and 374 councils – 360 municipal councils and 14 city councils. The councils should submit a report to the regional treasury including tax revenue collected, communal stamps sold, bank statement showing bank transactions, execution of state transfer credit cards for investment projects, expenditure, and a general trial balance from class one to class eight account every month. The regional FEICOM offices say these reports do not always come in on a monthly basis. To address this gap in data submission, regional FEICOM units arrange the data quarterly.

4 Results and discussion

The analysis was carried out to isolate the potential impact of the digital tax policy on council and general tax revenue. In this way, the regression models of council and general tax revenue have digital tax policy as the key explanatory variable, but bring in control variables, such as the level of economic activity (GDP), Centre de Formation pour l'Administration Municipale (CEFAM) reductions, and COVID-19.

4.1 ARDL regression results

4.1.1 Augmented Dickey Fuller (ADF) unit root test

Standard tests like Dickey and Fuller (1979) have been used extensively to find the order of integration of variables, but due to poor size and power properties the tests are not reliable for small sample datasets (Dejong et al. 1992). Thus, in our case, with a small sample size, we employed the Augmented Dickey Fuller.

The null hypothesis for the stationary test states that the variable of interest is not stationary; the alternative holds that the variable is stationary. These hypotheses can be verified using either the critical value approach or the p-value approach (Mackinnon approximate p-value). For instance, taking lnGDP, we can observe that the calculated Z statistic (-4.297) is greater than the 1 per cent critical value (-4.196), rejecting the null hypothesis. The last column of Table 4.1 shows the level of integration of each variable, and the stationary level. The variable lnGDP has the level of integration I(1), indicating that it is stationary at first difference. CTR has the level of integration I(0) indicating it is stationary at levels.

Table 4.1 ADF unit root test

Variable	Test statistic (Z)	1% critical value	5% critical value	10% critical value	Order of integration
lnGTR	-3.236	-4.196	-3.520	-3.192	I(0)
	MacKinnon approximate p-value for Z(t) = 0.0775				
lnCTR	-4.297	-4.187	-3.516	-3.190	I(0)
	MacKinnon approximate p-value for Z(t) = 0.0032				
lnCEFAM	-5.236	-4.187	-3.516	-3.190	I(0)
	MacKinnon approximate p-value for Z(t) = 0.0001				
lnGDP	-4.297	-4.196	-3.520	-3.192	I(1)
	MacKinnon approximate p-value for Z(t) = 0.0032				

Source: Computed by the authors using Stata 14.

4.1.2 Descriptive statistics of data used

We used yearly quarterly data from 2010 to 2021 in Cameroon, including the following: council tax revenue, CEFAM reductions, GTR and GDP. We also collected yearly quarterly data on GDP and CEFAM, which constituted our control variables for the analyses. The average price index for the pre-period (API-Pre) and post-period (API-Post) were 106.5727 and 118.1203 respectively. To remove the price effect and allow sound comparison between the two periods, we expressed the tax revenue values and control variables of the post-

period in terms of the pre-period prices. Specifically, we expressed API-Post/API-Pre, then divided the post-period (2016-2021) tax revenue values by the result (1.10835) to obtain the post-period values expressed in pre-tax policy period prices.

Now, to distinguish between the treatment and control periods, we introduced a treatment-dummy variable. The treatment-dummy variable takes the value 1 for the period 2016-2021, representing the post-period (period of the DTP), and the value 0 for the period 2010-2015 representing the pre-period (before the DTP).

Table 4.2 shows the mean council tax revenue for the post-period (F.CFA 19,674.4 million) is greater than that of the pre-period (F.CFA 16,038.8 million). This indicates that, on average, the implementation of the digital tax policy registered a positive impact (an increase of about 22.67 per cent) on collection of council tax revenue in Cameroon. On average, general tax revenue was F.CFA 2,147,484.6 million in the period of study, with a higher average value in the post-period (F.CFA 2,523,344.2 million) compared to the pre-period (F.CFA 1,771,625 million). This shows an increase in GTR of 42.43 per cent between the periods before and after the digital tax policy. This increase may partly be a result of the introduction of the digital tax policy in 2016. We can observe that the mean level of economic activity in the post period is higher than in the pre digital policy period. This clearly shows that the economy of the country has improved over time. Leaning on the premise that the visible tax revenue gains recorded above may result from improvements in economic activity, this variable serves as a control variable in the regression analysis. While these preliminary results tell a positive story about implementation of this policy, further robust analyses should enlighten us on the impact of the digital policy on these visible positive revenue gains.

