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African Tax Administration Paper 23

Are Women More Tax Compliant than Men? How Would We Know?

Jalia Kangave, Ronald Waiswa and Nathan Sebaggala

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Summary

Most research on tax compliance, including research on gender differences in compliance, is based on one of two problematic sources of data. One is surveys enquiring about attitudes and beliefs about taxpaying, or actual taxpaying behaviour. The other is experiments in which people who may or may not have experience of paying different types of taxes are asked to act out roles as taxpayers in hypothetical situations. Much more accurate and reliable research is possible with access to 'tax administrative data', i.e. the records maintained by tax collection organisations. With tax administrative data, researchers have access to tax assessments and tax payments for specific (anonymised) individual or corporate taxpayers. Further, tax administrative data enables researchers to take account of a phenomenon largely ignored in more conventional compliance research. Tax payment is best understood not as an event, but as part of a multi-stage process of interaction between taxpayers and tax collectors. In particular, actually making a tax payment typically represents the culmination of a process that also involves: registering with the tax collecting organisation; filing annual tax returns; filing returns that indicate a payment liability; and receiving an assessment. The multi-stage character of this process raises questions about how we conceptualise and measure tax compliance. To what extent does 'compliance' refer to: registration, filing, accurate filing, or payment? The researchers employed this framework while using tax administrative data from the Uganda Revenue Authority to try to determine gender differences in compliance. The results are sensitive to the adoption of different definitions of compliance and subject to year-to-year changes. Finding robust answers to questions about gender differences in tax compliance is more challenging than the research literature indicates.

Keywords: tax compliance, gender, sole proprietors, laboratory experiments, surveys, administrative data.

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Introduction

We now have a better understanding of the gender dimensions of taxation in Africa than we did, say, five years ago.[1] But we know very little about the relationship between gender and tax compliance in Africa. One of the earliest studies on the determinants of tax compliance is the Allingham and Sandmo (1972) study, which concluded that taxpayer behaviour is influenced by the economic returns on evasion. Since then, researchers and policymakers have identified various other determinants of tax compliance including the impact of social influence, the importance of the political legitimacy of states, the validity of the fiscal exchange theory and the role that positive incentives play in influencing compliance (see Mascagni 2018 for a review of the literature). Similarly, there are now several studies that examine the gender dimensions of tax compliance (Hasseldine 1999; Kasipillai and Jabbar 2006; D'Attoma, Volintiru and Malezieux 2018; Chung and Trivedi 2003; Torgler and Valev 2010; Ross and McGee 2012; Yimam and Asmare 2020). However, very few of them focus on Africa. The results of these studies have been mixed but the bulk of them conclude that women are more tax compliant than men.

Identifying the gendered differences in tax compliance is important from a policy perspective because it has the potential to result in the development of more equitable tax systems. For example, if it is determined that women are more compliant than men, policymakers may wish to establish the reasons behind women's higher levels of compliance. Are women more compliant because they are more law abiding or do they comply because they lack the protective social networks that men have? Or do we find higher levels of compliance among female-owned businesses because women do not have a good understanding of the law, which results in them paying more taxes than they should actually be paying? Similarly, if it is established that men are more compliant than women, policymakers may inquire into whether this is because enforcement efforts target male-dominated sectors. Addressing the issues raised by these questions is not only likely to result in building more equitable tax systems but may also lead to more voluntary compliance, which would in turn result in more revenue being collected.

The methods that we use in measuring these gendered differences are important. With the exception of the recent study by Yimam and Asmare (2020), which uses tax administrative data, almost all of the other studies on gender and tax compliance use laboratory experiments or attitudinal surveys. While experiments and surveys provide us with useful insights into the behaviours and attitudes of men and women, they tell us very little about actual taxpaying. First, they do not rely on actual taxpayer data. Second, most of the studies assume that tax compliance is a singular and simple process and that, therefore, one can easily divide taxpayers between those who comply and those who do not. The reality is, however, quite different. In practice, most tax collection involves several bureaucratic

[1] Studies on market trade highlight the huge burden imposed on women by toilet fees (Siebert and Mbise 2018; Sharpe 2018), regressive market taxes (Ligomeka 2019; Akpan and Sempere 2019; SEATINI and Oxfam 2017) and market tax rates that are higher than those for personal income taxes, corporate income taxes and trading licence fees (Ligomeka 2019; Tanzarn 2008). Similarly, in markets and in cross border trade, male tax collectors have been found to be responsible for much of the verbal, physical and sexual harassment of traders (Akpan and Sempere 2019; van den Boogaard, Prichard and Jibao 2019; Higgins 2011) even as there is also some evidence that vulnerable women – particularly the elderly, pregnant and widowed – may receive preferential treatment from tax collectors (Prichard and van den Boogaard 2017). In addition, a disproportionate burden is placed on women by the informal taxes and user fees paid to access community goods and services such as healthcare, education and clean water (van den Boogaard 2018; Paler, Prichard, Sanchez de la Sierra and Samii 2017) and gender biases have been identified in the presumptive taxes that are imposed on small and informal businesses (Carroll 2011; Dube and Casale 2017; Lahey 2018). Lastly, a number of positive impacts have been identified when women are engaged in tax administration at the national and subnational levels (Mwondha, Kaidu Barugahara, Nakku Mbiru, Kanaabi and Isingoma Nalukwago 2018; Akpan and Sempere 2019).

processes including registration, filing tax returns, paying taxes and establishing the accuracy of the returns filed and the taxes paid. Measuring tax compliance thus becomes more complicated than laboratory experiments and surveys suggest.

