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INCOME TAX EVASION IN UGANDA

CORTI PAUL LAKUMA

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ABSTRACT

Uganda, just as many developing countries, collects less than potential tax. The country compares poorly to other low- income countries with regard to income tax revenue mobilization. This paper estimate the baseline amount of tax owed by comparing income amounts reported on the 2015/16 Uganda Revenue Authority (URA) income tax returns with similar income amounts households reported on the 2015/16 Uganda National Panel Survey (UNPS). The paper also combine the UNPS data and the URA income tax data to estimate potential income tax revenue and the scale of tax evasion in Uganda in 2015/16 by income bracket. The gross tax gap was therefore estimated at Ug.Shs 1, 783.31 billion, or 52.73 percent of the baseline tax. The manufacturing, wholesale and retail, information and communication, financial and insurance, real estate, public administration and human health sectors explain Ug.Shs. 1,512.39 of the tax gap, which is 44.72 percent of the baseline tax. The income bracket above Ug.Shs 410,000 explain more than 80 percent of the sectoral default. Approximately 755,217 persons did not file for income tax in 2015/16, which is 39 percent rate of default. Audit and compliance activities managed to recover Ug.Shs 130.37 billion of Ug. Shs. 1,783.31 billion gross tax gap. We recommend for capacity building in data management and in audit and compliance functions.

1. INTRODUCTION

The government of Uganda has been suffering from a widening fiscal deficit and a rising debt burden. Fiscal deficit was 8 percent of Gross Domestic Product (GDP) in 2018/19 from 6 percent in 2017/18 and net present value of debt rose to 32 percent of GDP in 2018/19 from 30 percent (GoU 2018). Fiscal deficit and debt have largely been driven by dismal tax collection.

Lakuma and Lwanga (2017) attribute low tax collection in Uganda to inadequate administrative capacity, the presence of a large informal sector, weak checks and balances, and the lack of social norms for tax compliance. Also, tax mobilization efforts in low-income countries are generally low due to exemptions and tax evasion (Reinikka and Svensson 2002). Consequently, Uganda's tax to GDP ratio has stagnated between 12-13 percent since 2004/5 (Ssewanyana and Kasirye 2015). Indeed, Uganda compares poorly to its regional neighbours with regard to tax revenue mobilization—for instance, the corresponding tax realization rates for Kenya, and Tanzania were 16 percent of GDP respectively in 2016 (World Bank 2018).

Collecting income taxes is even harder than collecting other taxes, such as trade taxes, because income tax collection requires a much more elaborate system of monitoring, enforcement, and compliance (Besley and Persson 2014). The USAID (2013) tax database shows that in 2012/13, Uganda collected 1.86 percent of GDP in income tax, which was low compared to the low-income countries average (3.30 percent). In this regard, reducing income tax evasion is an urgent issue in Uganda, as the government seeks finances to reduce the infrastructure deficit, expand access and quality of social services and reduce dependency on aid and debt (Mawejje and Ouma 2015).

Yet, measuring the scale of income tax evasion in developing countries is difficult due to lack of data. Few developing countries have made income tax data available. In this regard, studies such as Asiedu et.al. (2018) match household surveys with administrative data from revenue administration agencies. For the purpose of this study, we have access to both Uganda National Panel Survey (UNPS) 2015/16 and 2015/16 Uganda Revenue Authority (URA) income tax data disaggregated by sector and income brackets.

However, evidence from other jurisdictions suggest that average income reported to the tax authorities is considerably higher than income reported in household surveys (Alvaredo and Piketty 2010; Alvaredo and Gasparini 2013). In addition, many household surveys poorly capture income at the top of the distribution (Alvaredo and Londoño 2013).

That notwithstanding, we use the UNPS and URA data to analyze the degree to which Ugandans are reporting taxable income or to measure what is commonly referred to as the "tax gap". This is defined as the difference between taxes owed (if one complied with all tax laws) and taxes actually paid by taxpayers. This paper will focus on the non-compliance relating to the reporting of components of income by sector. These are the individual income items, which constitute adjusted gross income such as wages, interest, dividends, business income, etc.

The methodology involves comparing levels of income reported on filed 2015/16 Uganda Revenue Authority (URA) personal income tax (PIT) returns with the 2015/16 Uganda national Panel Survey (UNPS) data compiled by the Uganda Bureau of Statistics (UBoS) where persons are asked to detail income items which are similar to adjusted gross income. Estimates of underreported tax liability are then derived from the analysis of underreported income. We also combine the UNPS data and the URA income tax data to estimate potential income tax revenue and the scale of tax evasion in Uganda in 2015/16 by income bracket.

Section 2 presents a detailed description of the data sources and section 3 presents the methodology used to determine the level of compliance by sector with regard to reporting of income on personal income tax returns for the 2015/16 tax year. Also presented are

the results in section 4, including the overall sectoral non-compliance rate and an estimate of the amount of underreporting of liability by filing status. The analysis also disaggregates levels of non-compliance between those not filing tax returns (non-filers) and those persons filing returns but failing to report all of their income (underreporting). The "non-filer" and "underreporting" non-compliance rates are further broken down between wage and non-wage income sources. Section 5 concludes and offers policy options

2. DATA

Uganda National Panel Survey (UNPS) 2015/16

The UNPS Microdata was used for this study. Detailed income information was obtained from a file that consists of 18,772 "person records" surveyed during financial year 2015/16. These records are weighted to represent information for 36 million Uganda residents. The income data questions on the UNPS ask respondents to indicate their income from 8 different sources received during the past month. The monthly income is annualized to simulate income in financial year 2015/16. Therefore, income reported for respondents surveyed during 2015 calendar year is measured in 2015 shillings.

Four of the eight income categories consist of income sources that are primarily taxable as stated in GoU (2016). These are:
- Wages, salary, commissions and bonuses;
- Self-employment income from farm and non-farm business including sole proprietorships and partnerships;
- Interest, dividends, net rental income, royalty income, or income from estates/trusts;
- Other sources of taxable income.

Uganda Revenue Authority (URA) Income Tax Data

Income amounts from the 2015/16 UNPS data were compared to the sample of URA income tax returns filed for financial year 2015/16. In order to make a valid comparison between the 2015/16 UNPS and URA income tax data, non-taxable income was dropped from the income tax sample.

3. METHODOLOGY

Methodology for Comparing UNPS Data with URA Income tax Return Data

Step 1 is primarily modeled on procedures used by the Bolognino (2005) to measure the tax gap in their individual income tax based on census income for the 2002 calendar year.[1] The methodology employed here relies on the analysis of income reported by residents of Uganda on the 2015/16 UNPS conducted by the UBoS. As earlier mentioned, the UNPS data is compared to information reported by Uganda Revenue Authority (URA) for income tax returns for the financial year 2015/16 to determine the level of compliance with filing and income reporting requirements for the tax.

