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# THE VALUE ADDED TAX (VAT) GAP ANALYSIS FOR UGANDA





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# **THE VALUE ADDED TAX (VAT) GAP ANALYSIS FOR UGANDA**

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## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>2</b>
<b>1. BACKGROUND</b>	<b>3</b>
<b>2. ESTIMATION AND EVALUATION OF THE COMPLIANCE GAP</b>	<b>3</b>
A. Definitions and Operationalization	3
B. VAT Compliance Gap in Uganda	4
C. Composition of the VAT Compliance Gap	5
<b>3. ESTIMATION AND EVALUATION OF THE VAT POLICY GAP</b>	<b>9</b>
A. Definitions and Methodologies	9
B. VAT Policy Gaps in Uganda	9
<b>4. APPLICATION OF RESULTS FOR VAT GAP</b>	<b>11</b>
A. Changes in C-Efficiency Ratios in Uganda	11
B. Comparison of VAT Gap Results with Other Measures	12
C. Import VAT and Domestic VAT	12
D. Cash Collections and Accruals—Surcharge and Interest	12
<b>5. CONCLUSIONS AND POLICY OPTIONS</b>	<b>13</b>
<b>REFERENCES</b>	<b>13</b>
<b>APPENDIX I. THE VAT-GAP MODEL AND METHODOLOGY</b>	<b>14</b>
A. Introduction	14
B. Estimating potential value-added tax revenue	14
C. Measuring Actual Collections	17
<b>APPENDIX II. APPLICATION OF THE TAX GAP MODEL TO UGANDA</b>	<b>18</b>
A. Introduction	18
B. VAT GAP Model for Potential VAT Revenues	18
C. Measurement of Actual Collections for VAT	19
D. Data Used in the VAT gap Model	19
<b>EPRC RESEARCH SERIES</b>	<b>22</b>

## EXECUTIVE SUMMARY

Uganda's public expenditure is growing at a fast rate due to the need to finance her National Development Plan (NDP) with the goal of attaining high middle income country status as envisioned in the *Vision 2040*. Consequently, Uganda's stock of public debt, both domestic and external, to finance the NDP has increased significantly. This has been exacerbated by significant reduction in aid due to austerity measure taken by development partners to contain the impact of the 2009 international financial crisis that constrained fiscal space significantly. In this regard, Uganda has made commitments to step up its efforts to mobilise domestic resources to finance the NDP. Owing to its relative efficiency and effectiveness, the Value Added Tax (VAT) has been identified as one of the key tax head that could boost domestic resource mobilisation. However, the revenue productivity of Uganda's VAT, as measured by its "C-efficiency", is low when compared with other Sub-Saharan African countries. It is on this backdrop that this paper provides a comprehensive quantitative analysis of the gap between potential revenues and actual VAT collections, known as the compliance gap. This analysis generates evidence for Uganda Revenue Authority (URA) to monitor and identify what is contributing to its VAT gap. In addition, this paper estimates the policy gap. The policy gap refers to the impact on the potential yield of the tax due to exemptions, zero ratings, and other reductions to the potential tax base.

### *Main findings and Policy Recommendations*

**The compliance gap is estimated to be between 39 percent and 30 percent of potential VAT revenues during the period 2009/10–2016/17, and peaking in 2010/11.** The estimated gap is higher than the typically observed levels in Sub Saharan countries and near to the levels in Latin American countries. The estimated compliance gap increased to 64 percent of potential revenue in 2010/11, largely due the significant reduction in imports during the 2010/11 election season, the lag effects of the global financial crisis, the effects of rebasing the economy from 2005/06 to 2009/10 and potential loss of information during the switchover from a manual VAT system to an e-tax system. The gap has since gradually decreased to 30 percent of potential VAT revenues. The size of compliance gap relative to GDP was between 2.3 percent and 3.6 percent of GDP.

**The VAT policy gap and the part of the gap explained by the policy gap due to VAT tax expenditures such as exemptions and reduced rates is lower than the VAT compliance gap in Uganda.** The policy gap shows the efficiency of VAT policy structure by calculating the difference between theoretical revenue given a hypothetical policy framework and potential revenue given the current policy framework. The policy gap is calculated to be between 1.1 percent and 0.5 percent of GDP in 2009/10 and 2016/17 respectively. The current VAT expenditures are mainly associated with hard-to-tax sectors, and substantial revenues from these sectors could not be expected without having more efficient revenue administration.

**The VAT c-efficiency ratio in Uganda has been in an increasing trend from 25.9 percent in 2009/10 to 31.9 percent in 2016/17 due to the decrease of both compliance gap and policy gap due to tax expenditures.** The changes in compliance gaps and policy gaps are due to reforms and measures at URA and policy choices, such as increasing the VAT threshold.

**There is a need to change the current system of excess credit returns and refund claims to reduce compliance risks.** The current approach that checks for consistency between refund and claim without restricting the accumulation of carried forward credit presents a significant fiscal risk. Restriction of accumulated excess credits could close the compliance gap and increase revenues in the short term.

**Manufacturers were found to have large compliance gaps.** Large deferments allowed to importers, particularly in the manufacturing sector, also present a risk. There is a need to collect data on deferments allowed to importers, particularly in the manufacturing sector. Prevalent deferments with attendant low levels of voluntary compliance and weak monitoring can exacerbate VAT compliance gaps.

## 1. BACKGROUND

Uganda's public expenditure is growing at a fast rate due to the need to finance her National Development Plan (NDP) with the goal of attaining high middle income status as envisioned in the *Vision 2040* (Lakuma and Lwanga 2017). At the same time donor support for development projects is reducing significantly due to, among other factors, impact of the 2009 financial crisis and the resulting austerity measures in donor countries. Consequently, Uganda's stock of public debt, both domestic and external, has increased significantly during 2010-2017. In order to check the rising public debt, Uganda has made commitments to step up efforts to mobilise domestic resources. However, Uganda's ratio of tax revenue to Gross Domestic Product (GDP) remains at approximately 14 percent (in 2016/17), which it is still below the Sub-Saharan Africa (SSA) average of 16 percent (Lwanga *et al.*, 2018). This calls for many reforms particularly the rationalisation of the key tax heads, especially the Value Added Tax (VAT), to improve on tax collection efficiency and effectiveness. The VAT has been the best performing tax head contributing up to 26 percent of Uganda's tax revenue (Lakuma and Lwanga, 2017). However, the revenue productivity of Uganda's VAT as measured by its "C-efficiency" value—the ratio of VAT revenue to the product of the standard rate and final consumption—is low when compared with other Sub-Saharan African countries (Hutton *et al.*, 2014).<sup>1</sup>

It is on this backdrop that this paper provides a comprehensive quantitative analysis of the gap between potential revenues and actual VAT collections, known as the compliance gap. Using a value-added approach that allows for a breakdown of the compliance gap by sector of economic activity, this analysis generates evidence for Uganda Revenue Authority (URA) to monitor and identify what is contributing to its VAT gap. We also present an estimate of the level and recent trends of the tax gap for VAT in Uganda. For that purpose, available national account data was used to quantify the potential revenues under the current Ugandan VAT legislation. These potential VAT

revenues were compared with the actual VAT receipts generated from underlying economic activities by using individual taxpayers' declarations and transactions. The difference between potential revenues and actual collections represents compliance gaps showing the degree of noncompliance of taxpayers.<sup>2</sup> In addition, this paper estimates the policy gap. The policy gap refers to the impact on the potential yield of the tax due to exemptions, zero ratings, and other reductions to the potential tax base.

The rest of the paper is structured as follows: Section 2 presents the estimation and evaluation of the compliance gaps; section 3 presents policy gaps; section 4 applies the results of section 2 and 3 to explain the collection gap/"C"- efficiency, while section 5 presents the conclusions and policy recommendations.

## 2. ESTIMATION AND EVALUATION OF THE COMPLIANCE GAP

### A. Definitions and Operationalization

#### Estimating the VAT compliance gap

As earlier mentioned for any given year, VAT compliance gap is the difference between actual revenues collected and the potential revenues that could have been collected given the policy framework that was in place during that year. In principal this can be split into the *collections gap*, the amount of declared and assessed tax not collected; and the *assessment gap*, the amount of tax due that was not declared or assessed. Estimates for potential collections are calculated for the years 2009/10 through 2016/17 by using the 2009 supply-use statistical tables and national accounts data. This analysis measures the VAT compliance gap at a specific date from tax record data available in December 2017.<sup>3</sup> Therefore, the value of the compliance gap includes the effects of filing for past periods, assessments and collections of arrears.<sup>4</sup>

2 The relationship between the compliance gap, the policy gap, and the overall tax gap is discussed in Appendix 1 and II. For a more complete discussion on the relationship between C-Efficiency, the compliance gap, and the policy gap see DeMooj and Keen (2012).