When we set out to undertake this study, we had the objective of answering one broad question: are women in Uganda more tax compliant than men? Specifically, we wanted to establish whether female sole proprietors on the Uganda Revenue Authority's (URA) taxpayer register are more compliant than male sole proprietors. We soon found that the answer to that question depends on exactly what one means by tax compliance. For example, does registering for taxes mean that an individual is compliant? What happens when a person registers for taxes but does not file tax returns? And what if they file returns but do not pay the taxes due? Does it matter whether or not they file their returns on time? And does the accuracy of those returns matter? Lastly, can we reliably establish the levels of compliance in the absence of audits? We do not have answers to all these questions because we do not have the data to answer all of them.

For purposes of this study, we define tax compliance to mean registration for taxes, filing income tax returns and paying tax bills. We analyse data from three URA databases: the taxpayer register, tax returns filed by sole proprietors between financial years 2013 to 2018 and tax payments made by sole proprietors for the financial years 2015 to 2018. Unlike most of the existing studies, which find women to be more tax compliant than men, we get mixed results, depending on the aspect of compliance that we are examining. We find that women are significantly more compliant than men when it comes to filing tax returns. On the other hand, we find mixed results when it comes to paying taxes. For example, we find that in 2015/2016, men are more likely than women to pay taxes. However, in 2016/2017, the difference between the behaviour of women and men is insignificant. While in 2017/2018, women are more likely than men to pay taxes. On the whole, we find low levels of compliance for both men and women with regard to paying taxes and filing tax returns. And while the taxpayer register contains more men than women, we do not have reliable data to measure the extent of compliance as far as registration is concerned. All of this makes it difficult to genuinely find out the gender dimensions of tax compliance. It also means that existing studies ought to be interpreted cautiously.

Our study has various limitations. To begin with, as stated above, we are unable to measure compliance with regard to registration because we lack reliable data on the number of sole proprietors that should ideally be registered. Similarly, even though we have access to a large sample of administrative data, without access to third party information and with limited audit information on individuals, it is difficult to establish the accuracy of the returns filed (Slemrod 2019). Moreover, we do not establish the reasons behind the differences in compliance. For example, we do not know whether women are more compliant with filing tax returns because of an obsession with registration, which compels more women to register out of a fear of being penalised (see Moore 2020). Despite these limitations, the study makes a useful contribution to the discussion on how we measure tax compliance through a gender lens. Specifically, it illustrates that compliance varies with different aspects of the 'filing-accuracy-payment framework' and indeed across years, making it difficult to reach a single conclusion on the question of whether women are more compliant than men. These findings may also be useful for how we measure tax compliance more broadly.

We begin by analysing the methodological approaches that have so far been used to study gender and tax compliance, in part 1. We then examine the URA's taxpayer register to determine the proportion of male vis-à-vis female sole proprietors and identify the businesses that they are engaged in and the tax regimes applicable to them. Having highlighted the challenges that we experience with analysing the data in part 3, we unpack the various aspects of tax compliance of men and women using the URA databases, in part 4. Our findings in part 4 form the basis for identifying some of the methodological challenges for measuring compliance in part 5. We conclude the paper in part 6.

1 Literature review

Studies on tax compliance often rely on three methods: surveys (in which respondents are asked questions about their perceptions, attitudes and experiences with tax systems), laboratory experiments (in which participants are put in artificial situations to observe how they would behave if they had to make decisions relating to paying taxes) and field experiments (which use various kinds of consistent messages sent out to taxpayers by revenue authorities to determine actual taxpayer behaviour in response to those messages) (Kangave, Mascagni and Moore 2018). Researchers seeking to understand the gender dimensions of tax compliance have, for the most part, relied on the first two methods (surveys and laboratory experiments). The results of the studies have been mixed. However, the majority of them conclude that women are more compliant than men.

Laboratory experiments – also known as simulation exercises – involve putting participants in artificial taxpaying situations and requiring them to report an income based on variables such as the rate of tax, the probability of audit and the severity of sanctions (Friedland, Maital and Rutenberg 1978; Chung and Trivedi 2003, Kastlunger, Dressler, Kirchler, Mittone and Voracek 2010; Mascagni 2018; D'Attoma, Volintiru and Steinmo 2017). To mirror real-life situations, participants are required to perform a task for which they are paid experimental currency. The participants are briefed on how to complete an income tax return, provided with information on audit procedures, and informed on the probability of audit and the fines imposed when non-payment or underpayment are detected. Participants may also be told to assume that the tax authority would not know what their income is, unless they are audited. In some experiments, participants are engaged in one taxpaying round. However, most experiments engage participants in several rounds to mirror the fact that in practice, taxpayers have opportunities to change their behaviour.

Laboratory experiments can be helpful in observing the differences between the behaviour of men vis-à-vis women because participants are likely to be honest, knowing that there are no real-life consequences attached to their actions (Kangave *et. al.* 2018). But the artificial nature of the setting may also produce the opposite outcome. Because participants know that they are being observed, they may be tempted to act in a manner that is intended to please the researcher. And invariably, because the setting is artificial, 'they may behave differently than they would under the pressures of real life'. (Mascagni 2018: 275).

Other studies measure the gender dimensions of tax compliance using surveys of randomly selected individuals (Hasseldine 1999; Kasipillai and Jabbar 2006). Survey questionnaires may be sent through mail (Hasseldine 1999) or administered through face-to-face interviews (Kasipillai and Jabbar 2006). Respondents are assured that their responses will be treated with confidentiality. The questionnaires are designed to collect the biographical data of respondents and to seek responses to questions that are used as proxies for compliance. In Kasipillai and Jabbar (2006), for example, participants were asked to respond to statements such as 'It is not wrong to understate some income since it does not really hurt anyone'; 'It is not so wrong to declare less on taxable income since the government spends too much on extravagant projects' and 'With the high cost of goods and services these days, it is okay to claim more expenses to help make ends meet.' In addition to structured questions, researchers may collect information relating to the respondents' prior tax history. Respondents may also be requested to answer hypothetical questions relating to cases of underreporting income and overstating deductions. In the Kasipillai and Jabbar (2006) study, respondents were also requested to report prior cases of tax evasion.