In order to derive "tax gap" estimates from these two data sources, the analysis of the UNPS data focused on those persons indicating enough income to file returns and have URA tax liability. To do this, information regarding persons from the UNPS was used to organize individuals by sector and income tax bracket. Specifically, there were 4 income brackets in 2015/16 and 21 four digit ISIC coded economic sectors (table 2).[2] This was done to exclude income from non-taxable individuals and sectors from the calculation of the tax gap. Particularly, incomes derived from some sectors such as agriculture and "main" incomes below Ug.Shs.235, 000 are exempt from taxation. [3]

As earlier mentioned, the analysis requires that these two data sources be made compatible with each other to facilitate the direct comparison of income reporting by sector. Specifically, the limits that are imposed on the UNPS data with regard to exclusion of certain types of income were also imposed on the state income tax return information. While this limits the ability to

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1   NYSDTF (2005),"New York State Personal Income Tax Compliance Baseline Study Tax Year 2002", New York State Department of Taxation and Finance (NYSDTF), Office of Tax Policy Analysis
2   From sector 0100 (A) to 9999 (U)
3   Secondary incomes are not subject to threshold and are taxed at a flat rate of 30 percent, regardless of the amount of income. Otherwise, incomes above 235,000 but below 335,000 are taxed at 10 percent, incomes above 335,000 and below 410,000 are taxed at 20 percent and those above 410,000 are taxed at 30 percent.

Figure 1: **Break down of Gross Tax Gap**
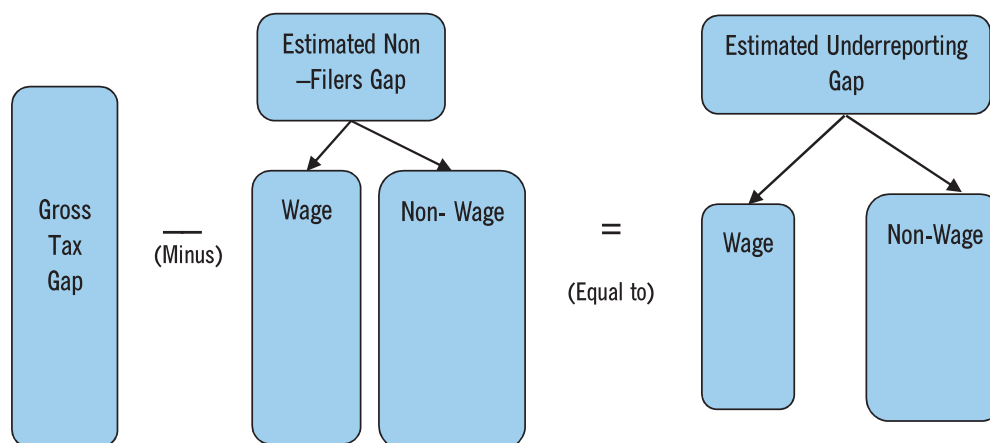
Source: Authors Construction

directly analyze the trends in compliance for high-income taxpayers, it does provide a valid basis for analyzing these trends for most taxpayers.

Definition of Income

Income information from the UNPS does not neatly correspond to the definition by GoU (2016) on what constitutes taxable income. For example, interest incomes from compulsory social saving such as the National Social Security Fund (NSSF) are taxable in Uganda, while there is an exclusion of taxation on interest earned on public sector pensions. Adjustments were made to the data to make both interest and retirement income from these files compatible. In addition, the most significant impediment to using the UNPS information is the fact that non-periodic sources of income, primarily net capital gains and other gains and losses, are not included in the survey.

For purposes of this analysis, a modified version of Uganda's gross income was derived from available sources of taxable income that appear on the UNPS. The definition is as follows:

Uganda's Gross Income (UGI) = Wages
+ Self-employment income (farm/nonfarm businesses, proprietorships, and partnerships)
+ Interest/dividends/net rental income/royalties/ estates and trusts
+ Other income (allowances, bonuses, etc)

Step 1

Gross Tax Gap

This paper defines "gross" tax gap as the amount of tax liability for a given financial year that is not paid voluntarily and timely. It is the difference between the "true" baseline tax liability owed and the amount voluntarily remitted by taxpayers. In order to calculate this, UGI amounts were derived from both the UNPS and the URA file and were tabulated by sector. These amounts were then compared for each sector and "income gap" ratios were derived to gauge the degree of under reporting of income for each sector. This procedure derived "aggregate" tax gap estimates for each sector by calculating the ratio of total UGI from the UNPS to total UGI for the URA income tax data and then applying this ratio to the total tax liability per sector. The resulting tax gaps by sector were then summed to estimate the total "gross" tax gap.

The gross tax gap is disaggregated further into the amount attributable to under reporting of income by persons filing returns and the amount attributable to person not filing, or the "non-filers". This is done by first determining the tax gap associated with non-filers from the analysis of URA data. Once the non-filer tax gap is determined, the gap associated with underreporting is the "gross" tax gap minus the "non-filer" tax gap. To determine the non-filer gap in Uganda, income data on person available from URA was used to determine which person had income sufficient to trigger an income tax liability.

The "non-filer" and "underreporting" tax gaps categories were broken down further between amounts attributable to wage and non-wage income. The portion of the non-filer tax gap associated with wage income was derived by an analysis of the percentage of wage income to total non-filer income for those identified non-filers. The Figure 1 presents the breakdown of the gross tax gap.

Step 2

Extent of Gross Tax Gap by Threshold

To determine the extent of tax evasion by tax income bracket and sector, we combine the UNPS data and the URA income tax files to reconstruct a nationally representative distribution of tax payers by sector.[4] We use the algorithm developed by Fournier (2015) and Blanchet, Fournier and Piketty (2017) to attain continuous distributions of incomes by approximating generalized Pareto curves per sector. Asiedu et.al. (2018) and Czajka (2017) have used this methodology to estimate tax evasion in Ghana and Cote d'Ivoire.

The continuous distributions of incomes are defined as the curve of the inverted Pareto coefficients b(p), where p is the percentile rank and b(p) is the ratio between the average income above the percentile p and the p-th quantile Q(p). $b(p) = E[X|X > Q(p)]/Q(p)$. Suppose $b(p)=2$ for the top 2 percent of income and the income of the top 1 percent exceeds 1 million Shillings, then the average income above 2 million shilling is 4 million shillings. We use the mean income for each bracket by sector provided by URA.

The continuous generalized Pareto curves enables us to compare URA income tax data with the simulated distributions of workers by sector and tax bracket from the UNPS 2015/16, by plotting them together. The blue and green lines on figure A1 to A20 represent the simulated distributions of workers from the URA income tax data and UNPS, respectively.

Step 3

Net Tax Gap

The "net" tax gap is defined as the gross tax gap minus the amount of taxes collected for the financial year in question through audit activities and compliance enforcement. This is the "true" tax liability for a given financial year that is not eventually paid. The audit, assessment, and collection cycle for a particular tax year encompasses a number of years following the tax year in question. Some amounts are assessed and collected within six months of the filing of a return, as in cases where automated processing systems can detect problems or omissions and issue bills expeditiously. Other amounts are assessed much later following a more intensive analysis by audit staff. Standard reports generated by URA information systems do not detail collections by financial year. It is therefore necessary to estimate this from available data and discussions with URA staff.

4.   RESULTS

This sections presents the detailed results of the analysis of the compliance baseline study on Uganda's income tax returns for the 2015/16 financial year. The first section discusses the results of the analysis of the gross tax gap and its' components by sector. Table A1 illustrates UGI amounts derived from the 2015/16 UNPS data and the 2015/16 URA returns and the associated income ratio by sector. Actual 2015/16 income tax liability reported on tax returns are multiplied by these ratios to scale-up to the true "baseline" tax liability for each of sectors. The difference between the baseline tax and the tax actually calculated from returns constitutes the level of unreported tax liability. Table A2 presents a comparison by sector between the number of 2015/16 tax year income tax returns actually filed and the number of 'simulated' returns from the UNPS 2015/16. Figure A1 to figure A20 estimates the extent of income tax evasion by both sector and tax bracket. The discussion will largely concentrate on sectors with an income gap of more

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4   Uganda has four income tax brackets: those below 235,000; those above 235,000 but below 335,000; those above 335,000 but below 410,000; and those above 410,000

than Ug.Shs 100 billion and agriculture.[56] On the other hand, the second section discusses the impact of audit, compliance, and enforcement efforts to recover some of this total unpaid liability and computes the remaining "net" tax gap.