Table 4.2 Descriptive statistics (values in F.CFA million)

Variable	All sample		Pre		Post	
	N	Mean (SD)	N	Mean (SD)	N	Mean (SD)
CTR	48	17,856.6 (5,011.2)	24	16,038.8 (6,111.8)	24	19,674.4 (2,658.1)
GTR	48	2,147,484.6 (557,892.9)	24	1,771,625 (520,079.22)	24	2,523,344.2 (265,920.51)
CEFAM	48	83.23 (52.85)	24	87.46 (75.31)	24	79.00 (0.01)
GDP	48	18,591,667 (2,678,586)	24	16,579,167 (1,996,514.2)	24	20,604,167 (1,490,981.3)

Source: Computed by the author using Stata 14.

CEFAM refers to the Local Government Training Centre, currently called the National School of Local Administration (NASLA), which trains senior council staff in the areas of administration and finance and treasury management. All councils contribute to running CEFAM, and FEICOM deducts these contributions (CEFAM reductions) from the tax revenue transfers for local councils. Thus, CEFAM reductions are the amount of council tax revenue used to train senior council staff and promote the autonomy of councils in the country. These reductions are used as control variables in the regression analysis of CTR.

4.1.3 ARDL bounds test for co-integration

Table 4.3 and 4.4 show the ARDL bounds test for council and general revenue tax models respectively. It is used to test for evidence of a long-term relationship among the variables under the study.

Table 4.3 ARDL bounds test for co-integration for GTR

Null hypothesis: no long-term relationships exist		
F- Statistics	4.157	
Critical value bound significance	Lower bound, I(0)	Upper bound, I(1)
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Computed by the authors using Stata 14.

Table 4.4 ARDL bounds test for co-integration for CTR

Null Hypothesis: No long-term relationship exist		
F- Statistics	13.77	
Critical value bound significance	Lower Bound, I(0)	Upper Bound, I(1)
10%	2.45	3.52
5%	2.86	4.01
2.5%	3.25	4.49
1%	3.75	5.06

Source: Computed by the authors using Stata 14.

The F-statistic of the bounds test is used to verify if co-integration exists between variables. The value of the F-statistic is compared to the critical values bounds test. If the computed F-statistic is above the upper bounds, the null hypothesis of no co-integration is rejected. If it is below the lower bounds, the null hypothesis is not rejected. Moreover, if the value of the F-statistic is between the upper and lower bounds, the results about co-integration are inconclusive (Pesaran et al. 2001). From the tables, the computed value of the F-statistic for the bounds test are greater than the upper bounds critical values at 10 per cent, 5 per cent, 2.5 per cent and 1 per cent significant levels using unrestricted intercept and no trend. We reject the null hypothesis of no long-term relationship in the two models. The bounds test shows the existence of co-integration or long-term relationship among the variables. Leaning on the existence of co-integration, both long-term and short-term CTR and GTR models of the ARDL are estimated and presented in Table 4.5.

4.1.4 ARDL regression short- and long-term results⁴

Table 4.5 shows the short and long-term ARDL regression results for the council and general tax revenue models. Based on the lag selection criteria, we made used of 4 lags for GTR and 1 lag for the CTR, and our normality test for both GTR and CTR is presented in the Appendix.

⁴ Additional tables available on request.

Table 4.5 ARDL regression short- and long-term results

Variables	GTR	GTR	CTR	CTR
	LR	SR	LR	SR
gtp	0.429*** (0.149)		0.162 (0.120)	
lnCEFAM	0.951*** (0.323)		0.455** (0.186)	
lnGDP	0.761 (0.902)		1.415*** (0.355)	
covid_19	-0.0511 (0.132)		-0.194** (0.0894)	
lnCTR	0.243 (0.374)		NA	
ECT	-0.292** (0.115)		-1.171*** (0.154)	
gtp		-0.274* (0.153)		0.0268 (0.695)
LD.gtp		-0.120 (0.184)		
L2D.gtp		-0.106** (0.0471)		
D.lnCEFAM		-0.287* (0.161)		-0.389*** (0.135)
LD.lnCEFAM		-0.245* (0.125)		
L2D.lnCEFAM		-0.191** (0.0779)		
L3D.lnCEFAM		-0.0891** (0.0357)		
D.lnGDP		-1.701 (1.073)		-0.446 (6.458)
LD.lnGDP		-0.179 (1.312)		
D.covid_19		-0.0875* (0.0498)		0.0443 (0.230)
LD.covid_19		-0.0520 (0.0409)		
L2D.covid_19		-0.0290 (0.0434)		
L3D.covid_19		-0.0204 (0.0410)		
D.lnCTR		-0.105 (0.0987)		
LD.lnCTR		-0.00924 (0.0779)		
L2D.lnCTR		-0.0395 (0.0575)		
L3D.lnCTR		-0.0490 (0.0329)		
Constant		-1.447 (3.561)		-18.76** (7.395)
Observations	44	44	47	47
R-squared	0.866	0.866	0.656	0.656