The advantage of surveys is that, because they often involve larger samples of participants than laboratory experiments, and because the participants are randomly selected, they are more likely to be representative of the localities that are being studied (Kangave *et. al.* 2018). Similarly, the information on the tax history of the respondents can provide useful insights for gauging compliance. And the hypothetical cases, used together with the questionnaire responses, can shed light on the attitudes and perceptions of men and women. However, just like laboratory experiments, surveys do not necessarily reflect how individuals will behave when making decisions relating to real-life situations.

Laboratory experiments and surveys provide us with useful insights into the attitudes and behaviours of men and women. From them, we conclude that women are likely to be more tax compliant than men. However, we ought to be cautious about relying on their findings to form concrete opinions on gender and tax compliance, at least for two reasons. First, as noted above, they are not based on real taxpaying situations, even though the researchers try to replicate this. As such, while the findings can tell us something about women and men's attitudes, perceptions and experiences with tax systems, they do not tell us with certainty how these individuals would behave when they have to make real-life decisions about tax compliance (Mascgani 2018). Similarly, as Slemrod (2019) observes, laboratory experiments do not tell us much about the 'psychological attitudes of individuals towards government [which] might be fundamentally different than their attitudes towards other people, or even other organizations. Individuals might feel more dutiful and even obedient toward government' (Slemrod 2019: 911). Ultimately, surveys and experiments can tell us very little about the relationship between attitudes and behaviour on the one hand and actual taxpaying on the other hand. Second, most of the studies assume that 'paying taxes' is a simple and singular process, rather than part of a long bureaucratic process. In laboratory experiments, for example, the filing of tax returns is often taken as a given. Emphasis is largely placed on the income declared and taxes paid. The assumption here is that everyone who registers for taxes files a tax return, with the only real question being whether they will declare the correct amount of income and pay the right tax. In practice, as will be demonstrated in part 4 using URA taxpayer data, these processes can be significantly different.

A recent study by Yimam and Asmare (2020) addresses these shortcomings by using actual taxpayer data. Using a combination of audit data from the Ministry of Revenues in Ethiopia and a survey of randomly selected businesses in Addis Ababa, the researchers investigate the question: how does the gender of business owners affect the tax compliance behaviour of enterprises in Ethiopia? They define tax compliance to mean 'declaring the right amount of taxable income in a given fiscal year' while non-compliance means 'underreporting taxable business income' (Yimam and Asmare: 8). The administrative data covers the period between 2008 and 2018 and consists of tax declarations of business income, the audit history of taxpayers and information relating to penalties. A business is considered to be compliant if it has been audited and never been fined during the period under study. On the other hand, a business is non-compliant if it has been audited and fined for underreporting taxable income at least once in the period. The researchers also conduct a survey of 408 businesses. Importantly, 77 per cent of the surveyed businesses had been audited at least once during the period being studied (*ibid*.: 11). Among other questions, survey respondents were asked why they pay taxes as required by the law. The majority (94 per cent) responded that it was 'their duty as citizens' (*ibid*.: 11). The researchers interpret this to mean that the majority are voluntarily compliant. There is, however, an important observation made by the researchers, which demonstrates why we should be cautious about relying too heavily on surveys to form opinions about the gender dimensions of tax compliance. When the researchers match the survey data with the audit data, they find reasons that lead them to question the trustworthiness of the responses provided in the survey. For example, 36.5 per cent of the respondents who say that they pay their taxes because it is their duty as citizens are found to have understated taxes according to the audit data (*ibid*.: 12).

The findings in Yimam and Asmare (2020) underscore the importance of measuring compliance using actual taxpayer data. Let us now turn to the URA case study to demonstrate some of the complexities involved in researching tax compliance.

2 The URA's taxpayer register

As at May 2018, the URA taxpayer register had a total of 1,302,435 taxpayers. Of these, 1,188,500 were individuals (70 per cent men and 30 per cent women).

Table 1 URA taxpayer register for individuals

GENDER	Freq.	Percentage
Female	356,261	30%
Male	832,239	70%
Total	1,188,500	100%

Approximately two thirds (64 per cent) of these individuals are employees. The remaining 36 per cent are split between those earning business income (26 per cent), rental income (1 per cent), property income (3 per cent)[2] and other income (7 per cent).[3] Of all the female taxpayers on the register, 73 per cent are employees compared to 60 per cent for men.

Table 2 Income sources for individuals on URA's taxpayer register

GENDER		Employment	Business	Rental	Property	Other	Register size
F	Freq	260,984	72,503	4,470	6,358	11,946	**356,261**
	Percent	***73.3%***	***20.4%***	***1.3%***	***1.8%***	***3.4%***	***100.0%***
M	Freq	495,441	233,385	10,631	25,346	67,436	**832,239**
	Percent	***59.5%***	***28.0%***	***1.3%***	***3.0%***	***8.1%***	***100%***
Total	Freq	756,425	305,888	15,101	31,704	79,382	**1,188,500**
	Percent	***63.6%***	***25.7%***	***1.3%***	***2.7%***	***6.7%***	***100.0%***

Excluding those in employment, women are engaged in retail trade (41 per cent), agriculture (13 per cent), financial services (13 per cent),[4] beauty and hair dressing (13 per cent) and other activities (20 per cent).[5] Men are mostly engaged in the transport and storage sectors – specifically boda-boda and taxis (32 per cent),[6] retail trade (25 per cent), agriculture (19 per cent) and other activities (24 per cent).