3 Measuring of VAT compliance gap at filing date was not possible due to a lack of data. Nevertheless, measuring VAT compliance gap at filing date is a good proxy for the level of voluntary compliance by taxpayers, i.e. amounts declared and paid by then without direct interventions by the revenue authority

4 See Appendix 1 and II for a formal stipulation of the methodology

1 See Hutton *et al.*, (2014) for a ranking of VAT C-efficiency in Sub-Saharan Africa (Sub-Saharan Africa average - 48.7%; Burundi - 81.7%; Ghana - 41.1%; Kenya - 44.4%; Rwanda - 41.7%; Senegal-73.2%; South Africa - 86.6%; and Tanzania - 45.7%



The actual collections for each sector are derived from cash receipts less the refunds paid. Similarly, VAT receipts are used to measure accrued revenue, which is accrued receipts less accrued net excess credits at the individual taxpayer level. The VAT legislation for each year is applied to the VAT base modelled from the statistical data. After the introduction of VAT in 1996, there have been consecutive changes in the VAT act in Uganda including changes to the VAT threshold in 2012/13 and the list of exempt and zero rated goods and service in 2012/13 and 2015/16.<sup>5</sup>

Future revisions of Uganda’s Supply Use Table’s (SUT) and other data may necessitate corresponding revisions of estimated potential VAT gap values. The extrapolation of the SUT 2009/10 tables to 2015/16 was implemented using the annual ratio of outputs and inputs in each sector.<sup>6</sup> The sectoral contribution to the Gross Domestic Product is estimated by the Uganda Bureau of Statistics (UBoS) statistical abstracts and the Ministry of Finance, Planning and Economic Development (MoFPED) in the background to the budget. However, there is a risk that these estimates do not fully capture the year by year structural economic changes. It is necessary to review potential revenues

and gaps when newer SUT’s become available from UBoS.

Actual VAT was measured as a combination of accrued net revenue and assessments—basically using payments data for debits and assessments for credits. This measure is designed to achieve the best measure for underlying taxpayers’ compliance. If the creation of excess credits to be carried forward balances out with the use of those excess credits, in the long run this measure will average out to the same value as net revenue. Given that this measure is a combination of accrued net revenue and assessments, it is necessary to consider an adjustment for the amount of offsetting between excess credit and tax liabilities in different periods. This is important given that Uganda allows or requires some or all taxpayers to carry-forward excess credit. This offset amount should be regarded as additional VAT payments, because the use of excess credit to offset a tax liability is in essence equivalent to a cash payment by the taxpayer.

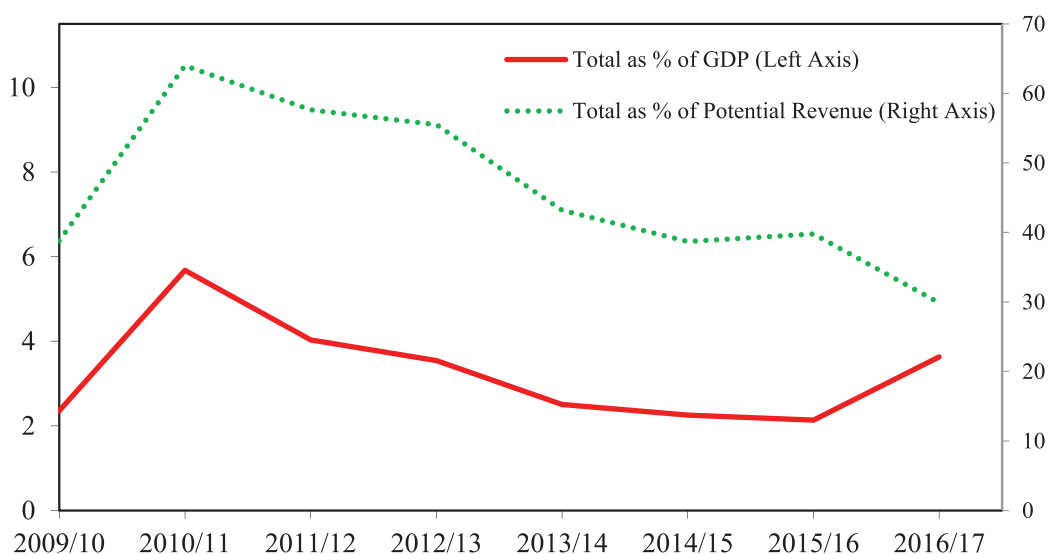
### B. VAT Compliance Gap in Uganda

The compliance gap increased from 39 percent in 2009/10 to 64 percent of potential VAT revenues and from 2.3 percent to 5.7 percent of GDP in 2010/11 (Figure 1). This is due to several factors key among them: the significant reduction in imports during the 2010/11 election season, the lag effects of the global

5 For example, midstream petroleum operations were required to register as taxable persons under the Act in 2016. Secondly, compact fluorescent bulbs and LED lamps or bulbs were removed from the list of exempt goods. Thirdly, persons engaged in business process outsourcing were added to claim input VAT on imported services. Fourthly, specified agricultural processing machinery were added on the list of exempted supplies (see GoU, 2017).

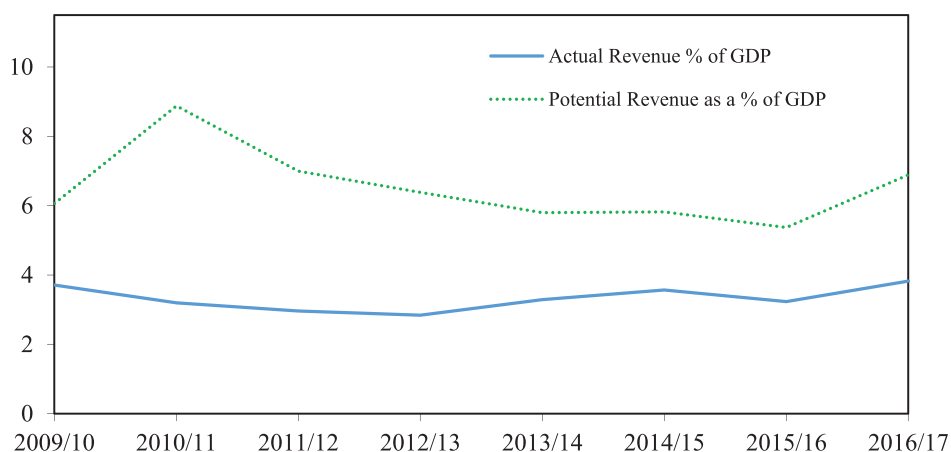
6 See European Commission (2008).

Figure 1: Compliance Gap, 2009/10–2016/17



Source: Author’s Calculation using data from URA

Figure 2: Potential VAT and Actual VAT Collection, 2009/10–2016/17



Source: Author's Calculation using data from URA

financial crisis, the effects of rebasing the economy from 2005/06 to 2009/10 and potential loss of information during the switchover from a manual VAT system to an e-tax system.

After 2010/11, the gap decreased significantly dropping to 30 percent of potential VAT revenues and 3.6 percent of GDP in 2016/17. In 2010/11, a steeper decline of actual VAT collections compared to potential revenues caused an increase in the compliance gap (Figure 2). In 2010/11, actual VAT collections declined from 3.7 percent in the previous year to 3.2 percent of GDP while potential VAT was 8.9 percent. In addition, the compliance gap was at its highest level of 5.7 percent of GDP. After 2010/11, potential VAT revenues relative to GDP stayed between 7 percent and 6.8 percent of GDP, while VAT collections gradually increased from 2.9 percent to 3.8 of GDP resulting in a gradually decreasing trend of compliance gaps after 2010.

### C. Composition of the VAT Compliance Gap

#### *Changes in potential VAT revenues*

Figure 2 shows that potential VAT revenue increased sharply in 2010/11 but decreased in 2011/12 and stabilized at around 7 percent of GDP. The sharp increase in potential VAT in 2010/11 was caused by three factors: [1] changes in the size of the tax base relative to GDP due to the rebasing exercise, [2] fall in input VAT tax credit claims for capital formation and

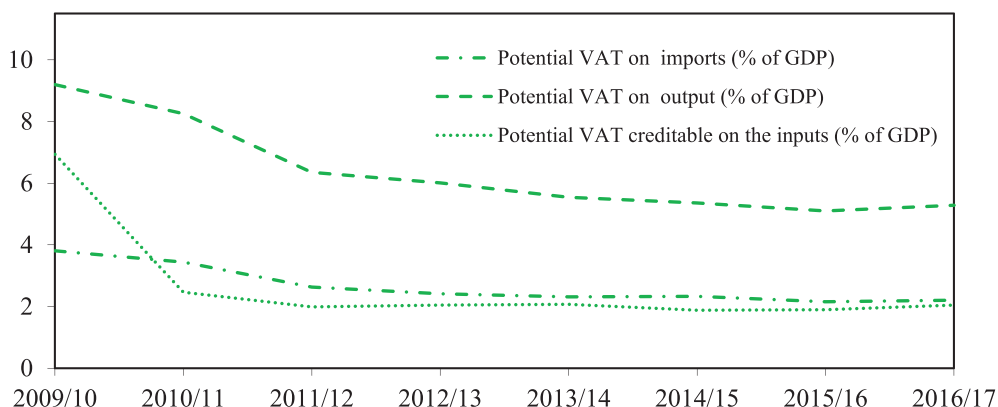
[3] stabilization of output eligible for VAT.<sup>7 8</sup>

However, potential VAT revenue gradually reduced from 2011/12 due to slower changes in final consumption and imports relative to GDP (Figure 3). In addition, the fluctuation of output, imports and tax credits exaggerated the movements of potential VAT revenues. When a decrease in the ratio of output and imports to GDP is larger than a decrease in the ratio of input tax credits to GDP, the potential VAT revenues to GDP ratio tends to become smaller. This is because potential VAT is estimated as the sum of import VAT plus domestic VAT calculated on domestic value added production minus input tax credit on inputs. The same chart shows that from 2010/11, the ratio of potential input VAT credit to GDP and potential VAT on imports stabilized at about 2 percent of GDP. The stagnation of potential import VAT and input VAT credit caused the observed decrease in potential VAT revenues between 2011/12 and 2016/17. The VAT law in Uganda allows for input tax credits for capital formation to be carried forward. The effects of allowing earlier recovery of input tax credits are estimated to be a reduction of potential VAT revenues by an average of 2.1 percent of GDP from 2011/12 to 2016/17.