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.

Source: Computed by the authors using Stata 14.

Columns 1 and 2 in Table 4.5 show the long- and short-term results for the general tax revenue (GTR) model, and columns 3 and 4 the long- and short-term results for the council tax revenue (CTR) model. The long-term results show the coefficient of GTP (general tax policy) is positive in both GTR and CTR models, implying that the GTP registered a positive effect on GTR and CTR. This means the introduction of GTP has led to an increase in GTR and CTR – a 43 percentage point and 16 percentage point increase in GTR and CTR respectively. This relationship is statistically significant at 1 per cent for GTR, and insignificant for CTR. The insignificant impact on the CTR is due to the fact that at the council level most taxes are still being paid manually. They deal mainly with small businesses, and most of them do still not use electronic means of payment.

With respect to the control variables, CEFAM and GDP registered a positive and significant impact on both GTR and CTR models, with the exception of COVID19 – which was negative and insignificant for GTR, and significant for CTR. The coefficient of council tax revenue (CTR) is positive in the GTR model, implying that CTR registered a positive effect on GTR. This relationship is statistically insignificant.

The short-term results show that the GTP registered a negative impact on GTR and a positive impact on CTR. This result is statistically significant at 10 per cent for GTR, and insignificant for CTR. The negative sign of GTP in the short term may be due to the fact that during this period (the short time period of the policy) people were still not familiar with the digital tax platform and its functionality, making it difficult to properly channel this revenue.

With respect to the control variables in the short term, CEFAM of the previous year has the capacity to decrease GTR and CTR in the short term – these results are statistically significant. GDP of the previous year has the capacity to decrease GTR and CTR in the short term – these results are statistically insignificant for both models. Further, COVID19 of the previous year has the capacity to decrease GTR and increase CTR in the short term – this result is significant for GTR, and insignificant for CTR. Finally, the coefficient of council tax revenue (CTR) of the previous year is negative in the GTR model in the short term, implying that the CTR registered a negative effect on GTR, though insignificant.

The error correction terms (ECTs) of -0.292 and -1.171 for GTR and CTR respectively, are all statistically significant, suggesting that about 29.2 per cent and 117.1 per cent of adjustments in GTR and CTR occur towards long-term equilibrium within one year respectively.

The adjusted R-squared is 0.866 and 0.656. This implies that 87 per cent and 66 per cent variation in GTR and CTR respectively is explained by the independent variables in this model. Thus, the model was well specified. Furthermore, it can be concluded that the results were reliable. The White test for heteroskedasticity reveals that the variance of the error term was constant over time, and the Breusch-Godfrey test for autocorrelation indicates that there is no serial autocorrelation.

The results show that the digital tax policy put in place in 2016 had a positive and significant long-term impact on general tax revenue (GTR), but negative and significant short-term impact on GTR. The impact was positive but insignificant on council tax revenue (CTR) in both the long and short term. These findings show that the full positive gains of the DTP in increasing general and council tax revenue in Cameroon are still to be realised, due to local constraints in rural areas. This study is in line with Nasr (2014), who finds that an e-tax system led to a substantial increase in tax returns after its introduction in Malaysia. Allahverdi

et al (2017), using secondary data from the Turkish revenue authority, study the data in two groups (pre and post the e-tax system), and find that the e-tax system positively affected tax revenue. Results from Fossung and Warah (2022), who examine the relationship between digitalisation and the level of tax compliance in Cameroon, reveal that digitalisation registered a positive and significant effect on tax compliance. Kiringa and Jagongo (2017) investigate the effect of online tax filing on tax compliance among SMEs in Kenya, and results indicate that online tax filing has a positive impact on SMEs' level of tax compliance.