Individuals outside employment are taxed under three income tax regimes: presumptive tax (for small, micro and medium enterprises, whose annual turnover is between UGX10 million (US$2,688) and UGX150 million (US$40,318)),[7] the real income tax regime (those with a turnover above UGX150 million) and the rental income tax regime. The bulk of individuals fall

2 Property income is defined under Uganda's income tax act to mean dividends, interest, natural resource payments, rents, annuities and royalties. It is distinguished from physical property, which is subject to rental income tax.

3 This includes those registered for non-tax revenues who declared no income source.

4 Most of the women in financial services work as mobile money agents.

5 These include transport, the hospitality industry, health services, and education services, among others.

6 Boda-bodas are motorcycle taxis, while the term 'taxis' is used to refer to public transport minibuses.

7 US$1 is equivalent to UGX3,720.38.

under the presumptive tax regime. This means that they are assessed income tax based on their gross income. The law distinguishes between those who earn less than UGX50 million (US$13,439) (who are required to pay predetermined fixed rates and are not allowed to claim any deductions for expenses or tax credits) and those who earn between UGX50 million and UGX150 million (who either pay a fixed rate or 1.5 per cent of their gross income, whichever is lower). The latter are allowed a credit for tax withheld or provisional tax paid, but they are not allowed deductions for expenses incurred in the production of their income.

Various indicators are used to estimate the gross income of presumptive taxpayers including the type of trade that they are engaged in, location of their businesses, size of their shops and responses given to URA enquiries about their estimates of monthly earnings and expenditures (interviews with URA officials; Joshi, Prichard and Heady 2014; Carroll 2011). A taxpayer can apply to the URA to be taxed under the real income tax regime if they can demonstrate that they are able to maintain proper records. Professionals, even when they earn less than UGX150 million, do not fall under the presumptive tax regime. The assumption is that they are capable of keeping proper books of account.

3 A few points on data

We analyse tax returns data for the years 2013 to 2018 and tax payments data for the years 2015 to 2018. Originally, our intention was to analyse returns and payments data over the same period (that is, 2013 to 2018). However, we found that the payments data for the period before 2015 is not disaggregated. In other words, payments relating to all three income tax regimes were lumped together prior to 2015. In contrast, data relating to tax returns for the three tax heads is captured separately even before 2015, which enables us to examine the filing of returns for a longer period of time.

Second, because the majority of sole proprietors fall under the presumptive tax regime, it is difficult for us to measure the gender dimensions of compliance based on variables such as the size of the taxpayer and number of employees that they have. In any event, the majority of these taxpayers are categorised as small taxpayers. We do, however, make an attempt to establish differences in size – even within this category – by looking at the average gross turnover of male vis-à-vis female-owned businesses.

Third, our analysis is made difficult by the fact that the majority of individuals on the register (approximately 86 per cent of men and 76 per cent of women) are perpetual non-filers, as discussed in part 4. This makes it hard to figure out whether these individuals fall under the presumptive tax regime or the real income tax regime, which invariably also has a bearing on establishing their size. At the point of registration, there is no requirement for individuals to register as presumptive taxpayers. Instead, they are all registered as income taxpayers. The distinction between those falling under the presumptive tax regime and the real regime is made at the point of filing returns.

These gaps in data and the low filing ratios complicate research.

4 Are female taxpayers on the URA’s taxpayer register more compliant than male taxpayers?

We ask one broad question: are female sole proprietors on the URA’s taxpayer register more compliant than male sole proprietors? To answer this question, we analyse data relating to taxpayer registration, filing of tax returns and payment of income taxes. We analyse both the intensive margin (the amount of tax payable and actual amounts paid) and the extensive margin (proportions and the change in probability to declare and pay). We extend the analysis to an inquiry into how women and men compare in terms of tax compliance over time, by location, age group and experience with the tax system.

Even though we find women to be significantly more compliant than men in filing tax returns, we find insignificant differences when it comes to paying taxes. We also find that generally, there are low levels of compliance among both men and women with respect to both filing returns and paying taxes. These low levels of compliance make research a bit more challenging.

Specifically, we find that:

a) The URA taxpayer register contains a much higher percentage of men than women. However, the proportion of women registered increases over the years.

There are more men than women registered on the URA’s taxpayer register. However, the proportion of women has increased over the years. For example, in 2010, of the 16,120 individuals who were registered, women accounted for only 12 per cent. This ratio increased to 29 per cent in 2011.[8] By 2018, women accounted for 31 per cent of the new individuals registered.

Table 3 Proportion of female and male taxpayers registered every year

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
Female	12%	29%	25%	27%	33%	28%	28%	32%	31%	30%
Male	88%	71%	75%	73%	67%	72%	72%	68%	69%	70%
Total	16,120	42,953	89,683	167,512	314,933	118,112	107,166	228,951	68,915	1,154,345

We are not able to establish with certainty the reasons behind this increase in women’s registration. We do not know, for example, whether this results from more women starting taxable businesses or whether women were largely non-compliant before, or if, indeed, women are now more vulnerable to being coerced to register because of the ‘registration obsession’ (Moore 2020). What we gathered from interviews with URA officials is that the introduction of the Taxpayer Registration Expansion Project (TREP) contributed to an increase in the percentage of female registration. Even though TREP was officially launched in 2015, work on expanding the taxpayer register started much earlier, when the Minister of Finance announced in her 2013/2014 budget speech that a legal framework would be put in place to support URA in identifying and collecting taxes from small businesses.