Computation of the Gross Tax Gap by sector

A - Agriculture: From table A1, the income ratio, defined as the ratio of income in the URA data to income in the UNPS data, for agriculture sector was 1.17.[7] The income ratio suggest that income reported on the UNHS data was 1.17 time more than that reported in the URA data. The non-compliance rate, defined as the tax gap as a percentage of the true baseline liability 43.38 percent. The baseline tax liability Ug.Shs 36.98 billion is Ug. Shs 16.04 above the URA collection of Ug. Shs. 20.94 billion. Table A3 show that the number of returns actually filed by the agriculture sector totaled 27,995 in 2015/16 compared to the number of 'simulated' returns from the analysis of the UNPS data which totaled 119,758, or 91,763 returns more. This difference is composed of both potential non-filers and 'invisibles'- those for whom no data exists to assess the taxpayer. Figure A1 in the appendix demonstrates the tax gap by tax bracket for the agriculture sector. The UNPS data has more high net worth individual in the agriculture sector when compared to the URA data. Figure A1 also suggest that the highest proportion of tax evasion in the agriculture sector emanates from those in the highest tax bracket (exceeding Ug.Shs 410,000). The level of tax evasion in the highest income bracket is estimated at Ug.Shs. 16.13 billion.

C - Manufacturing: The income ratio for manufacturing sector was 1.70. The non - compliance rate was 66.89 percent. The baseline tax liability is Ug. Shs. 462.57 billion, which is Ug. Shs. 309.39 billion above the Ug. Shs. 153.17 billion which appears on URA tax returns (table A1). Meanwhile, the number of actual returns were 104,984 compared to potential return of 170,156 in the UNPS data, a difference of 65,172 (table A2).

Figure A3 shows significant income tax gap in all the tax threshold. However, the upper bracket dominates with an estimated gap of Ug.Shs. 202.42 billion. Those with incomes below Ug. Shs. 235,000 did not pay taxes to the tune of Ug.Shs 18 billion, while the two middle bracket defaulted more than Ug. Shs 40 billion each.

G - Wholesale and retail trade: The income ratio in the wholesale and retail sector was 1.35. The baseline tax liability is Ug.Shs. 280.96 billion, which is Ug.Shs. 191.92 billion higher than the URA collection of Ug.Shs. 89.04 billion (table A1). Meanwhile, the number of actual returns were 77,662 compared to potential return of 148,259 in the UNPS data, a difference of 70,597 (table A2). Figure A7 shows significant income tax gaps for people in the wholesale and trade sector with income above Ug.Shs 335,000. Particularly, Ug.Shs.154 million was owed by cohorts with income above Ug. Shs. 335,000 but below Ug.Shs. 410,000. Those with income above Ug. Shs. 410,000 held Ug.Shs. 191 billion in underpaid taxes.

J - Information and communication: The income ratio in the information and communication sector was 1.32. The baseline tax liability is Ug.Shs. 211.32 billion, which is Ug.Shs. 119.90 billion higher than the URA collection of Ug.Shs. 91.42 billion (table A1). However, there were 822 more actual filers than potential returns in the UNPS data (table A2). This could be as a result of many high-income individuals in the URA data when compared to UNPS data. This is confirmed by the simulation on figure A10 that shows significant income tax gaps worth Ug.Shs. 117.04 billion owed by individuals in the Information and communication sector with income above Ug.Shs. 410,000.

K - Financial and insurance activities: The income ratio in the financial and insurance sector was 1.46. The baseline tax liability is Ug.Shs. 583.07 billion, which is Ug.Shs. 307.64 billion higher than the URA collection of Ug.Shs. 275.43 billion (table A1). The number of actual returns were 45,022 compared to potential return of 55,735 in the UNPS data, a difference of 10,713 (table A2). Figure A11 shows significant income tax gaps for all income brackets in the financial and insurance activities sector except

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5 In total, sectors with a gap of more than Ug.Shs. 100 billion tax gap explain Ug.Shs. 1,512.39 of gap, which is 44.72 percent of the baseline tax
6 Agriculture sector is of policy interest.
7 Income ratio is the quotient of income reported in UNPS and URA data

individuals with incomes above Ug. Shs 235,000 but below Ug. Shs 335,000. Specifically, Ug.Shs.60 billion was owed by cohorts with income below Ug. Shs. 235,000. Cohorts with income in between Ug. Shs 335,000 and Ug. Shs 410,000 owed Ug.Shs. 67 Billion. Those with income above Ug. Shs. 410,000 held Ug.Shs. 180.28 billion in underpaid taxes.

L - Real estate activities: The income ratio in the real estate sector is the highest at 14.63, which indicates the informality of the sector. The baseline tax liability is Ug.Shs. 153.59 billion, which is Ug.Shs. 129.49 billion higher than the URA collection of Ug.Shs. 24.11 billion (table A1). While the number of actual returns were 8,462, we could not ascertain the number of potential tax payers in the real estate sector because all cohorts answered "*no*" to the question on whether they are paying taxes on not (table A2). As a result, we were unable to simulate the extent of tax deliquesce per threshold in the real estate sector due to incomplete information on average tax paid.

O - Public administration and defence; compulsory social security: The income ratio in the Public administration and defence; compulsory social security sector was 1.07. The baseline tax liability is Ug.Shs. 552.33 billion, which is Ug.Shs. 191.09 billion higher than the URA collection of Ug.Shs. 361.24 billion (table A1). The number of actual returns were 486,013 compared to potential return of 536,328 in the UNPS data, a difference of 50,315 (table A2). The difference could emanate from public sector exemptions granted to members of the disciplined forces namely the policy, prisons and the defense forces. Justices of the judiciary are also exempt from taxes. Figure A14 shows significant income tax gaps for Cohorts with incomes above Ug. Shs. 410,000 who held Ug.Shs. 190.61 billion in underpaid taxes.

Q - Human health and social work activities: The income ratio in the human health and social work sector was 1.26. The baseline tax liability is Ug.Shs. 258.80 billion, which is Ug.Shs. 133.48 billion higher than the URA collection of Ug.Shs. 125.32 billion (table A1). The number of actual returns were 62,813 compared to potential return of 123,915 in the UNPS data, a difference of 61,102 (table A2). Figure A16 shows significant income tax gaps for all income brackets in the human health and social work sector except for individuals with incomes above Ug. Shs 235,000 but below Ug. Shs 335,000. Specifically, Ug.Shs. 6.51 billion was owed by cohorts with income below Ug. Shs. 235,000. Cohorts with income in between Ug. Shs 335,000 and Ug. Shs 410,000 owed Ug.Shs. 46.96 Billion. Those with income above Ug. Shs. 410,000 held Ug.Shs. 79.92 billion in underpaid taxes.

All sector: The overall baseline tax liability of Ug.Shs. 3,381.90 billion is Ug.Shs.1,783.31 billion above the Ug.Shs 1,598.59 billion, which appears on tax returns for the 2015/16 tax year. The "gross" tax gap of Ug.Shs. 3,381.90 billion translates into an overall non-compliance rate of 52.73 percent (table A1). Table A2 shows that the number of returns actually filed by sectors totaled 1.20 million in 2015/16 compared to the number of 'simulated' returns from the analysis of the UNPS person data which totaled 1.95 million, or 755,217 returns more. This difference is composed of both potential non-filers and 'invisibles'- those for whom no data exists to assess the taxpayer.