7 The rebasing exercise included activities, such as mobile money, that were previously not being captured in the calculation of GDP using the 2005/06 base year (see UBoS, 2010)

8 Point number 2 and 3 are observed from the VAT data

Figure 3. Potential VAT on Imports, Output and VAT Credit on Inputs Relative to GDP



Source: Calculations based on data from URA

**Changes in actual VAT collections**

Since 2010/11, the decline in excess credit used to offset positive VAT liability has been modest (Figure 4). This signals a large claim on URA by taxpayers in a debit position. On the other hand, cash payments by taxpayers have stagnated at less than 1 percent of GDP between 2010/11 and 2016/17 despite the sharp decline in excess credit used for tax payment between 2010/11 and 2011/12.<sup>9</sup> As indicated in Figure 3, the proportion of excess credit for taxpayers with a credit has remained stable at 3 percent of GDP in all the years under review. The stability of excess credits is attributable to excess credit claims in domestic VAT owing to losses, penalties collected without authority and excessive and wrongful VAT collection.

**Actual collections and potential VAT by sectors**

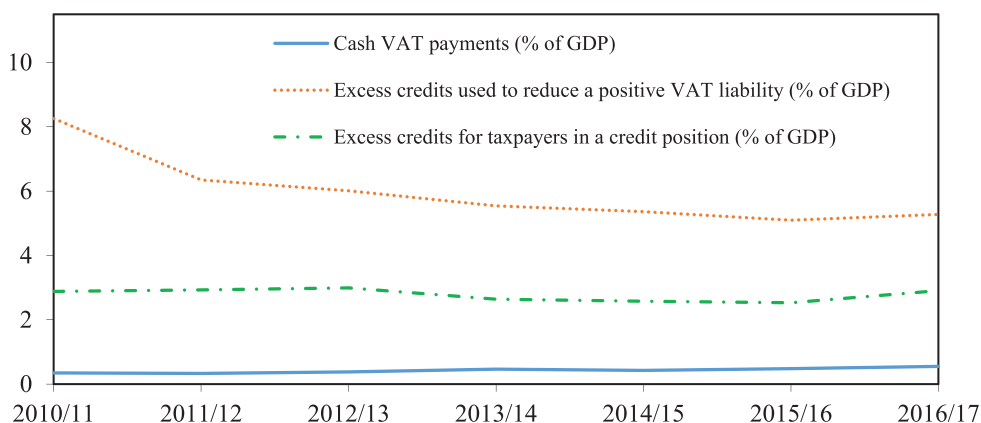
VAT collections from taxpayers in the manufacturing

sector alone account for 43 percent of VAT revenues (Figure 5). Manufacturing combined with wholesale and retail, information, communication, and the electricity sector account for 85 percent of VAT revenues. At the other end of the scale, transactions related to agriculture, mining, water, construction, education, health and arts have either been zero-rated or exempted, VAT payments from these sectors are negligible.

Figure 5 also shows that the contribution of the **mining and quarrying** sector to actual VAT collection increased from a - 0.7 percent of total collection in 2010/11 to 0.2 percent in 2016/17 following the abolition of the exemption to mining and quarrying industry in the second and third schedule of the VAT act. In this regard, the importation of minerals and equipment intended for use in the mining and quarrying is taxable. In addition, there was a reduction in offset claims by the mining sector between 2010

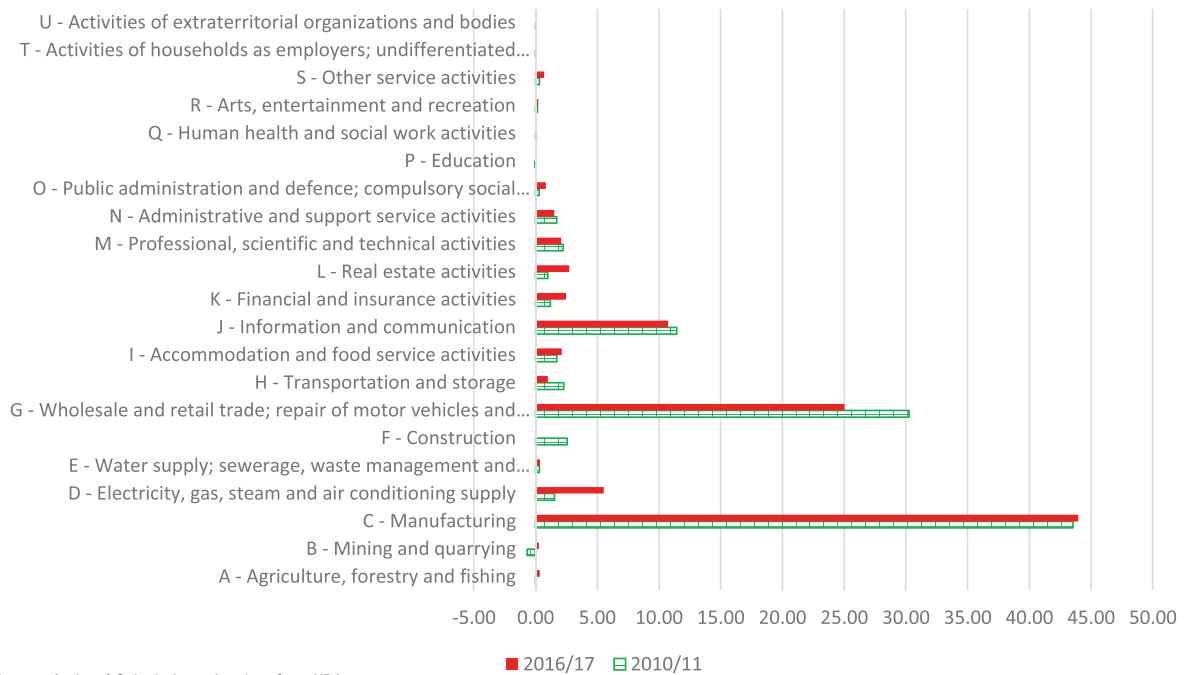
<sup>9</sup> The decline was after the introduction of computerization/the e-tax platform

Figure 4: Cash VAT Payments, Excess Credit Used to Reduce VAT Liability and Declared Excess Credit



Source: Authors' Calculation using data from URA

Figure 5: Sector Share of Actual VAT Collections (% of Total collection)



Source: Authors' Calculation using data from URA

and 2016 owing to a 16 percent reduction in excess credit carried forward from the previous period.

**Electricity, gas, steam and air conditioning** accounted for 5.5 percent of total VAT collections in 2016/17, a 4 percentage point rise from 2010/11 (Figure 5). The increase was due to a significant increase of imported supplies in the sector between 2010/11 and 2016/17. Although excess credit claims in the sector more than doubled during the period under analysis, VAT cash payment compensated for this increase with a fourfold growth. However, the electricity sector is exempted from paying VAT on residual oils for use in thermal power generation (URA, 2017). This exemption accounts for 30 percent of VAT revenue forgone from exempt supplies during the period under analysis (URA, 2017). The exemption of electricity inputs (residual oils) has a significant cascading effect on VAT tax payers who are expected to pay VAT for the total value of their outputs. This includes the value of electricity at the end of the VAT chains if their outputs are taxable.

Actual revenues fell in the **construction; wholesale and retail trade; transportation and storage** sectors during the period between 2010/11 and 2016/17. In particular, while the construction industry underwent a significant increase in import related VAT, there

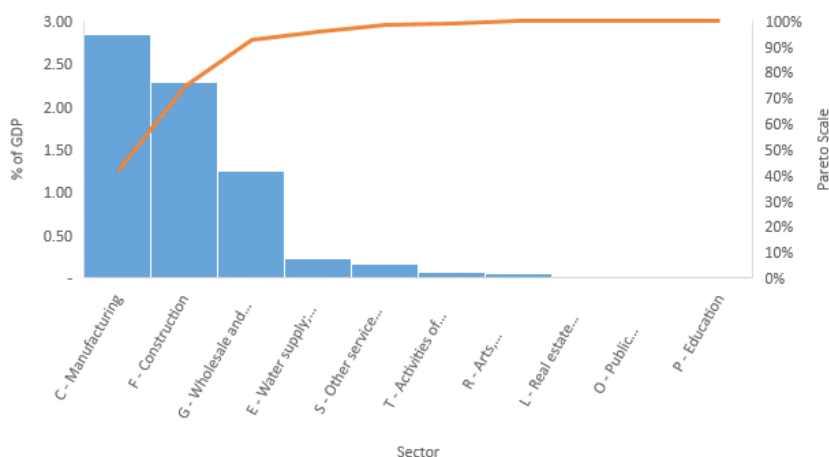
was an 80 percent fall in cash payments remitted to settle VAT debit during the period under analysis. This decrease is related to the 85 percent increase in the VAT credit claims by the construction sector during the period under analysis.

A further disaggregation of the actual collections by URA reveals that despite a 72 percent increase in import VAT contribution for the wholesale and retail sector between 2010/11 and 2016/17, the sector registered a 5 percent drop in its contribution to VAT collection (Figure 5). This is related to the 85 percent increase in excess credit claims by the sector during the period under analysis.