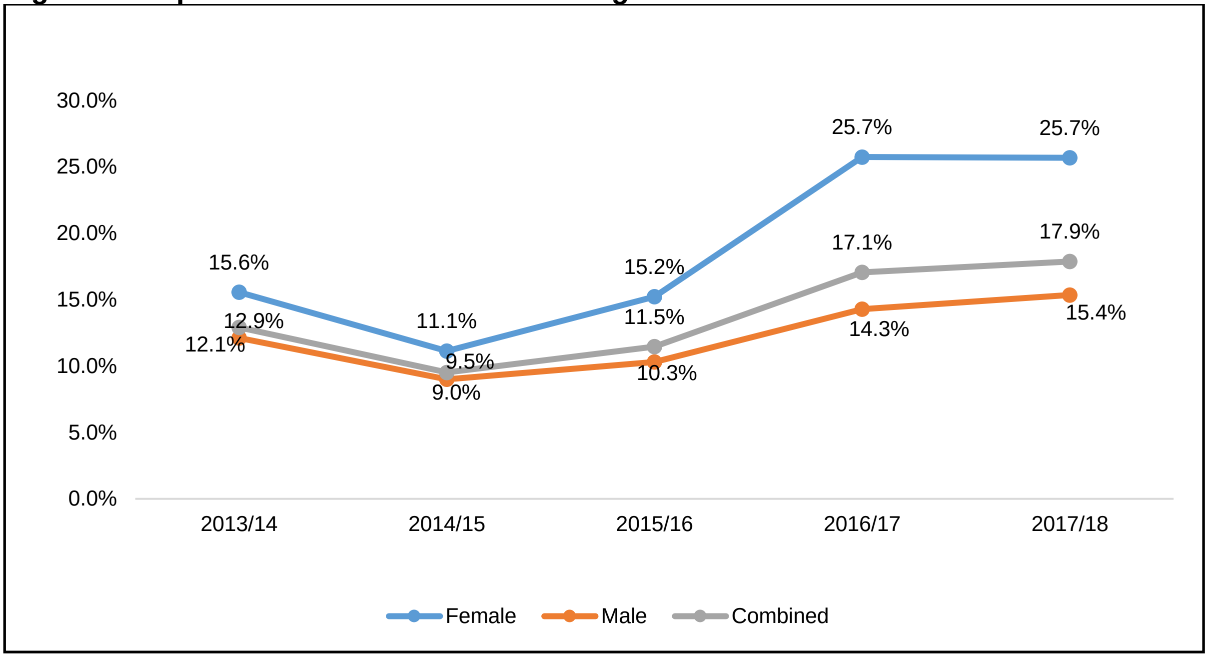
8 The spike in registration in 2011 could be attributed to the introduction of the electronic tax (eTax) system. Even though the system was introduced in 2009, it started with a few tax offices in Kampala. The focus in the initial stages was to migrate the data relating to large and medium taxpayers. Smaller taxpayers were migrated later.

The registration of businesses entailed moving from door to door (interview with URA official). There was no discrimination based on gender. However, URA officials suggest that the increase in women on the register may be associated with two factors. First, TREP focused largely on registering small businesses, where there is a huge representation of women. Second, most women are engaged in businesses that require having a physical location. For example, as shown in part 2 above, most women are involved in retail trade, hairdressing saloons and mobile money services. These businesses require physical premises and could thus be easily accessed by TREP officials. In contrast, even though men still constitute the largest proportion of individuals on the register, it is likely that many of them remain unregistered given their significant involvement in mobile businesses, particularly the transport sector.[9]

b) Women are significantly more compliant than men when it comes to filing income tax returns. However, overall, the compliance levels with respect to filing returns are very low for both men and women.

We find that women are significantly more compliant than men when it comes to filing income tax returns. The filing gap increases over the years. For example, in 2013/2014, approximately 16 per cent of women on the register filed income tax returns when compared to 12 per cent of men. By 2017/2018, the filing rate for women had increased to almost 26 per cent compared to 15 per cent for men. Filing ratios for both men and women started to rise in 2015/2016. However, while filing by women increased by 4 percentage points from the previous year, men's filing increased by only 1 percentage point. The increase in women's filing may be due to the formal launching of TREP in 2015, where small businesses were specifically targeted. Similarly, in 2015, the URA introduced an e-filing system for small businesses, which enabled these businesses to use simplified tax returns at the time of paying taxes (Mayega, Ssuuna, Mubajje, Nalukwago and Muwonge 2019). This may also explain why we see an increase in filing ratios by women.

Figure 1 Proportion of men and women filing income tax returns



9 As noted in part 2, the majority of the men on the taxpayer register (32 per cent) are in the transport and storage sector. Of these, approximately 92 per cent are registered as being involved in boda-boda and minibus (taxi) businesses. URA officials believe that the percentage of men registered would be much higher if these businesses were not so mobile.

However, there is still a high percentage of perpetual non-filers. Between financial years 2013/2014 and 2017/2018, approximately 86 per cent of men and 76 per cent of women who were registered for income taxes were not filing tax returns.