The figure 2 presents the disaggregation of the gross tax gap by the 'underreporting' and 'non-filers' categories of non-compliance and by wage and non-wage sources within these categories. The non-filer tax gap of Ug. Shs 1,626.68 billion was derived from the analysis of URA wage and non-wage tax data. An analysis of the non-filer data collected indicated that approximately 60 percent of the identified income is related to wage income. The portion of the Ug.Shs 1,626.68 billion non-filer gap associated with wage was therefore assumed to be Ug.Shs 984.00 billion. The amount of underreported liability that is attributable to wages was based on the percentage of the wage tax gap to the total underreporting tax gap derived from Lwanga et.al. (2018) in their analysis of the income tax gap.

Figure 2: **Gross Tax gap by 'underreporting' and 'non-filers' categories of non-compliance and by wage and non-wage sources**
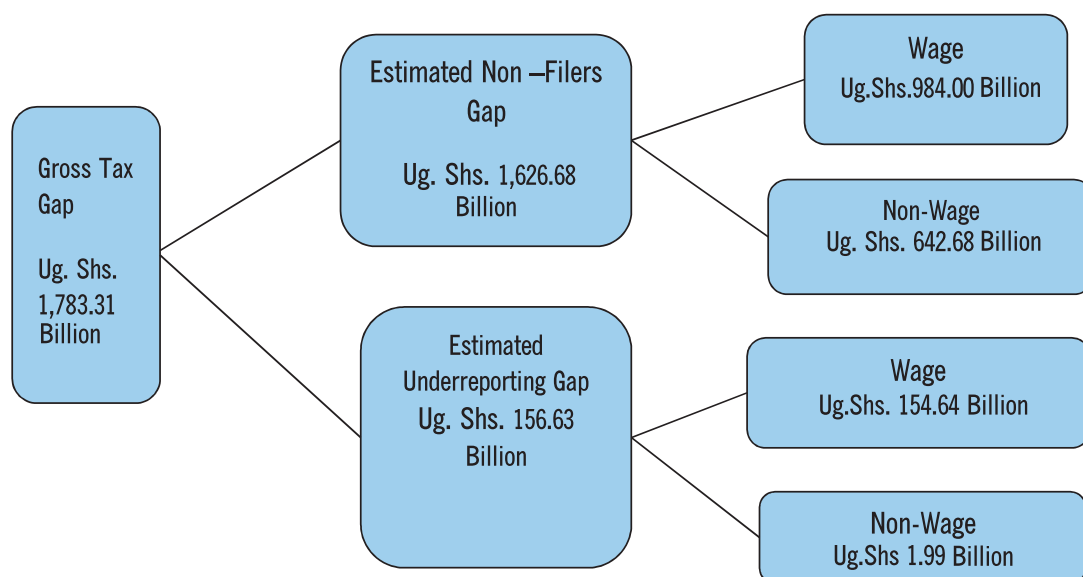
Source: Authors Construction

Table A3 presents a breakdown of baseline (or "true") liability between the tax voluntarily reported on returns and the components of the gross tax gap by wage and non-wage sources. The ratio of wage to total income on filed returns was used to determine that Ug.Shs 1,566.88 billion of the Ug.Shs1,598.59 billion in voluntary tax reported was associated with wage income. Although wages comprise a large portion of both "true" and "voluntarily" reported tax liability, wage income does not constitute a significant portion of the tax gap attributable to underreporting and non-filing. Lwanga et.al. (2018) demonstrates that the level of underreporting of non-wage income greatly exceeds the non-compliance rate for wage reporting. For example, Ssewanyana and Kasirye (2013) study on progressivity of Uganda's tax system determined that business income, especially nonfarm proprietor income and informal supplier income, constituted the largest percentage of total underreported income. In total, the "wage" non-compliance rate is 42.09 percent. Conversely, the non-compliance rate related to the underreporting/non-filing of non-wage income is significant at 95.31 percent.

Estimation of the Net Tax Gap

The results presented above detail the characteristics of the Ug.Shs. 1,783.31 billion "gross tax gap" in the

URA income tax returns for tax year 2015/16. This represents the total difference between what is "true", or baseline tax liability owed by Uganda residents and the amount voluntarily reported and paid with tax returns. Of course, some of this unreported liability is recovered through audit, compliance, and enforcement efforts of URA. As defined earlier, the amount of unpaid liability which remains after these collection efforts is the "net" tax gap.

URA has a number of audit and compliance programs in place to identify delinquent taxpayers and to assess these taxpayers for the underpayment amounts. While collections from these programs are tracked on a fiscal year basis, these amounts are derived from audits covering a number of tax years. As mentioned earlier, information systems are not generally designed to allocate audit and enforcement collections for a particular fiscal year on a tax year basis. Furthermore, since tax law allows for the auditing of returns for several years following the due date of the return, audit and assessment activities for 2015/16 tax returns could be continuing for several years, to-date. It is therefore necessary to estimate audit and compliance collections for tax year 2015/16.

Information of the amounts of personal income collected through these operations for the 2015/16

tax year were estimated from data supplied in URA (2017). Based on data available and an analysis of recent annual trends, it is estimated that audit and compliance collections of personal income tax liability for 2015/16 tax year was approximately Ug. Shs 130.37 Billion. This amount may be overstated since interest and penalty is also included in the reporting of these collections. Ideally, only collected tax amounts should be subtracted from the gross tax gap to arrive at the net tax gap. The figure 3 summarizes the analysis of the "gross" and "net" income tax gaps for the 2015/16 tax year. As indicated, a substantial portion, Ug. Shs. 1,652.94 Billion, of the tax gap in 2015/16 was not be assessed.

6. CONCLUSIONS AND POLICY OPTIONS

This paper estimates the degree of sectoral compliance with income tax law requirements for the reporting of taxable income. The baseline amount of tax owed is estimated by comparing income amounts reported on the 2015/16 Uganda Revenue Authority (URA) income tax returns with similar income amounts households reported on the 2015/16 Uganda National Panel Survey (UNPS). The paper also combine the UNPS data and the URA income tax data to estimate potential income tax revenue and the scale of tax evasion in Uganda in 2015/16 by income bracket.

We find that the true "baseline" tax liability was Ug.Shs. 3,381.90 billion, compared to Ug.Shs 1, 598.59 billion, which was voluntarily reported on returns for tax year 2015/16. The gross tax gap was therefore estimated at Ug.Shs 1, 783.31 billion, or 52.73 percent of the baseline tax.

The manufacturing, wholesale and retail, information and communication, financial and insurance, real estate, public administration and human health sectors explain Ug.Shs. 1,512.39 of the tax gap, which is 44.72 percent of the baseline tax. This calls for an urgent audit in the above named sectors. A tax education drive to increase on compliance of the identified sectors is also recommended.

The continuous inverted pareto curve show that the income bracket above Ug.Shs 410,000 explain more than 80 percent of the sectoral default. The gross tax gap of Ug. Shs. 1,783.31 billion consisted of Ug. Shs. 156.63 billion associated with the underreporting of income by filers and Ug. Shs. 1,626.68 billion associated with potential non-filers. Furthermore, Ug.Shs.984.00 billion of the Ug. Shs. 1,626.68 billion gap was related to wage income.