However, this study gives contrary results to other studies, such as Ofurum et al. (2018), who assess the impact of e-taxation on Nigeria's revenue generation and economic growth using secondary data from 2013 to 2016. Ofurum et al. find that following the introduction of e-taxation, both federally-collected revenue and the tax-to-GDP ratio decreased dramatically. Ofurum et al. (2018), using secondary data and a paired sample t-test, emphasise that tax-to-GDP ratio significantly decreased after implementation of e-taxation. Hanrahan (2021), using panel data spanning from 1995 to 2018, investigates the effect of digitalisation as a factor of tax collection in OECD countries, and indicates that digitalisation has a negative effect on tax revenue in some countries with high digital dynamics.

5 Conclusion and policy implications

This study sets out to examine the impact of the digital tax policy on tax revenue collection in Cameroon. The study uses quarterly data, divided into two distinct periods – before and after introduction of the digital tax policy – and ARDL estimation techniques. The results show that the digital tax policy put in place in 2016 had a positive and statistically significant long-term impact on general tax revenue (GTR), but negative and significant short-term impact on GTR. The impact was positive but insignificant on council tax revenue (CTR) in both the long and short term. These findings show that the full positive gains of the digital tax policy in increasing general and council tax revenue in Cameroon have not been achieved due to local constraints in rural areas. Based on our findings, we make the following recommendations.

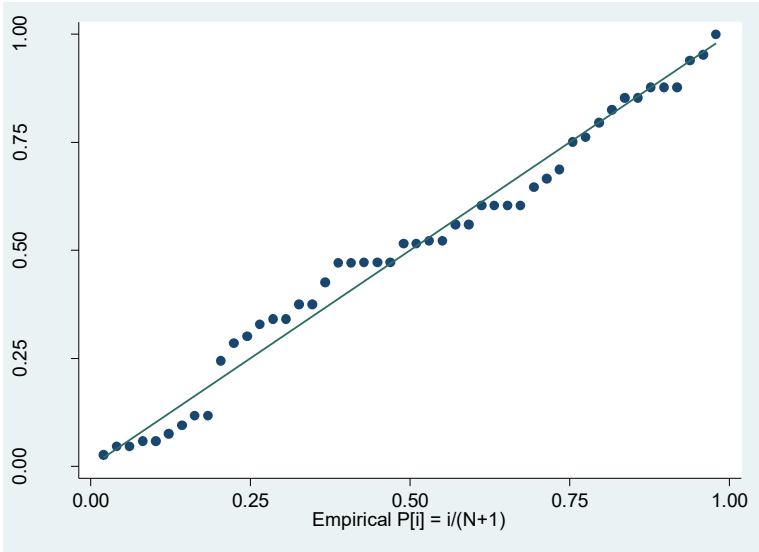
- The DTP should be strengthened to address the lack of infrastructure in local areas (such as electricity and internet connections), and provide necessary ICT equipment required to use the online tax system. This will reduce corrupt practices (bribery and embezzlement) that abound with the use of paper-based declaration and payment of taxes, and will eventually enhance general and council tax revenue.
- The state should find a way to monitor the DTP system by constant auditing of taxpayers, as some individuals and companies do not declare all relevant information about their activities in order to pay less tax. This will increase the tax base, and ensure that what they declare corresponds with their business status. If there is no current control or auditing of their activities, they are taxed only on information they declare on their activities. This will go a long way towards reducing malpractice and boosting general and council tax revenue in Cameroon.
- In order to enhance the DTP system, training/sensitisation programmes could be developed to help business owners with the online declaration and payment system. This will improve ease of use, reduce dependence on agents who may advise clients on various ways of evading taxes; and help new and old taxpayers who find it difficult to use the online system and prefer to visit tax offices (Kakdeu et al. 2021) to declare their taxes

manually. This defeats the purpose of the online system, and will boost tax compliance and increase general and council tax revenue.