Table 4 Perpetual non-filers by gender FY 2013/14–2017/18

Perpetual non-filer	Female (%)	Male (%)	Total
No	17,489 (24.4)	33,275 (14.2)	50,764 (16.6)
Yes	54,230 (75.6)	201,281 (85.8)	255,511 (83.4)
Total	71,719 (100)	234,556 (100)	306,275 (100)

Percentage shares by gender in parentheses

We employ the logit model to estimate the probability of filing. Model 1 considers all observations from financial years 2013/2014 to 2017/2018 without controlling for any variable (no covariates). We consider location, age group and year of registration of taxpayers as control variable in our estimate. Model 2 considers observations for all five years. Models 3, 4, 5, 6 and 7 estimate the gender effect of different financial years. We find that gender has a significant impact on the decision to file or not to file ($p<0.05$). Models 1 and 2 show that men are about 57 per cent less likely to file their returns when compared to women. Similarly, it appears that the interventions in 2015 did not increase the likelihood of men filing returns. For example, in 2013/2014, men were 22.6 per cent less likely than women to file returns. This figure increased to 43 per cent in 2015/2016 and by 2016/2017, it had risen to 71 per cent.

Table 5 Probability of filing tax returns by gender

Filer	(1) All	(2) All	(3) FY 2013/14	(4) FY 2014/15	(5) FY 2015/16	(6) FY 2016/17	(7) FY 2017/18
Male	-0.578^{***} (0.006)	-0.571^{***} (0.006)	-0.226^{***} (0.025)	-0.241^{***} (0.022)	-0.430^{***} (0.016)	-0.706^{***} (0.012)	-0.683^{***} (0.010)
Covariates	No	Yes	Yes	Yes	Yes	Yes	Yes
N	982532	982532			187351	255516	331074

Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We also find that men are about 64 per cent more likely to be perpetual non-filers than women, as seen in Table 6.

Table 6 Probability of being a perpetual non-filer

Perpetual non-filer	(1) All
Male	0.638^{***} (0.011)
Covariates	Yes
N	306275

Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

c) Even though women are significantly more compliant than men as far as filing tax returns is concerned, we find very small differences with respect to paying taxes. Indeed, the results are mixed.

In the real income tax regime, women are only 6.9 per cent more likely to pay taxes than men and only 6.4 per cent in the presumptive tax regime. Indeed, the results are mixed across the years. For example, in 2015/2016, men were more likely to pay taxes than women were. In 2016/2017, the difference was insignificant. While in 2017/2018, women were more likely than men to pay taxes, as seen below.

Table 7 Probability of paying by gender

Filer	(1) All	(2) All	(3) Real	(4) Presumptive	(5) FY 2015/16	(6) FY 2016/17	(7) FY 2017/18
Male	-0.053***	-0.095***	-0.069***	-0.064***	0.044*	-0.009	-0.125***
	(0.010)	(0.010)	(0.012)	(0.020)	(0.024)	(0.017)	(0.015)
Covariates	No	Yes	Yes	Yes	Yes	Yes	Yes
N	190366	176113	128267	47846	36261	610065	78787

Standard errors in parentheses: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

d) While on average, men pay higher taxes than women, on the whole, both men and women pay very little in income taxes. In fact, in a few cases, individuals pay amounts that are below the statutory rates.

We find that for both presumptive tax and the real income tax regime, men pay higher taxes than women. For presumptive taxes, these differences are insignificant, with men on average paying only approximately UGX20,000 (US$5.4) more than women. However, a significant difference is observed in the real income tax regime, where women on average pay approximately UGX1.45 million (US$390.1) compared to the UGX 2.4 million (US$645.7) paid by men.

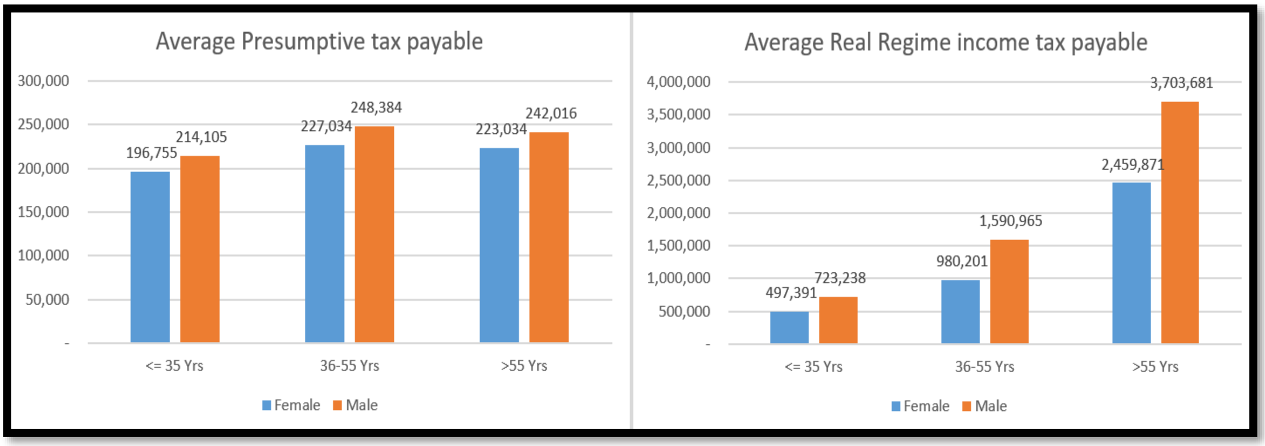
Table 8 Payment of taxes (in UGX)

Gender	Presumptive tax paid	Real regime income tax paid
Female	217,337.4	1,451,196
Male	237,759.2	2,402,317
Combined average	230,063.9	2,099,908
Differences (F-M)	-20,421.85***	-951,120.3***

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The gap between the taxes paid by men and women widens when the age of the taxpayers is taken into account. Older men, above the age of 55 years, pay a lot more tax under the real regime than women of comparable age.