Analysis of the Uganda National Panel Survey household data implies that approximately 1,950,424 resident returns should have been filed for 2015/16 compared to 1,203,669 actually filed. The difference of 755,217 returns implies a non-compliance rate of 39 percent with regard to filing. A comprehensive national database for all citizens (individuals and businesses) will go a long way to alleviate this problem. Also a single identifier such as the National Identification Number (NIN) for all transactions will go a long way in integrating and improving the integrity of all the existing databases.

Audit and compliance income tax collections for tax year 2015/16 were estimated to be Ug. Shs 130.37 billion. Subtracting this from the Ug. Shs. 1,783.31 billion gross tax gap yielded a "net" tax gap estimate of Ug. Shs. 1,652.94 billion, or 48.88 percent. This calls

Figure 3: **Net Income Tax Gap**

| 2015/16 Gross Tax Gap = Ug. Shs. 1,783.31 billion | - | 2015/16 Audit & Compliance Amount= Ug. Shs 130.37 Billion | = | 2015/16 Net Tax Gap =Ug. Shs. 1,652.94 Billion |

Source: Author's Computation

for strengthening of the audit function by motivating, training, equipping monitoring and evaluating audit personnel.

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APPENDIX

Table A1: Summary of Uganda's Income Tax Gap by Sector for Financial Year 2015/16 (Ug.Shs in Billions)

Sector	Uganda National Panel Survey (UNPS) 2015/16	Uganda Revenue Authority (URA) Income Tax Data (2015/16)	Income Ratio	URA Income Tax Collection (2015/16)	Baseline Tax Liability (UNPS) (2015/16)	GrossTax Gap	Tax Gap
A – Agriculture, forestry and fishing	156.57	133.77	1.17	20.94	36.98	16.04	43.38%
B – Mining and quarrying	106.57	88.91	1.20	31.05	58.35	27.30	46.79%
C – Manufacturing	1,158.05	681.13	1.70	153.17	462.57	309.39	66.89%
D – Electricity, gas, steam and air conditioning supply	779.70	160.21	4.87	41.10	73.95	32.85	44.42%
E – Water supply; sewerage, waste management and remediation activities	209.21	51.86	4.03	22.01	35.28	13.27	37.62%
F – Construction	312.03	203.32	1.53	39.15	93.10	53.96	57.95%
G – Wholesale and retail trade; repair of motor vehicles and motorcycles	599.27	444.58	1.35	89.04	280.96	191.92	68.31%
H – Transportation and storage	453.23	129.97	3.49	18.30	49.86	31.56	63.30%
I – Accommodation and food service activities	193.14	123.06	1.57	18.59	43.25	24.65	57.00%
J – Information and communication	494.65	373.67	1.32	91.42	211.32	119.90	56.74%
K – Financial and insurance activities	1,465.36	1006.28	1.46	275.43	583.07	307.64	52.76%
L – Real estate activities	1,402.04	95.85	14.63	24.11	153.59	129.49	84.30%
M – Professional, scientific and technical activities	322.71	281.39	1.15	70.04	142.80	72.76	50.95%
N – Administrative and support service activities	356.52	164.29	2.17	15.49	22.22	6.73	30.30%
O – Public administration and defence; compulsory social security	1,914.40	1795.78	1.07	361.24	552.33	191.09	34.60%
P – Education	1,838.79	633.89	2.90	124.99	160.67	35.68	22.21%
Q – Human health and social work activities	836.24	665.30	1.26	125.32	258.80	133.48	51.58%
R – Arts, entertainment and recreation	637.94	49.47	12.90	6.43	15.09	8.66	57.39%
S – Other service activities	532.74	308.05	1.73	43.04	89.55	46.51	51.94%
T – Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	219.07	2.60	84.20	0.04	0.34	0.29	86.87%
U – Activities of extraterritorial organizations and bodies	0.23	138.67	0.00	27.69	57.83	30.14	52.12%
Total	13,988.46	7,532.05	1.86	1,598.59	3,381.90	1,783.31	52.73%

Source: Authors Calculations based on 2015/16 UNPS and 2015/16 URA data

Table A2: Comparison of Simulated Returns from UNPS 2015/16 Sample with URA Filed Returns for Tax Year 2015/16

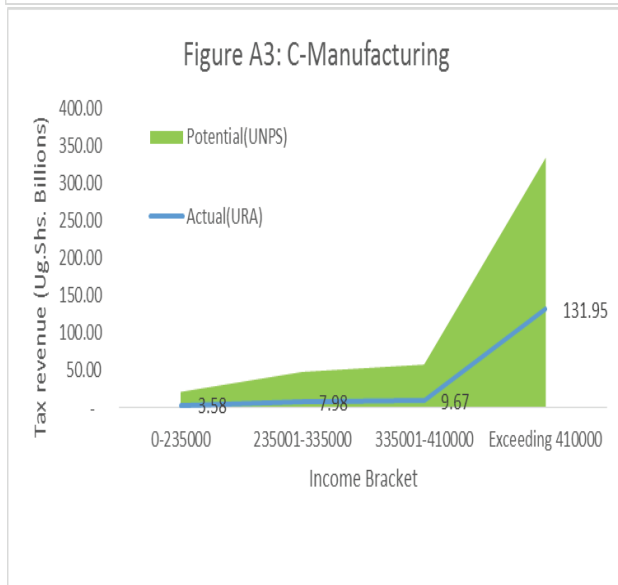| Sector	*Number of Wage and Non - Wage Tax filers*			
Sector	**Uganda National Panel Survey (UNPS) (2015/16) Returns**	**Uganda Revenue Authority (2015/16) Number of Returns Data**	**Difference**	**% Non - Compliance**
A - Agriculture, forestry and fishing	119,758	27,995	91,763	77%
B - Mining and quarrying	3,185	2,174	1,011	32%
C - Manufacturing	170,156	104,984	65,172	38%
D - Electricity, gas, steam and air conditioning supply	10,436	8,925	1,511	14%
E - Water supply; sewerage, waste management and remediation activities	10,721	6,860	3,861	36%
F - Construction	160,698	41,516	119,182	74%
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	148,259	77,662	70,597	48%
H - Transportation and storage	47,357	14,498	32,859	69%
I - Accommodation and food service activities	53,910	28,342	25,568	47%
J - Information and communication	16,088	16,910	(822)	-5%
K - Financial and insurance activities	55,735	45,022	10,713	19%
L - Real estate activities	-	8,462	-	
M - Professional, scientific and technical activities	50,722	19,336	31,386	62%
N - Administrative and support service activities	93,097	66,974	26,123	28%
O - Public administration and defence; compulsory social security	536,328	486,013	50,315	9%
P - Education	228,137	121,088	107,049	47%
Q - Human health and social work activities	123,915	62,813	61,102	49%
R - Arts, entertainment and recreation	12,335	8,854	3,481	28%
S - Other service activities	70,200	39,663	30,537	43%
T - Activities of households as employers; undifferentiated goods- and services-producing activities of households for own use	*27,239*	*1,489*	*25,750*	*95%*
U - Activities of extraterritorial organizations and bodies	*12,148*	*14,089*	*(1,941)*	*-16%*
Total	*1,950,424*	*1,203,669*	*755,217*	*39%*

Source: Authors Calculations based on UNPS 2015/16 and URA data

Table A3: Comparison of Baseline Tax Liability, Voluntary Reporting and Components of Tax Gap by Wage and Non-Wage Categories for 2015/16 (Ug. Shs Billions)