The transportation and storage sector was exempted from VAT in 2010/11 (URA, 2013). As illustrated in Figure 5, the sector lost 1.3 percentage points in actual VAT between 2010/11 to 2016/17. Given the exemptions, VAT emanating from imports fell by 52 percent and excess credit claimants increased by 32 percent during the period under review. Nevertheless, VAT cash payments more than doubled over the same period.

**Potential VAT revenues** in the manufacturing (C), construction (F), wholesale and retail trade (H), water supply (E), other social services (N) and

Figure 6: Sectoral Compliance Gap of the period 2009/10 to 2016/17 (% of GDP)



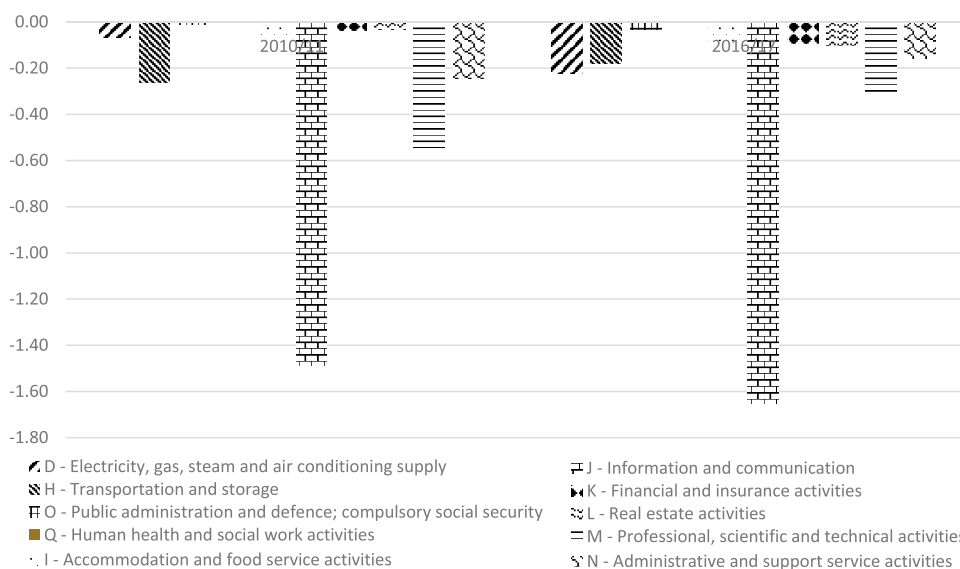
Source: Authors' Calculation using VAT data from URA

arts, entertainment and recreation ( R ) sectors are estimated to be greater than actual collections (Figure 6).<sup>10</sup> Notwithstanding the inherent uncertainties over the precise level of the gaps for each individual sector (for example due to classification differences, the impact of registration thresholds or special treatments by some enhancement laws), this is a reasonable set of findings. Generally, these sectors with high levels of sales to final consumers often present higher compliance risks. For the manufacturing sector, the deferments of import VAT has a significant impact on reducing actual collections compared with estimated potential revenues.

Meanwhile, potential VAT revenues in the electricity (D), transport and storage (H) accommodation and foodservices (I), telecommunication (J) sectors, financial and insurance (K), real estate activities (L), Professional, scientific and technical activities (M) and administrative and support service activities (N) are estimated to be less than actual collections (Figure 7). This is clearly an unlikely scenario in reality, and it is possible that potential revenues have been under-estimated as a result of differing classifications by the SUT and VAT registration. It is likely that vendors are engaged in providing additional goods and services beyond their primary business (such as sales of appliances and devices), which would be recorded separately in their respective sectors in the SUT. There is no available data to infer the reasons for

<sup>10</sup> The red line in the pareto graph represents the sectors that explain 80 percent of the problem/issue of interest. The others sectors contribution to the problem/issue are assumed to be negligible.

Figure 7: A select sectoral Compliance Gap 2010/11 and 2016/17 (% of GDP)



Source: Authors' Calculation using data from URA

the difference between potential and actual revenues in these sectors, but suppliers in these sectors are typically large businesses falling within the purview of the large taxpayers department. As such, there is a need to assess each vendor’s compliance position individually.

### 3. ESTIMATION AND EVALUATION OF THE VAT POLICY GAP

#### A. Definitions and Methodologies

There are various possible measures (definitions) of potential VAT revenues, which lead to different measures of the gaps (Ueda and Thackray, 2015). This paper uses the difference between potential VAT revenue under a reference (theoretical) VAT structure applying the standard rate to all final consumption and actual revenue. The ratio of actual VAT collections to potential revenue under a reference structure is the C-efficiency ratio. While a theoretical policy framework in which all final consumption (as measured in national accounts) is taxed at a standard rate would be difficult to implement, this measure is nonetheless important because a gap value arrived at with this measure is comparable to the value arrived at using C-efficiency. In turn,

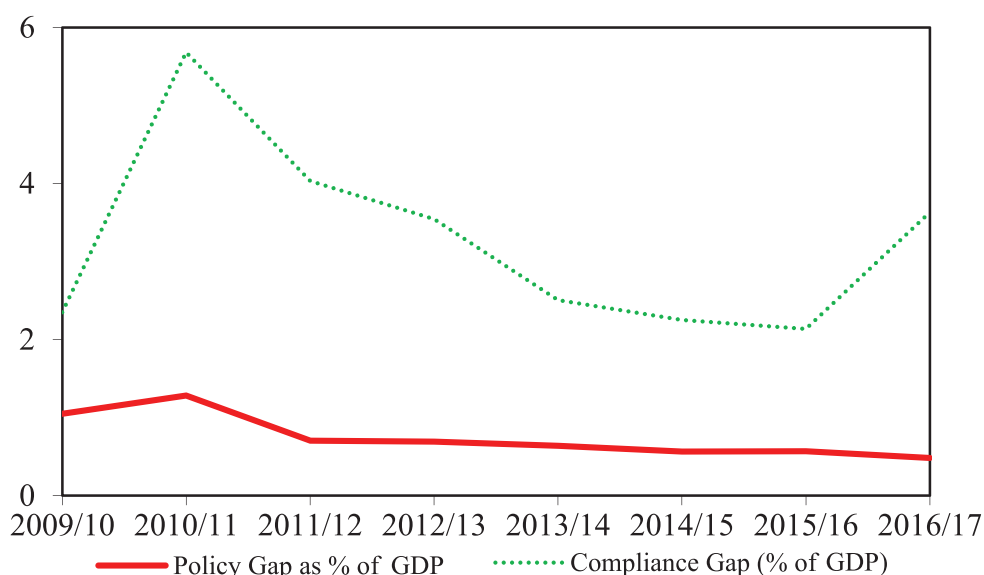
the C-efficiency ratio is an important metric because it is straightforward to calculate on a consistent basis in different countries, allowing comparisons with peer administrations.

#### B. VAT Policy Gaps in Uganda

The policy gap due to VAT policy gaps in Uganda is below the VAT compliance gap (Figure 8). The chart shows that the policy gap in Uganda is equivalent to 1 percent of GDP. The relative sizes of the compliance gap (2 to 3 percent of GDP) have stayed larger than the policy gap.

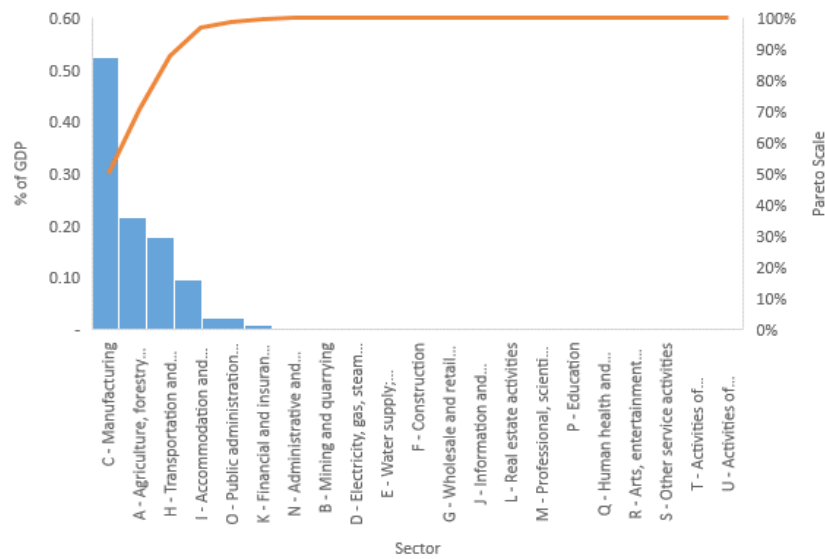
The policy gap is largely due to VAT expenditure, and it mainly consists of exemptions for the manufacturing, agriculture and transportation sectors (Figure 9). Further aggregation on table A1 shows that the supply of petroleum fuels for industrial use account for more than two thirds of tax expenditures in the manufacturing sector. In the transport sector, exemptions granted to trailer suppliers and the zero rating of international transport are key areas of examination by Ministry of Finance. Meanwhile, exemptions granted to unprocessed agricultural products, poultry and livestock feed and cereals produced in Uganda and the zero-rating of processed and unprocessed milk explain more than 80 percent of tax expenditure in the

Figure 8. VAT Policy Gap, 2009/10–2016/17



Source: Authors’ Calculation using data from URA

Figure 9. VAT Policy Gap by sector of the period 2009/10 to 2016/17



Source: Authors' Calculation using data from URA

agriculture sector.<sup>11</sup>

Nevertheless, the exemptions of unprocessed agricultural products increase the incidence of tax in that sector because this exemption is applied to business-to-business transactions. This enables the URA to block the recovery of input tax by producers of unprocessed agricultural goods, and this becomes a net VAT receipt.<sup>12</sup>

However, the food manufacturers are the largest purchasers of agricultural products in Uganda. If the exemptions were to cascade downstream, the VAT foregone in the agriculture sector would be recovered in manufacturing activities. Nevertheless, the manufacturing sector was found to have large compliance gaps, well over 45 percent of total collection in 2016/17 (see Figure 5). This means that the VAT exemption on the supply of agricultural goods is not recovered in the manufacturing sector. This provides a basis for the removal of tax expenditure in the agriculture sector, especially considering that the

compliance gap in manufacturing is 2.8 percent of GDP (see Figure 6).<sup>13</sup>

The exemptions on business-to-business transactions in agriculture are a consequence of poor VAT design in various dimensions. Firstly, agricultural exemptions trap input tax on intermediate consumption and increase effective rates of tax in downstream sectors, particularly the manufacturing sector. Secondly, such exemptions increase both the complexity of tax administration and compliance costs for both URA and taxpayers in the manufacturing sector. In this regard, the cascading effects of stuck input tax create opportunities and motivation for noncompliance in the manufacturing sector. Accordingly, large compliance gaps have been observed in the agriculture and manufacturing sector in Uganda (see Figure 9).