Figure 2 Declared tax payable by gender and age group (in UGX)



These differences are not entirely surprising. Men are generally involved in more lucrative businesses than women. For example, women who are engaged in trade are mainly engaged in small retail businesses (85 per cent) such as unspecialised stores, second-hand clothing, foodstuffs and beverages. Only 15 per cent of women are in wholesale trading compared to 26 per cent of men.

Table 9 Distribution of men and women in the wholesale and retail sector

Wholesale and retail sector	Female	Male	% of female	% of male
Large wholesale trading	6,205	20,199	15%	26%
Small retail trading	35,401	58,201	85%	74%
Totals	41,606	78,400	100%	100%

Similarly, on average, men's businesses are more profitable than women's businesses. Over the five-year period, the difference between the profits made by men's businesses under the real income tax regime and the profits made by women's businesses is statistically significant. However, this difference becomes less significant in later years.

Table 10 Average profit after tax by gender in the real regime (in UGX)

Gender	Overall	2013/14	2014/15	2015/16	2016/17	2017/18
Female	1,820,364	1,616,075	557,570.8	1,821,584	2,712,498	2,211,573
Male	3,292,094	2,165,388	3,211,847	3,424,317	3,415,710	3,890,742
Difference (male-female)	1,471,730***	549,313	2,654,247***	1,602,733**	703,211.1	1,679,169

* p<0.10, ** p<0.05, *** p<0.01

Suffice to note, however, that the majority of sole proprietors on the register are presumptive taxpayers, which makes it difficult to compare compliance based on profitability or business size. We thus use gross turnover as a proxy for profitability and size. We find that on average, male-owned businesses have higher gross turnovers than female-owned businesses. The difference is statistically significant across the years.

Table 11 Average turnover by gender in the presumptive regime (in UGX)

Gender	Overall	2013/14	2014/15	2015/16	2016/17	2017/18
Female	16,635,562	16,570,818	10,525,757	4,945,774.7	15,526,637	17,899,202
Male	19,214,363	17,124,862	11,688,299	8,203,957.3	17,673,314	20,615,723
Difference (male-female)	2,578,801***	554,044	1,162,542***	3,258,182.6***	2,146,677.7***	2,716,521.1***

* p<0.10, ** p<0.05, *** p<0.01

Even though men pay higher taxes than women, on the whole, both men and women pay very little in income taxes. In fact, some individuals pay amounts that are below the statutory rates. For example, while the lowest tax payable under the presumptive tax regime is UGX100,000, we find a few cases of individuals (1 per cent of women and 1.5 per cent of men) paying below this amount. Similarly, almost all the presumptive taxpayers (97 per cent) who paid taxes, paid in the lower presumptive tax bracket (that is, less than UGX50 million). Only 2 per cent of women and 3.7 per cent of men paid in the bracket with a turnover above UGX50 million. We observe a similar behaviour under the real income tax regime. Almost 90 per cent of taxpayers pay in the lower tax brackets, as seen in the table below.

Table 12 Amounts of tax paid by gender and regime (in UGX)

	Presumptive		**Real regime income tax**	
Amounts paid	Female	Male	Female	Male
Below 100K	151 (1.1)	322 (1.5)	836 (4.5)	1,853 (4.8)
100K to 150K	2,897 (21.4)	4,484 (20.3)	2,822 (15.2)	4,917 (12.7)
150K to 200K	2,784 (20.6)	4,449 (20.1)	2,747 (14.8)	4,901 (12.7)
200K to 350K	5,647 (41.76)	8,243 (37.2)	7,230 (38.9)	12,037 (31.2)
350K to 937.5K	1,762 (13.0)	3,819 (17.3)	3,242 (17.4)	8,103 (21.0)
Above 937.5k	282 (2.1)	823 (3.7)	1,715 (9.2)	6,796 (17.6)
Total	13,523 (100)	22,145 (100)	18,715 (100)	38,607 (100)

Percentage shares in parentheses.

Additionally, even though the minimum tax rate for general trade in Kampala is UGX250,000, the majority of traders pay this bare minimum, with a few of them paying below this rate. The average tax paid by female traders in Kampala is UGX243,000 while that paid by men is UGX259,000.

Table 13 Income tax paid by individuals in and outside Kampala (in UGX)

	Presumptive tax paid		Real regime income tax paid	
Gender	Kampala	Outside Kampala	Kampala	Outside Kampala
Female	243,951.7	180,180.6	1,846,535	679,233.3
Male	259,176.6	222,996.9	3,277,114	1,245,027
Combined	252,121.9	210,199.8	2,774,685	1,093,205
Differences (F-M)	-15,224.9	-42,816.3***	-1,430,579***	-565,793.3***

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

These findings have various implications. The finding that women are more tax compliant than men with respect to filing tax returns could mean a number of things. It could mean that women are now more aware of their duty to file tax returns. It could also mean that the new e-filing system simplified filing for them. At the same time, it could mean that women are more affected by the ‘registration obsession’ and thus file returns out of fear. Meanwhile, the finding that there are no significant differences between men and women when it comes to paying taxes and that generally very few men and women file returns could mean that sole proprietors on the URA register evade taxes. However, it could also mean that both men and women on the register are unable to pay the taxes imposed on them and that they should not have been on the register in the first place. Our research did not investigate the reasons behind these findings. However, these are important questions for inquiry both from a gender and tax perspective and from a broader perspective on tax compliance more generally.

Importantly, the very low levels of compliance among both men and women suggest that there is something bigger than gender that is at play. Similarly, the differences that we observe – even within these low levels of compliance – underline the importance of not conflating tax compliance into a singular act of paying taxes. We turn to these methodological points in the next part.