Source	Baseline Tax Liability	Voluntary Tax Reported	Under-reporting	Non-Filers	Total Tax Gap	Tax Gap (%)
Wage	2,705.52	1566.88	154.64	984.00	1,138.64	42.09%
Non-Wage	676.38	31.71	1.99	642.68	644.67	95.31%
Total	3,381.90	1,598.59	156.63	1,626.68	1,783.31	52.73%

Source: Authors Calculations based on UNPS 2015/16 and URA data

Figure A1: A- Agriculture, Forestry and Fishing

Figure A2: B-Mining and Quarrying

Figure A3: C-Manufacturing

Figure: A4: D-Electricity, Gas,Steam and Air Conditioning

Figure A5: E- Water Suppy, Sewerage

Figure A6: F-Construction

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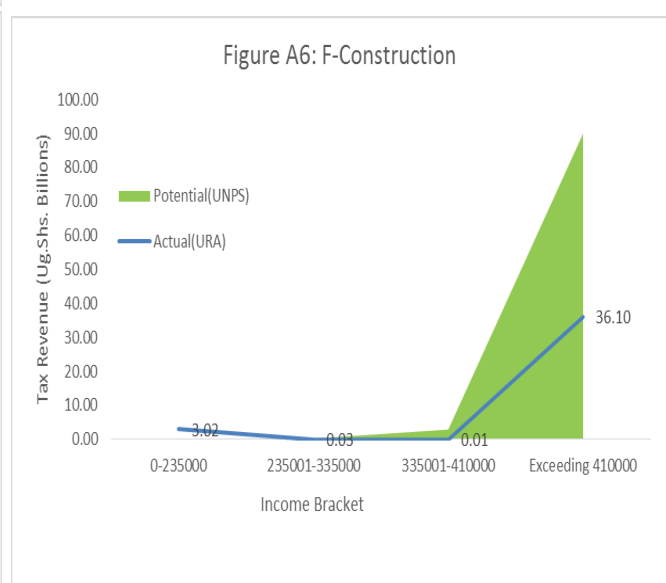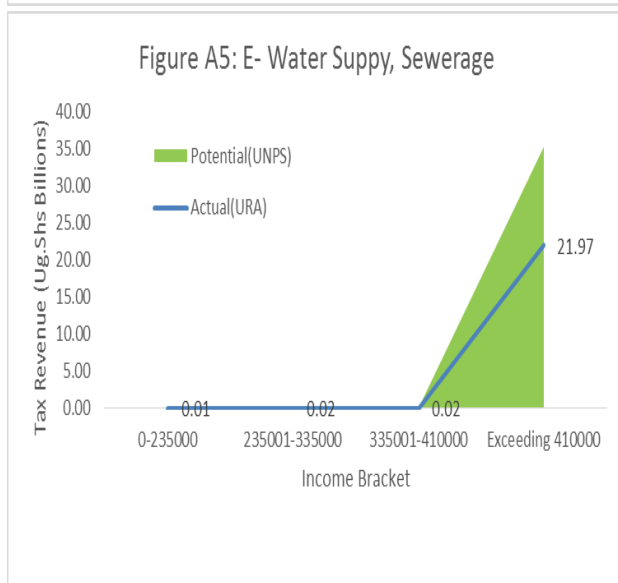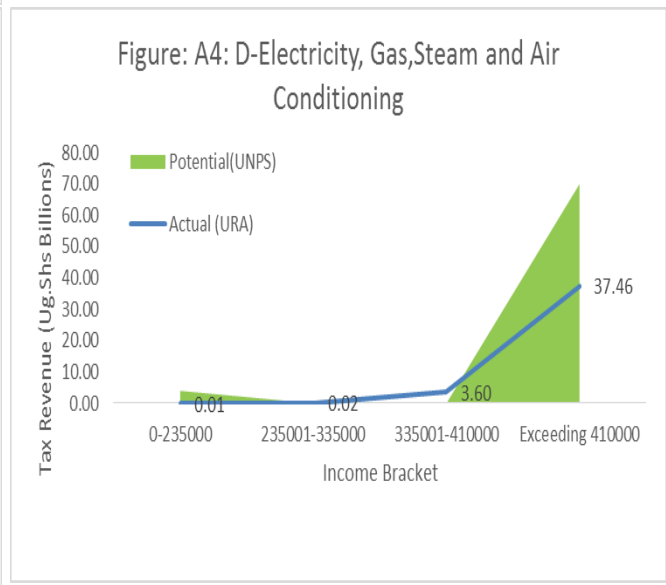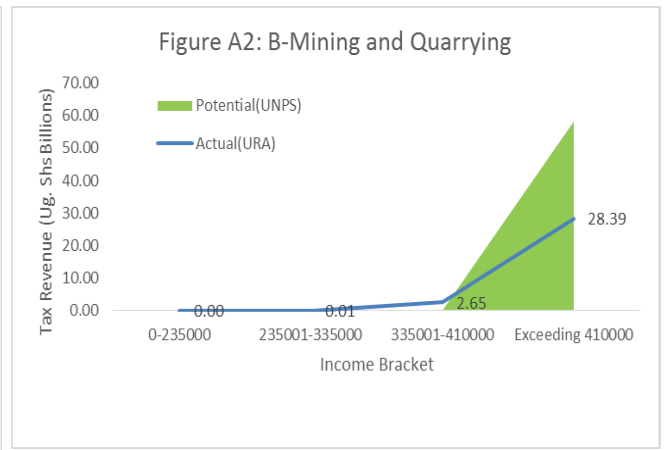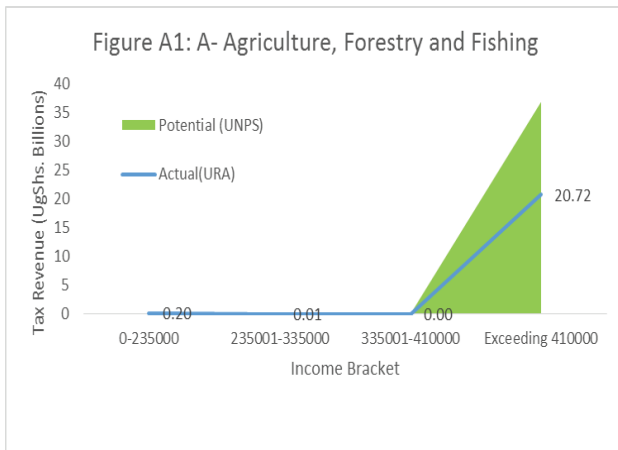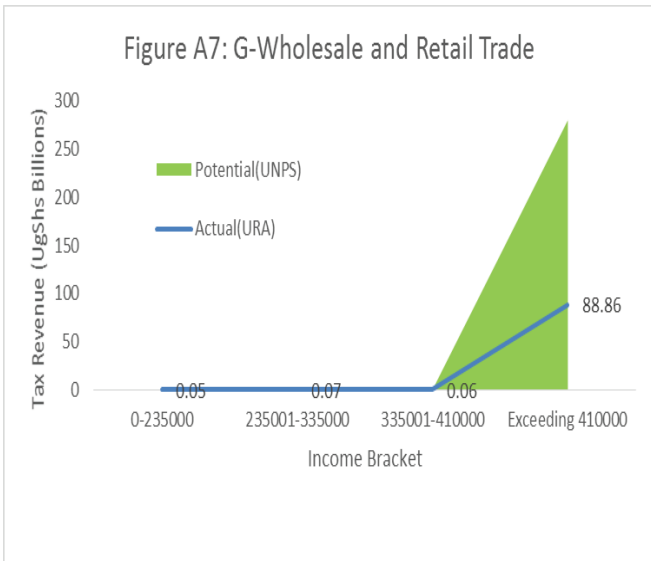
Figure A7: G-Wholesale and Retail Trade