A disaggregation of data on the transport sector reveals that the removal of the exemptions in domestic passenger transport will increase net VAT receipts. The potential revenue gains from removing the current exemptions for passenger transport are positive and fairly constant over time averaging 0.2 percent of GDP in the years under review. While these revenue gains are significant, it's also important to remember that the sector is typically composed of small businesses that can be difficult and costly to administer. Since

11 It is important to note that the sum of the individual tax expenditure estimates on table A1 will not in general equal the policy gap in figure 7. This is because of potentially important interactions among the various exemptions and zero rates across sectors and commodities. The estimates of the expenditure presented here do not take into account the potential behavioral impacts of the exemption; they simply show the amount of tax potentially due on the activity currently taking place.

12 This consequence of the exemption of business-to-business transactions is also referred to as creating 'sticking' tax (i.e., the tax burden is not passed on by the purchasing business as output tax on supplies made by them), or 'cascading' input tax (because the non-recoverable input tax cascades down the supply chain).

13 There were other considerations in granting the agricultural sector VAT exemption. For example, the agricultural sector employs more than 70 percent of the population.

fuel is exempt from VAT—it amounts to approximately 14 percent of the sector’s total intermediate demand—this decreases the incentive for transportation operators to register and report taxable supplies as there is less input tax to recover.

## 4. APPLICATION OF RESULTS FOR VAT GAP

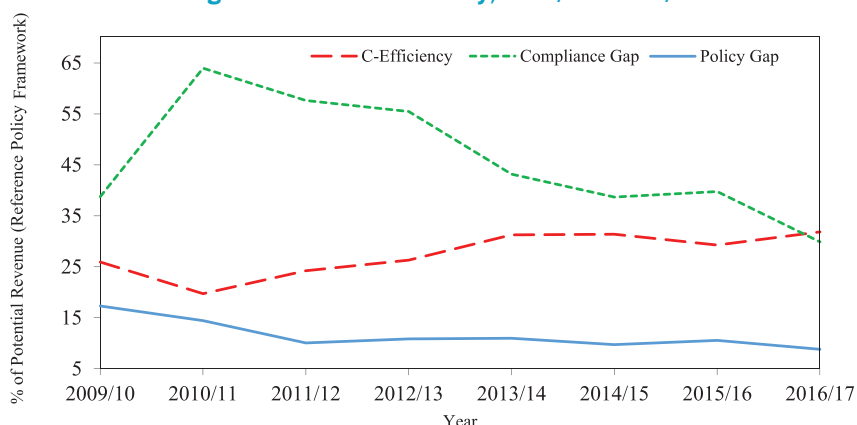
### A. Changes in C-Efficiency Ratios in Uganda

This paper examines C-efficiency by decomposing it into compliance and policy gaps as a proportion of the reference policy framework potential revenue. The decomposition of C-efficiency suggests that recent increases in C-efficiency have been caused by a combination of decreasing compliance gaps and policy gaps (Figure 10). Uganda’s C-efficiency has increased from 28 percent in 2009/10 to 31 percent in 2016/17. The decline of C-efficiency ratios in 2009/10 can be

explained by the increasing compliance gap. Figure 10 also illustrates the effect of the changes in the VAT threshold in 2015/16 that increased the C-efficiency ratio. Nevertheless, Uganda’s C-efficiency is still low when ranked with comparable nations (Hutton *et.al.*, 2014). The increasing trend of non-taxable final consumption constrains the increase of the C-efficiency ratio.

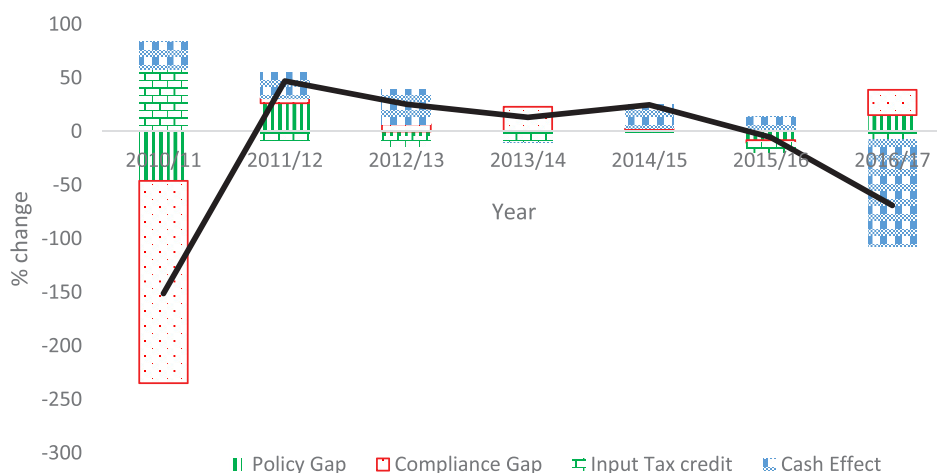
Figure 11 decomposes changes in C-efficiency and illustrates that the compliance gap decreased significantly more than the policy gap, offsetting the impact of increasing input tax claims (non-taxable final consumption) which would have otherwise reduced C-efficiency. From 2011/12, changes in timing for claiming input tax credit for capital formation has had a negative effect on the C-efficiency ratio, but the effect diminished in 2016/17. The decreasing trend of cash payments (deferred payment) has also decreased the C-efficiency ratio over the period under analysis.

Figure 10. VAT C-Efficiency, 2009/10–2016/17



Source: Authors’ Calculation using data from URA

Figure 11. Decomposition of Changes in C-Efficiency Ratios after 2009/10



Source: Authors’ Calculation using XXXX



## B. Comparison of VAT Gap Results with Other Measures

Hutton *et al.*, (2014) previously estimated the VAT compliance gap in Uganda from 2003/4 to 2012/13. The estimate was based on the same assumption used in this study, but does not take into account reforms implemented on the second and third schedule of the VAT act in calculating the ratios of exempt and zero rated goods and services on VAT-able output. In this regard, Hutton *et al.*, (2014) calculated the compliance gap to be an average of 6 percent of GDP and a policy gap averaging 1 percent of GDP. While the policy gap in Hutton *et al.*, (2014) is generally consistent with this paper's results, the compliance gaps are larger than the one estimated herein. Nevertheless, both studies identify manufacturing and construction as a source of significant compliance gaps; and manufacturing, agriculture, transport and accommodation as sources of policy gaps.

## C. Import VAT and Domestic VAT

This paper considered the decomposition of compliance gaps and potential VAT revenues into import VAT and domestic VAT when analysing administrative performances and sector collections. However, the current available data sets and existence of deferments and exemptions complicate the implementation of a reliable analysis. In this paper, potential VAT revenues are calculated from the SU table of 2009/10.<sup>14</sup> However, the comparison between potential import VAT revenues and actual import VAT does not yield the compliance gap for import VAT because of the various deferments allowable for import VAT. Deferments allow importers to delay the timing of declarations and payments of import VAT thus changing them into domestic VAT liabilities, and in so doing reducing the adverse cash flow impact of paying VAT at import and later recovering it as input tax credits.

While deferments may not necessarily cause significant risks for compliance, prevalent deferments with attendant low levels of voluntary compliance and weak monitoring can exacerbate VAT compliance

gaps. Since the sector analysis in Section 2C and 3B indicated larger compliance gaps in manufacturing/downstream industries, insufficient controls of deferments may allow revenue losses from every stage of supply chains rather than at just the business to consumer stage.

Another category that is difficult to monitor appropriately is purpose-specific (or purchaser-specific) exemptions for imported goods. Purpose-specific exemptions are applied to specific purchasers, particularly charitable organizations and government. While purpose specific treatments aim to reduce or eliminate tax burdens on selected institutions (or the final purchaser), they may increase the administration and audit costs emanating from the need to check that the imported goods are finally purchased by qualifying institutions. If these treatments are weakly monitored, loopholes in VAT collections can be created.