5 Methodological points

Most of the research on gender and tax compliance uses laboratory experiments and attitudinal surveys to measure compliance. These methods tell us something about the attitudes and behaviours of women vis-à-vis men. We can use them to understand differences between what women and men think about the tax system and how this, in turn, affects their tax morale. Laboratory experiments can help us to understand which gender is more likely to take risks when they know that the probability of audit, for example, is low. Surveys that collect information on past taxpayer behaviour in relation to declarations of income and expenditures can also give us some insight into the behaviour of male vis-à-vis female taxpayers. And we can use both methods to understand how different genders are likely to respond to moral persuasions. However, surveys and laboratory experiments tell us very little about the actual taxpaying behaviour of individuals. The question of how one can do valid research on the gender dimensions of tax compliance and draw any kind of useful conclusions turns out to be significantly more complicated than the apparent findings from research to date.

Our findings from the URA case study demonstrate why we need to be cautious about drawing policy prescriptions based on studies that use laboratory experiments and surveys.

Specifically, they underline the importance of unpacking the various components of tax compliance. In practice, tax compliance involves several steps, the most typical being: (a) registration for taxes; (b) filing tax returns (annually, bi-annually or monthly, depending on the tax in question); (c) paying taxes; and (d) checking that the returns filed and the taxes paid are accurate. In our analysis of sole proprietors on the URA's taxpayer register, we find that the levels of compliance vary depending on the aspect of compliance being examined. Indeed, for the case of paying taxes, there are periods when men are more compliant and periods when women are more compliant. There are also periods when the differences in the levels of compliance between men and women are insignificant.

Access to administrative data helps us to understand the differences in actual taxpayer behaviour in a manner that laboratory experiments and surveys are unable to. However, even with the ability to access administrative data, researchers can still face a number of challenges. We have seen, for example, that even when we do have access to large samples of administrative data, the manner in which that data is collected can affect the extent to which we can make useful comparisons. For example, we were unable to compare payments data with filing data for similar periods of time because of the manner in which payments data was captured prior to 2015. Our analysis was further complicated by the fact that very few individuals file tax returns. Perpetual non-filing made it difficult for us to understand the profile of the taxpayers, including their size and the profitability of their businesses. In some countries, it would be difficult to undertake such a study because there is no requirement for taxpayers to disclose their gender at the time of registration. And there are instances when taxpayers may not fill out important aspects of the registration form, further making it difficult to determine things such as the nature and size of their businesses.

Similarly, those who evade taxes have huge incentives to conceal their behaviour (Slemrod 2019). This means that even when we can access administrative data, the reliability of the data is compromised by the fact that we can never really know how accurate these filings are (Mascagni, Monkam and Nell 2016; Alstadsæter, Johannesen and Zucman 2017). For studies like the present one, because we are relying on information that is disclosed by taxpayers, we are unable to detect the extent of under-declaration, or indeed, non-declaration. One cure for this would be to use audit data, as Yimam and Asmare (2020) did. In our case, however, there was no sufficient audit data for the category of taxpayers that we were studying. Consequently, when using administrative data, it is important to be cautious about its shortcomings. Is the data accurate? Is it collected in a manner that is useful? Are you comparing like with like?

The fundamental point to be made here is that it is difficult, actually, to research tax compliance, both in general and by gender, especially in low-income countries. Policymakers thus ought to bear these various limitations in mind. Administrative data is perhaps the most accurate reflection of actual taxpayer behaviour. However, for it to be useful, it needs to be properly captured.

6 Conclusion

Most studies on the gender dimensions of tax compliance measure compliance using laboratory experiments and surveys. These studies often reduce the concept of compliance to the act of paying taxes. We need to be cautious about using the findings of these studies to inform policy decisions, for at least two reasons. First, the behaviours and perceptions observed in laboratory experiments and surveys can be significantly different from how individuals behave when they are faced with real-life decisions about complying with tax obligations. Second, as the Uganda case study reveals, measuring compliance in real life is a lot more complicated than the picture painted in studies that are based on laboratory experiments and surveys. Administrative data provides a more realistic picture of taxpaying in practice. The Uganda case study underscores the plasticity of the concept of compliance, demonstrating that complying with taxes involves a range of processes and that the behaviour of individuals can vary depending on the process being analysed and indeed, the period in question. Yet even with access to large samples of administrative data, measuring compliance can be difficult when the data is not well documented. And in the absence of audit data, we cannot verify whether what taxpayers declare is accurate. All of this means that it is hard to genuinely find out about the gendered differences in tax compliance.

There are various other questions that have been raised by the findings in this research, which would be useful to explore in future research. What explains why women are more compliant than men when it comes to filing tax returns? Why are there generally low levels of compliance with filing and payment among both male and female taxpayers? Does gender not matter in this regard? Do male and female sole proprietors on URA's taxpayer register simply evade taxes or is there another explanation for these low levels of compliance? Previous research on tax compliance notes that non-compliance can be explained by a wide range of factors including outright evasion (Allingham and Sandmo 1972), weak tax knowledge on the part of taxpayers (Mascagni, Santoro and Mukama 2019), unrealistic targets and inaccuracies in taxpayer registers that are caused by ambitious taxpayer registration expansion campaigns (Mayega *et. al.*, 2019; Mascagni, Santoro, Mukama, Karangwa and Hakizimana 2020; Santoro and Mdluli 2019; Moore 2020) and a genuine inability on the part of taxpayers to pay the taxes that are imposed on them (Fjeldstad and Semboja 2001; Lahey 2018; Carroll 2011). In interpreting the findings that we provide in this paper, it is important to bear these factors in mind. Further research is required in this regard.

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