Figure A8: H-Transportation and Storage
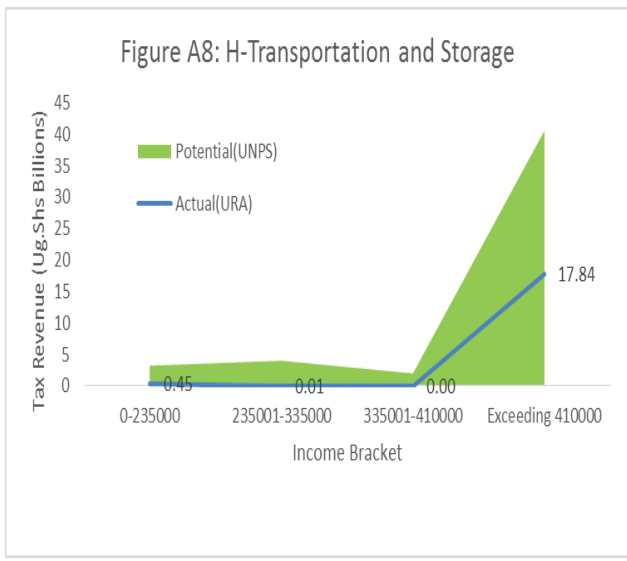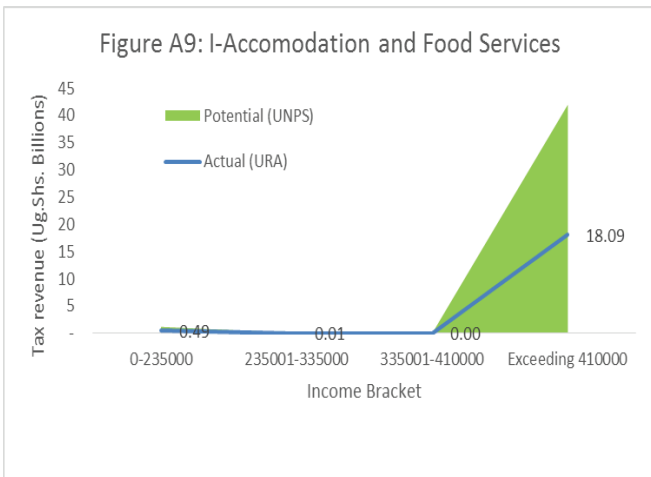

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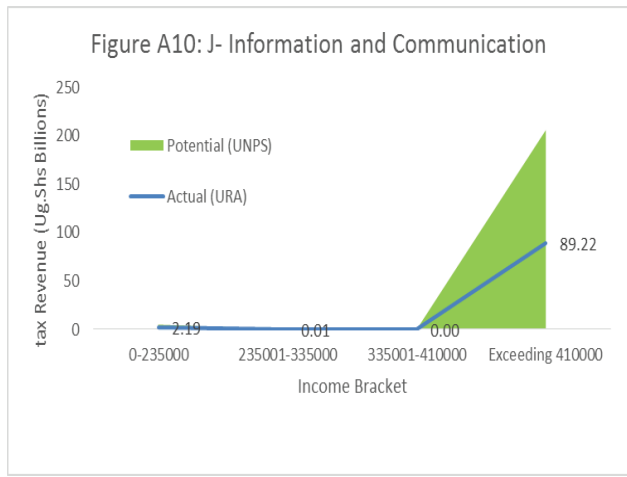

Figure A10: J- Information and Communication
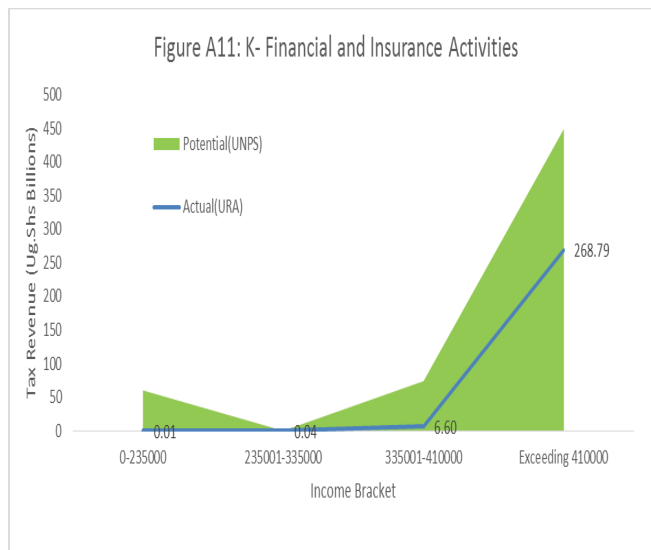

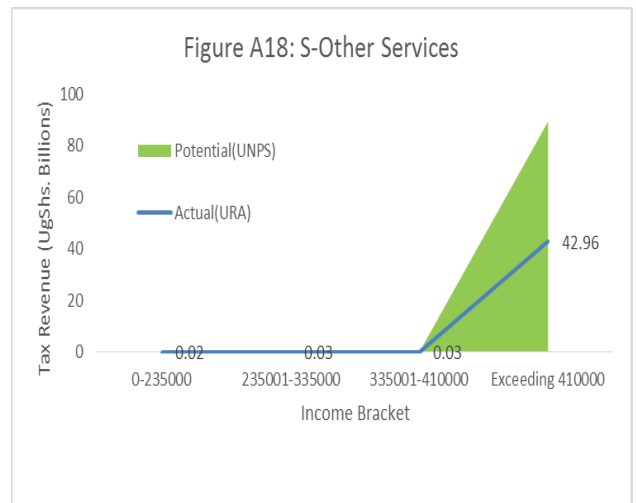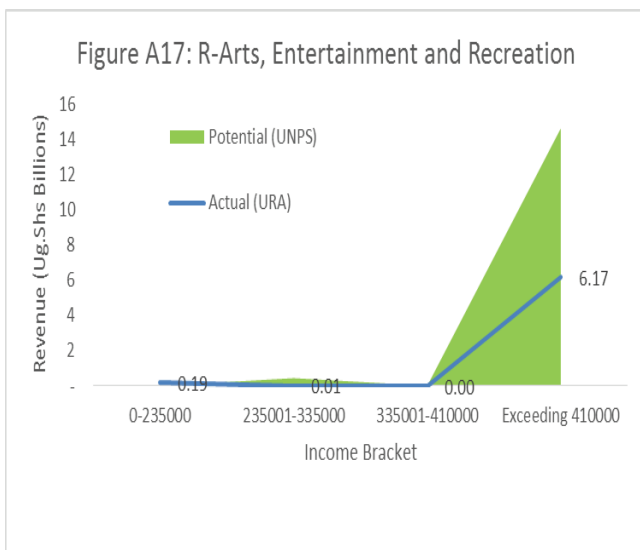
Figure A11: K- Financial and Insurance Activities