## D. Cash Collections and Accruals—Surcharge and Interest

This paper calculates the compliance gap by estimating accrued (reallocated) collections of principal tax liabilities with potential revenues. In this regard, the paper does not include collections for surcharges and interest. This is based on the principal that collections of surcharges and interests reflect secondary effects of taxpayers' compliance, and these values could not be related with potential revenues derived from statistical data.<sup>15</sup>

There is need to monitor data on payment compliance for surcharges, interests and principal tax liabilities in Uganda in order to track cleared (paid or offset) values for surcharges and interest and values for delinquent tax liabilities during a year. This is because interest charges for unpaid tax and surcharges can accumulate to levels that cannot be easily recovered. This calls for better management of debt and enforceable rules for interest charges for arrears.

<sup>14</sup> As the sum of potential import VAT derived from aggregate import data and potential domestic VAT derived from domestically produced aggregate value-added

<sup>15</sup> Therefore, the collection gaps presented in Section 2.C indicate payment compliance for the principal tax liabilities, and do not reflect payment compliance for surcharges and interests.

## 5. CONCLUSIONS AND POLICY OPTIONS

This paper has showed that Uganda's VAT compliance gaps are large but have been reducing over time as a percentage of potential VAT, from around 40 percent in 2009/10 to 30 percent of potential VAT revenues in 2016/17. This result is consistent with Uganda's low but improving tax efficiency relative to its regional peers. As a percentage of GDP, the compliance gap was around 3.6 percent of GDP in 2016/13. This decrease reflects the drop in potential VAT as a percentage of GDP over time. The sectoral decomposition of the VAT gap suggests that manufacturing, construction, wholesale and retail trade, water supply, other social services and arts, entertainment and recreation sectors present a significant compliance risk. This calls for investigation and audit of these sectors.

The VAT policy gap in Uganda is lower than the compliance gap, around 1 percent of GDP. While there are a number of exemptions and zero-rates in Uganda's VAT, their effect on revenue is relatively low. The policy gap is reduced significantly by negative tax expenditures in agriculture due to the non-recovery of input tax in supply chains leading to taxable outputs (also known as cascading). However, manufacturers, who are the largest purchasers of agricultural products in Uganda, were found to have large compliance gaps, which means that the VAT exemption on the supply of agricultural goods is not recovered in the manufacturing sector. This provides a basis for removal of tax expenditure in the agriculture sector.

There is a need to change the current system of excess credit returns and refund claims to reduce compliance risks. The current approach that checks for consistency between refund and claim without restricting the accumulation of carried forward credit presents a significant fiscal risk. Restriction of accumulated excess credits could close the compliance gap and increase revenues in the short term.

There is a need to collect data on deferments allowed to importers, particularly in the manufacturing sector. While deferments may not necessarily cause a significant risk for compliance, prevalent deferments

with attendant low levels of voluntary compliance and weak monitoring can exacerbate VAT compliance gaps.

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## APPENDIX I. THE VAT-GAP MODEL AND METHODOLOGY

### A. Introduction

This paper followed Ueda and Thackray (2015) to estimate potential tax revenues from macroeconomic data, and finding out the magnitude of a given gap by comparing it to appropriately evaluated actual (micro data) tax revenues. In order to analyse the gap, the paper broke down both revenue data into economic sectors and traced the trend of the gap over time. This enabled the paper to capture the reasons for fluctuations in the overall gap indicator, whether it was due to changes in potential revenue or to compliance issues in specific sectors.

The difference between the potential revenue under the current tax rules with full compliance and the actual revenue is called a compliance gap. This paper treated this gap as a representative indicator, and analysed its level and changes. The policy gap was estimated as the difference between potential revenue from a reference policy framework and potential revenue from the current policy framework. This measure provided a supplementary component to help explain the level and changes of potential revenues and gaps.

The general approach of this paper's methodology was to estimate the size of the compliance gap on a top-down basis. The paper set out to estimate the total size of compliance losses by comparing actual VAT collections to potential VAT collections estimated from economic statistics covering the whole of the VAT tax base. The critical advantages of this approach was that (a) it covered all compliance losses, whether or not they were separately identified; and (b) the results were comparable to the costs of tax expenditures and reliefs that constrain revenue mobilization. The alternative, bottom-up, approach of estimating losses of each behavioural component of the compliance gap individually can also be used to help identify drivers of the total gap.

### B. Estimating potential value-added tax revenue

Potential tax revenue can generally be calculated as the sum of the product of potential tax bases and

corresponding statutory tax rates. For VAT, there are several approaches to estimate the tax bases from macroeconomic statistics, e.g. from simply taking final consumption or by capturing the ends of VAT chains by looking at demand data.

This paper aimed to deal with each sector's value added, i.e., output minus input, as VAT tax bases and thereby tracked value added by each sector along the line of production chains to determine VAT due. Given that in Uganda's VAT systems there are a large number of different treatments for commodities and sectors (such as exemption and the application of different tax rates), this approach enabled the paper to directly reflect such a system in the estimation of overall potential tax revenues. This approach enabled the estimation of sectoral potential revenues and comparisons with actual sectoral tax collections, which enabled the identification of causes of the level and changes to the overall gap.<sup>16</sup>

#### Determining the corresponding actual value-added tax revenue

The next step was to measure the amount of actual VAT collections. Tax is obviously collected in cash and all tax authorities record yearly cash collections, netting out payments and refunds during the period. However, in this analysis it was important to compare the potential tax revenue with the amount actually collected out from that potential in order to correctly trace the relative changes in compliance. Since cash collection in a specific period does not necessarily correspond to the tax due that accrued in the same period, it was necessary to allocate the cash collection data to the periods in which the tax due actually

<sup>16</sup> It may also be possible to adopt other approaches, such as using detailed household surveys and demand data, depending on the nature and quality of available data in a specific country. The worth of any method depends on the quality of data, and alternative approach might produce more reliable estimate if the used data are more reliable than the value added approach. It should be noted that any approaches using macroeconomic statistics have error margins—due to simplifications in modelling and difficulty in measuring the full impact of the shadow economy. In addition, this kind of top-down approach in estimating potential revenues carries an inherent risk of overestimating potential VAT within the extant tax law because of tax avoidance activities and other questions of legal interpretation. Those may be technically complying with tax rules, but the reduction of revenue cannot easily be captured in the estimation. Without a specific adjustment, it would therefore be included in the compliance gap number, even though it requires a policy response or litigation, not administrative measures.

accrued.

In general, yearly cash collection was the most eye-catching data partly because total receipt of cash payments was one of the most reliable data sources. While this paper used cash collection data, it linked collected tax revenue and underlying economic activities. This was achieved through fully utilizing the vast volume of individual tax return and payment records available to URA. This procedure helped the paper to capture the real trend of the compliance gap without the effects of concurrent lags in payments and refunds. Where appropriate, the estimates were reconciled with cash-based estimates so as to allow tax administrations to better understand this linkage.

The tax collection data was sorted out into sectors in the economy, and compared to the potential revenues for each sector. Using sectoral collections data helped the paper to understand trends, by considering specific features. A comparison of potential VAT receipts against actual collections for each individual sector also allowed the paper to identify those sectors with larger compliance gaps, and thus some insight as to the nature and placement of non-compliance in Uganda.

### Relative size of 'compliance gap' to 'policy gap'

This paper treated the compliance gap as a representative indicator, and analysed its level and changes. As a further analysis, the magnitude of the compliance gap was compared with the impact of policy measures by using the indicators based on potential tax using the reference policy framework and the analyses of effects due to changes in tax policies. This paper provided this indicator as a 'policy gap'. This analysis can provide policy makers and administrators with a perspective on the necessary actions for revenue mobilization.

### The potential revenues model

$$PV^s = \sum_c (M_c^s \times \tau_c) \times r^s + [\sum_c (Y_c^s - X_c^s) \times \tau_c] \times r^s - [\sum_c (N_c^s - I_c^s) \times \tau_c] \times r^s \times (1 - e^s) \times \eta_c^s$$

$PV^s$  = the potential net VAT for a sector,  
 $M_c^s$  = imports by sector s of commodity c,  
 $Y_c^s$  = output by sector s of commodity c,  
 $X_c^s$  = exports by sector s of commodity c,

$N_c^s$  = intermediate demand (consumption) by sector s of commodity c,  
 $I_c^s$  = investment by sector s of commodity c,  
 $\tau_c$  = the VAT rate that applies to commodity c (zero if zero-rated or exempt),  
 $\eta_c^s$  = the proportion of input tax credits for commodity c by sector s allowed to be claimed,  
 $r^s$  = the proportion of output for a sector produced by registered businesses, and  
 $e^s$  = the proportion of output for a sector which is exempt output.

Values for each of these variables were determined as follows:

Y, X, M, N, and I: Data for these variables was obtained from their respective components in statistical supply-use (or input-output) tables of 2009/10. The data for the external trades, X and M, required some adjustment before being inputted into the model; this adjustment is described below.

$\tau_c$  : This is the first of the two "policy variables" in the model. The values for  $\tau_c$  were obtained from the tax rate structure for each commodity, except for trade services. The explanation and method for the trade services are described below. For the calculation of hypothetical revenues under reference tax structure, the standard rate was assigned to the full vector except for those supplies typically exempted internationally (margin-based financial services, life insurance, and residential rents).

$\eta_c^s$  : This is the second policy variable in the model. The values in estimating current potential revenues are determined by any specific statutory limitations on input tax credits, such as a general disallowance of input tax credits for restaurant meals. Such a disallowance would be indicated by a value of 0 for the commodity of restaurant meals across all sectors; the default value is 1. All values in are set to 1 for the calculation of revenues under reference tax structure.