- The DTP system should be made more flexible, user-friendly and effective, by reducing recurrent maintenance work and changing the website without notification. This often frustrates tax administrators and taxpayers. There should be continuous upgrades to make the site easy to use. The authorities should make the system easily accessible to all Cameroonians, and ensure the site is secure and reliable. Taxpayers will then be more willing to use the tax system to meet their tax obligations.
- In order to boost the DTP system, the state should design national strategies and frameworks for cybersecurity, consumer protection and financial services, to help reduce fraud and exploitation of customers. The state should set up a body with oversight of financial services, who can act as a mediator between financial service providers and consumers. The consumer protection framework should focus on financial access, e-commerce and other e-services.
- It is very important to improve the national education system for digital skills development. Underprivileged populations with limited means should be considered at all levels. Training workshops/programmes could be very important for underprivileged populations to access digital skills training.
- The government of Cameroon should also seek possible ways to strengthen the digital tax policy so it can capture other e-transactions. This will eventually increase general and council tax revenue.

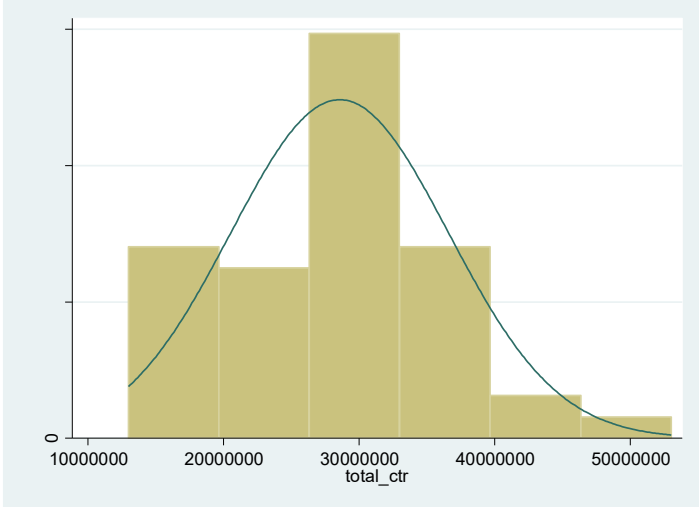
Appendix

Table A1: Normal probability plots – CTR



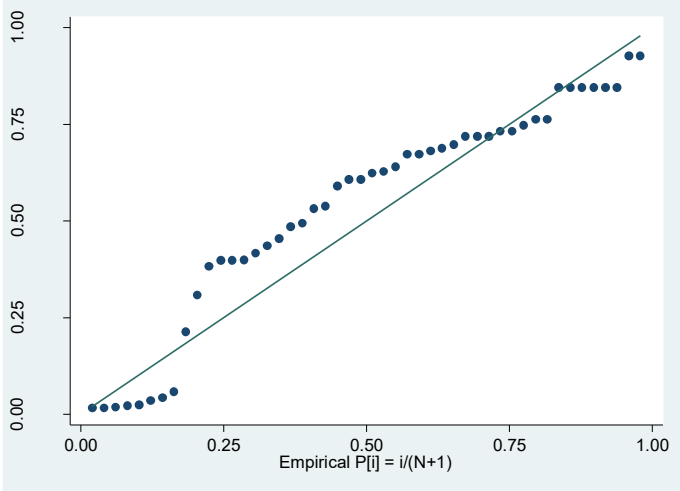
Source: Computed by the authors using Stata 14.

CTR



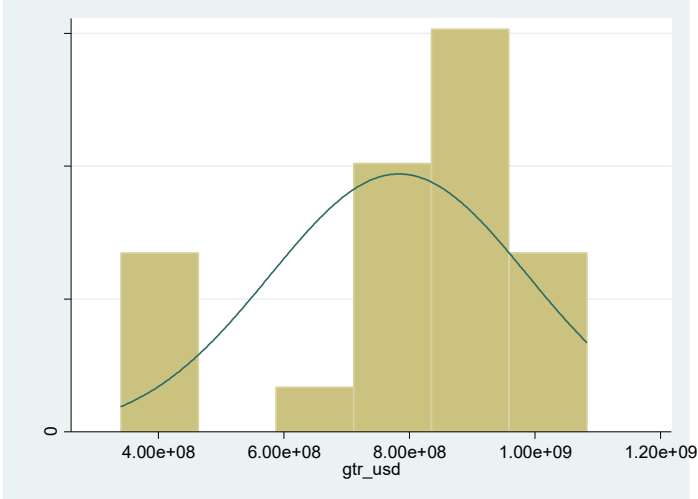
Source: Computed by the authors using Stata 14.

Table A2: Normal a plots – GTR



Source: Computed by the authors using Stata 14.

GTR



Source: Computed by the authors using Stata 14.

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