Figure A12: M- Professional, Sciencetific and technical activities

Figure A13: N-Administrative and Support Services

Figure A14: O- Public Admin, Defence and Compulsory Social Security

Figure A15: P-Education

Figure A16: Q- Human Health and Social Work Activities

Figure A17: R-Arts, Entertainment and Recreation

Figure A18: S-Other Services

Figure A19: T- Activities of households

Figure A20: U-Activities of Extra-Territorial Organization

Figure A21: All Sectors

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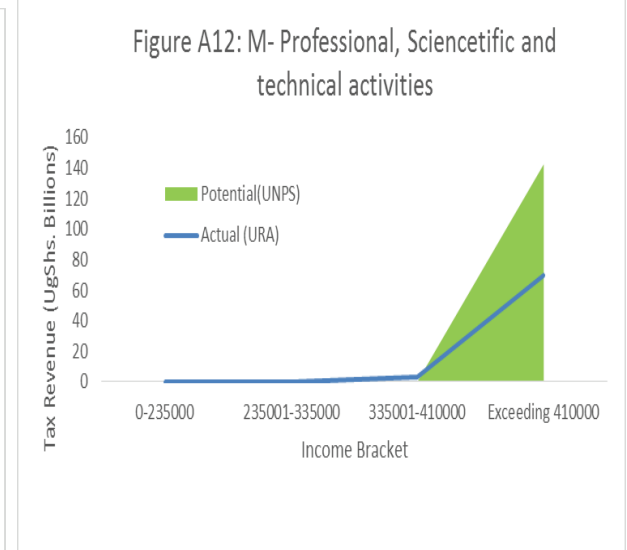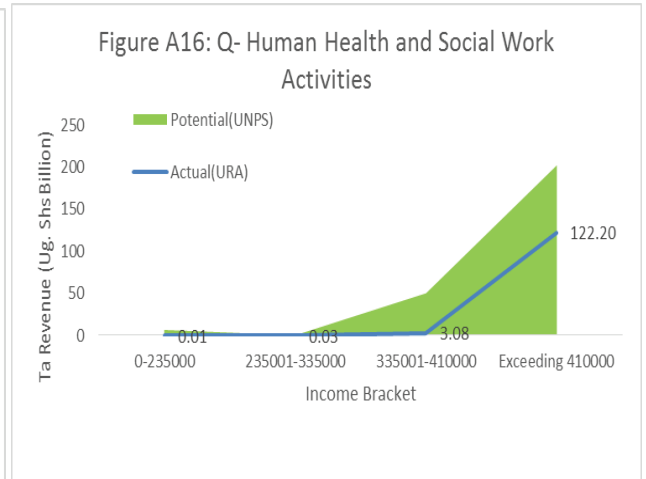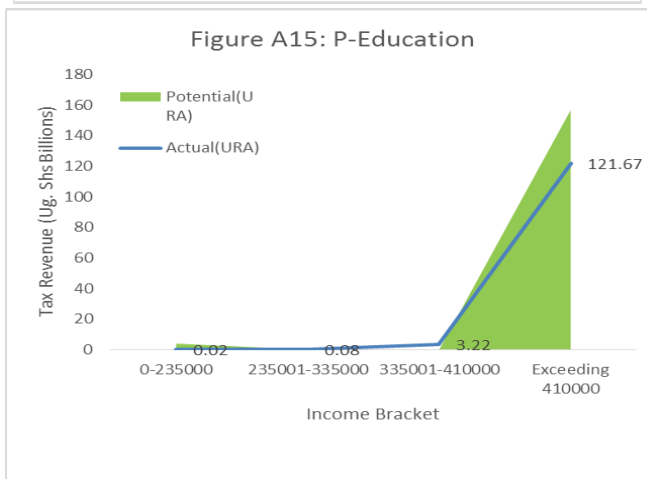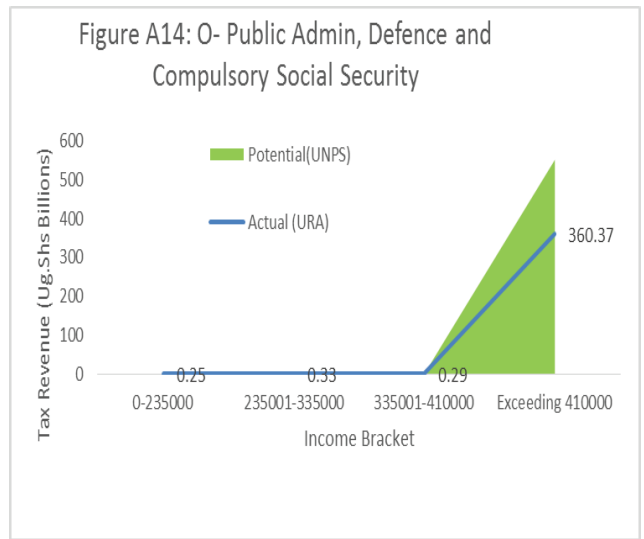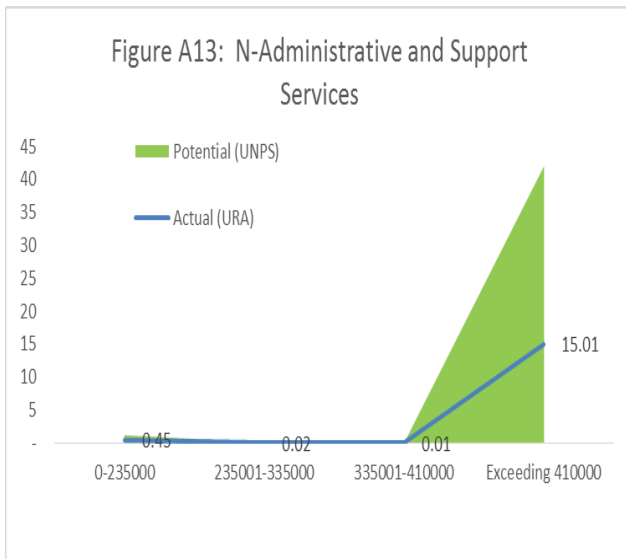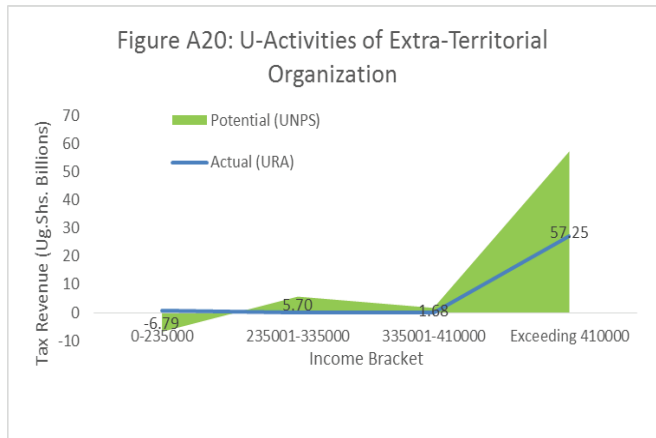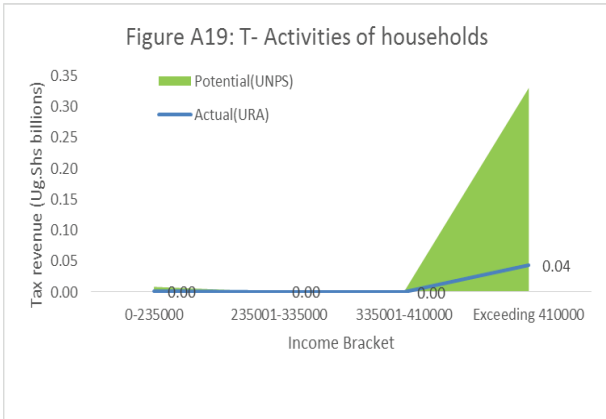
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