$r^s$  : Estimates for the values for  $r^s$  are determined in conjunction with URA by making use of business

licensing data, or Customs transactions data.<sup>17</sup>

$e^s$ : The proportion of output for a sector which is taxable is a function of  $\tau_c$ . The values for  $e^s$  are determined by comparing the value of exempt output in a sector to the total output of the sector. That is,  $e^s = \sum_c (Y_c^s \times \tau_c) / \sum_c (Y_c^s)$  where  $\tau_c$  is a vector which distinguishes whether commodity  $c$  is exempt ( $= 1$ ) or taxable ( $= 0$ ).<sup>18</sup>

### Adjustments for variables X and M

Adjustments to the raw statistical data for exports and imports as supplied by the supply-use tables (or input-output table) was necessary. Specifically, the values for exports needs was adjusted to remove the value of domestic consumption by non-nationals. The value of consumption abroad by nationals, which was included in the values for imports was removed.<sup>19</sup>

### Determining the weighted average statutory rate for the output of the trade sector

To determine the value for  $\tau_c$  applicable to the retail and wholesale trade services, a weighted average statutory rate was determined based on the trade margins by commodity type. This rate was determined as follows:

$$\tau_\tau = \sum_c (K_c \times \tau_c) / \sum_c (K_c)$$

<sup>17</sup> There is an assumption here that the same value of  $r^s$  applies across Y, X, I, and N. It can be shown that this assumption is only of consequence if there are any significant differences between the level of  $r^s$  for Y and X. As the level of  $r^s$  is generally fairly close to one, the results are not that sensitive to this assumption. As such, while it might be more technically correct to come up with separate values for Y and X, this would most probably increase the time and effort required to construct the model with no discernible difference in the final results.

<sup>18</sup> This assumes that the proportion of inputs to outputs used in producing the taxable supplies and non-taxable supplies is identical. While this is most likely not the case for any individual taxpayer, many jurisdictions use just such an apportionment rule to determine the allowable amount of input tax credits for businesses making split supplies (taxable and exempt supplies). In such cases this model treatment would coincide exactly with the statutory requirement. In jurisdictions where taxpayers are allowed to apportion their supplies based on actual use,  $e^s$  could be determined by tax return data on the proportion of input tax being creditable to those sectors with exempt output presuming the required information is being captured on the return.

<sup>19</sup> In a best case scenario the supply and use tables will specifically include the data used for these out these special categories of imports and exports (domestic consumption by non-nationals, and consumption abroad by nationals) making it simple to adjust the tables to the definitions for VAT purposes. In cases where this specific data is not available, an approximation can be made by removing values for the import or export of services which are typically consumed at the place of supply—such as hotel and restaurant supplies, and local transportation supplies.

Where:

$\tau_\tau$  = the weighted average statutory rate for the trade services commodities,

$\tau_c$  = the statutory rate for commodity  $c$ , where  $c$  includes all commodities but the trade services commodities, and

$K_c$  = is the trade margins associated with commodity.

### Accommodating complexities in the policy structure

While the two policy variables  $\tau_c$  and  $\eta_c^s$  can be used to model most policy structures, occasionally, there were some circumstances which either required adjustments of inputs in the model, or adjustments of the structure of the model:

- a tax structure that has provisions which relate to a sector as a whole as opposed to a particular type of supply or commodity; for example an exemption which applies to the financial sector instead of particular financial services, and
- a tax structure that has special provisions for particular types of transactions; for example the zero-rating of certain otherwise taxable business-to-business transactions.

### Sector specific tax rates

Sector specific tax rates were accommodated by using a sector by commodity matrix of tax rates,  $\tau_c^s$ , instead of the simple vector in commodity space,  $\tau_c$ , for the treatment of the tax to be applied to output, and in the computation of input tax credits. The simple  $\tau_c$  vector of rates still applied against imports.

The calculation of  $e^s$  was also adjusted in such cases. Instead of using  $\sum_c (Y_c^s \times \tau_c)$ , to determine  $e^s$ , as specified in the equation above, the calculation included the term  $\sum_c (Y_c^s \times \tau_c^s)$ , where  $\tau_c^s$  is a matrix of specific vectors of ones and zeros, and one indicates an exempt commodity  $c$  for sector  $s$ —so  $\tau_c^s$  had a vector of zeros for any exempt sectors.

### Transaction specific treatments

Dealing with transaction specific treatments where a different rate schedule might apply to a supply depending on the nature of either the supplier or recipient generally requires additional data on the

value of these supplies. These specific treatments were not in fact accommodated in the model and were dealt with on the data side. There are two classes of these types of transactions, taxpayer to – taxpayer transactions, and taxpayer-to-final consumer transactions. These two classes of transactions required a separate treatment.

#### 1) Taxpayer-to-taxpayer transactions

There were two potential solutions to deal with this circumstance: the paper had an option of splitting the commodity into two component commodities based on their tax treatment, or ignoring such transactions. To split a commodity required adding a new commodity to the supply use tables and to the policy variables. Adjustments to both the output and input variables were also made. This treatment required data on the value of these transactions.

#### 2) Taxpayer-to-final consumer transactions

Again special tax treatments under this category required treatment on the data side. In this case the final estimates of the potential VAT from the retail sector were reduced by external estimates of the cost of the tax expenditure.

### C. Measuring Actual Collections

This paper measures actual tax collections from the same economic activities upon which potential revenues were estimated. The paper required reallocation of cash collection data into the periods in which tax due actually accrued.<sup>20</sup> These reallocated data are called ‘accrued collections’, formulated as follows.<sup>21</sup>

$$AV^s = C^s + P^s - R^s( +OP^s)$$

$AV^s$  = accrued VAT collection for the period,

$C^s$  = collections at customs in the period,

$P^s$  = payments received for the period,

$R^s$  = excess credit accrued for the period, and

$OP^s$  = payments offset by excess credit (excess credit carried forward to offset tax due, or excess credit accrued for the period used to offset tax owing

for the past periods).

Values for each of these variables were determined as follows:

$C^s$ : Collections at customs in the period, by sector, were obtained from the URA database. Declaration data necessary to determine these amounts included: the value of VAT payments on imports, the date of entry for the declaration the payment is associated with, and the sector of activity for the taxpayer making the declaration.

$P^s$ : Payments received for a period is obtained from the URA. The data needed from the payment transactions database would include: the value of VAT payments made (exclusive of interest or penalties), the date of payment, the tax period for which the payment is for, and the sector of the taxpayer who made the payment.

$R^s$ : To determine the amount of excess credit in a tax period, data from the tax returns database was required.<sup>22</sup> The data extracted included: the value of excess credit, the tax period the excess credit return was submitted for the date of filing for the return, and the sector of activity of the taxpayer who filed the return.<sup>23</sup>

$OP^s$ : This variable usually applies in countries like Uganda where taxpayers are required or allowed to carry forward excess credit generated in one period into the next. This in turn can be used against any obligations in the next period in place of a refund request or to offset past tax liabilities by excess credit. These data was obtained from the URA database in addition to the related tax period and the sector of the

20 While in the long run cash collections and accrual cash collections should balance out, there can be wide variations between the two for a given period, as cash collections will include arrears collections from other periods and the stock of arrears changes.

21 This compliance gap calculation is based on the assessed data as of the date of extraction

22 While the transactions database may include data on actual refunds paid, data on the value of excess credits accrued in a period will be needed in order to properly measure the accrued collections. If the excess credit is used to offset other tax obligations, it should be recognized as a reduction in net VAT collections.

23 In order to properly measure excess credit for a given period, it may be necessary to compute it from some of the fundamental line items on the return, rather than using the reported value for net tax owing. The proper computation of net tax for the period should be: output tax on supplies made in the period, plus any self-assessed VAT on imports, minus VAT paid on inputs used in making taxable supplies. If this value does need to be recomputed, it will need to be computed on a taxpayer by taxpayer basis.

taxpayer.<sup>24</sup>

## APPENDIX II. APPLICATION OF THE TAX GAP MODEL TO UGANDA

### A. Introduction

Potential VAT revenues were calculated for each year between 2009/10 and 2016/17 by using extended supply and use tables (27 sectors and 57 commodities) for each year with the policy parameters specified in APPENDIX II B. The extended supply and use tables are constructed from original supply and use tables in 2009/10 provided by UBOS and sector production of value added from 2009/10 to 2016/17 provided in the national income and product data in the UBOS statistical abstract. Actual VAT collections for each year are calculated as the sum of [1] payments allocated to the tax period starting each financial year; [2] payments at Customs during each financial year minus [3] excess credits declared in the tax period starting each financial year.

### B. VAT GAP Model for Potential VAT Revenues

#### VAT rates

For the calculation of potential VAT revenues under the current policy structure, the Effective Tax Rate (ETR) of 17 percent was used.<sup>25</sup>

#### VAT exemptions

Goods and services listed on the Second and Third Schedule of the VAT Act, and petroleum products are exempted from payment of VAT. There are two types of exemptions: [1] item-specific exemptions and [2] purpose-specific (or purchaser-specific) exemptions.

#### [1] Item-specific exemptions

Item-specific exemptions are defined as exempted treatments for specific items irrespective of who purchases the goods and services, or exempted

treatments for specific items within a single commodity category on SUT. For goods with records of imports, the ratio of supply and use of exempted goods for each commodity items on SUT tables calculated from the actual values lost from exemption as shown on table A1. For other goods and services that do not have import data, the ratio was calibrated from available commodity decomposition data in similar countries.

#### [2] Purpose-specific exemptions

Purpose-specific exemptions are defined as exempted treatments applied to specific purchasers, and to items in multiple categories on SUT commodity classification. A typical example is the exempted treatment for goods purchased by or on behalf of government and or charitable organizations. The purchased items under this category may fall into several commodity categories.

Where such goods are imported, the amount of imports exempt from VAT at Customs for purpose specific reasons (as classified by corresponding VAT free codes) are extracted from Customs data from 2009/10 to 2016/17 for each sector. The 'purpose-specific VAT-free import ratio' (together with purpose-specific zero-rating) were calculated for each sector to discount the effect of these treatments on sector potential import VAT revenues.

For domestically produced goods and services, it was assumed that there are no purpose-specific exemptions because there was no reliable data on the amount of domestically produced goods and services (value added) that are exempted in a purpose-specific manner. It was assumed that the proportion of all goods that were exempted was non-material.

#### VAT zero-rating

Goods and services listed on the Part II of the second and third Schedule of VAT Act are zero-rated. There are three types of zero-rating treatments: [1] item-specific zero-rating treatment, such as processed and un-processed milk and seeds, fertiliser and pesticides; [2] purpose-specific zero-rating treatment, such as goods purchased or imported on behalf of government and for charity organizations; and [3] zero-rating of imports under special rules. The value lost due to

<sup>24</sup> The amount of excess credit used to offset tax owing is generally not recorded explicitly on either the return or in the return database. The method for determining this value is: if the net tax owing (as determined above) is greater than zero, and the excess credit carried forward is greater than zero then the amount of excess credit used as a tax payment is either the net tax owing, if the excess credit carried forward is greater than the net tax owing, or the excess credit carried forward, if the net tax owing is greater than the excess credit carried forward.

<sup>25</sup> URA (2017) uses an Effective Tax Rate of 17 percent

zero rating products are provided on table A1.<sup>26</sup> The output shares of seeds, fertiliser and pesticides; cereals produced in Uganda; Ugandan cereal; tools & implements and processed and un-processed milk were derived from the actual values lost due to zero rating shown on table A1. The zero-rated share of electricity supply was derived from final consumption of electricity.

### [2] Purpose-specific zero-rating

Values of imports zero-rated for purpose-specific reasons were extracted from Customs data from 2009/10 to 2016/17 (with the purpose-specific exemptions). The effects of purpose-specific zero-rating on potential import VAT revenues were included in the calculation of 'VAT-free import' values. For domestically produced goods and services, table A1 shows that the sale of education and printing; and drugs and medicine are zero-rated.

### [3] Zero-rating of imports under special rules

Zero-rating treatments for items under special rules that enable importers to evade payment of customs duty and VAT were assumed to not affect the total and sectoral potential VAT revenues. In this case, Zero rating only affects the timing of payments for VAT (by moving them from Customs, to domestic transactions after importation). Petroleum products were treated differently; values of imports of goods categorized under HS27 without payment VAT are treated as exempted imports of petroleum products.

### Treatment of transactions under VAT threshold

The VAT registration threshold was raised from Ug.Shs 50 million to Ug.Shs 150 million in 2015/16. Since there is no reliable data about the economic activities under the threshold, it is assumed that 10% of value added produced in the wholesale and retail sector and hotel and restaurant sector was produced by the vendors under the threshold of VAT, and their sales was not purchased by VAT registrants.

## C. Measurement of Actual Collections for VAT

### Aggregate cash collection

Cash collections were based on monthly collection data provided by URA. The data consists of gross

cash collections for domestic VAT, refund, and cash collections for import VAT.

### Accrued collection

Accrued collections were calculated as the sum of [1] payments reallocated to the tax period starting each financial year; [2] excess credits declared in the tax period starting each financial year; and [3] payments at Customs during each financial year. Reallocation of payments to tax periods was based on individual payment data from 2009/10 to 2016/17, and the reallocation of excess credits was based on individual VAT declaration data for the period.

## D. Data Used in the VAT gap Model

### For estimating potential VAT revenues

Supply and use tables, 2009/10 (UBoS; provided in November 2017) Capital formation by general government, 2009/10 - 2016/17 (GFS, downloaded in November 2017). National Income and Product, 2009/10 - 2016/17 (UBoS; provided in November 2017). Sector output and input, 2009/10- (UBoS; provided in November 2017). Imports and exports by commodities 2009/10 -2016/17 (Customs; provided in November 2017). Customs declaration for imports 2009/10 -2016/17 (Customs; provided in November 2017).

### Tax collections data (aggregate)

Monthly cash collection of VAT 2010/11-2016/17 (URA; provided in November 2017) [For calculating Accrued VAT collections] (Anonymized). VAT payments and refunds from July 2010/11 to June 2016/17 (URA; provided in November 2017). VAT returns from July 2010/11 to June 2016/17 (URA; provided in November 2017). Customs Import VAT declaration from 2010/11 to 2016/17 (URA; provided in November 2017).

<sup>26</sup> Marked with stars\*



Table A1: VAT Exempt and Zero-rated list 2010/11 to 2016/17, Ug.Shs. Billions

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17
<b>Manufacturing</b>	<b>Total 264.77</b>	<b>265.13</b>	<b>320.87</b>	<b>15.31</b>	<b>29.09</b>	<b>34.99</b>	<b>34.99</b>
Semi-conductors	-	0.01	-	-	-	-	-
Liquid Petro. Gas	4.21	13.89	6.14	14.23	1.53	-	-
Salt	-	-	0.22	-	-	-	-
Packaging Material	-	-	-	-	-	-	-
Petroleum fuels	260.56	251.23	120.11	180.17	13.78	13.78	21.21
<b>Agriculture</b>	<b>Total 90.41</b>	<b>75.63</b>	<b>31.23</b>	<b>40.81</b>	<b>0.67</b>	<b>19.67</b>	<b>34.09</b>
Unprocessed Agro.	7.77	10.38	12.15	13.26	0.57	-	-
Poultry & Livestock Feeds	7.43	6.19	0.03	-	-	0.01	-
Processing Machines	2.82	2.42	0.65	0.64	-	0.25	6.37
*Seeds, Fertiliser & Pesticides	-	0.89	2.52	3.33	0.03	9.46	8.67
*Ugandan Cereal	59.23	48.07	-	2.73	-	8.42	-
*Tools & implements	1.21	1.17	0.16	3.56	0.02	0.79	0.05
*Milk	11.95	6.51	15.72	17.29	0.05	0.07	-
<b>Transport</b>	<b>Total 91.03</b>	<b>74</b>	<b>14.93</b>	<b>58.8</b>	<b>9.07</b>	<b>13.92</b>	<b>5.82</b>
Supply of Trailers	45.39	34.16	-	-	-	-	-
Passenger Transport	-	8.90	10.63	2.63	8.68	3.83	0.31
*Inter. transp.	45.64	30.94	4.3	56.17	0.39	1.02	0.66
<b>Education</b>	<b>Total 29.95</b>	<b>18.35</b>	<b>25.55</b>	<b>39.07</b>	<b>5.17</b>	<b>6.88</b>	<b>14.4</b>
Education Services	1.26	0.10	-	0.21	1.83	1.22	9.46
New Computers	17.25	10.22	20.32	19.16	0.79	0.44	3.23
Computer soft-wares	7.17	5.64	4.64	5.16	2.55	-	-
*Education & Print.	4.27	2.39	0.59	14.54	-	0.05	-

Table A1: VAT Exempt and Zero-rated list 2010/11 to 2016/17, Ug.Shs. Billions

	2010/11	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	
<b>Health and Social work</b>	<b>Total</b>	<b>109.52</b>	<b>90.06</b>	<b>59.84</b>	<b>50.68</b>	<b>73.45</b>	<b>126.68</b>	<b>77.06</b>
	Vector Control	-	-	16.64	-	17.54	-	-
	Dental & Vet Equip.	-	0.01	1.90	16.45	-	0.09	1.94
	Medical& Vet. Service	24.84	20.80	20.55	16.63	22.51	33.01	1.96
	Social Services	0.18	0.21	0.15	3.99	0.19	-	0.47
	*Drugs and Medicine	84.5	69.04	20.6	13.61	33.21	20.13	19.46
<b>Tourism</b>	<b>Total</b>	<b>6.29</b>	<b>5.85</b>	<b>12.19</b>	<b>11.91</b>	<b>1.26</b>	<b>1.43</b>	<b>1.43</b>
	Accommodation	6.29	5.85	12.19	11.91	1.26	1.43	1.43
<b>Financial and Insu.</b>	<b>Total</b>	<b>152.56</b>	<b>75.51</b>	<b>151.85</b>	<b>138.43</b>	<b>6.88</b>	<b>238.39</b>	<b>2.52</b>
	Financial services	151.63	72.45	144.51	138.43	0.12	227.6	2.52
	Insurance Services	0.93	3.06	7.34	-	6.76	3.91	-
<b>Real Estate</b>	<b>Total</b>	<b>1.41</b>	<b>1.26</b>	<b>3.29</b>	<b>10.41</b>	<b>3.2</b>	<b>4.92</b>	<b>23.80</b>
	Sale, rental and lease	1.41	1.26	3.29	10.41	3.2	4.92	23.80
	<b>Total</b>	<b>745.94</b>	<b>605.79</b>	<b>619.75</b>	<b>343.1</b>	<b>128.79</b>	<b>446.88</b>	<b>180.33</b>
	Exemption	539.14	446.78	531.97	231.87	95.09	406.94	151.49
	Zero-Rated	206.80	159.01	87.78	111.23	33.70	39.94	28.84

Source: Own calculations on data from URA December, 2017. \* Represents zero-rated products

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