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The Customer is King: Evidence on VAT Compliance in Tanzania

Odd-Helge Fjeldstad, Cecilia Kagoma, Ephraim Mdee, Ingrid Hoem Sjursen and Vincent Somville

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Summary

Like governments in many other African countries, the Government of Tanzania has been striving to improve the effectiveness of its value added tax (VAT) regime by reducing tax evasion through a combination of measures, including improved tax legislation and more effective administrative processes. A key initiative was the introduction of Electronic Fiscal Devices (EFDs) in 2010. It was expected that the new technology would be beneficial to both the Tanzania Revenue Authority (TRA) and business people by improving VAT compliance and reducing administrative and compliance costs. However, VAT collection has not improved as expected. In this paper, we examine EFD compliance among businesses that have an EFD and identify factors that influence compliance. An innovation in this study is that the research design allowed us to directly observe EFD usage, an important aspect of VAT compliance. Our enumerators waited for customers departing from business premises, and then checked their receipts, interviewed them and interviewed the businesses. This design enabled us to observe each business's actual compliance in issuing EFD receipts, thus circumventing the problem of dishonest reporting, which is common in self-reported survey data. We find that EFD compliance is strongly associated with the customer's perception of detection and penalty risks, and with the business operator's perception of other businesses' compliance behaviour.

Keywords: tax; VAT; compliance; attitudes; audit probability; penalty; Tanzania.

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Acronyms

B2C	Business-to-customer
EFD	Electronic fiscal device
POS	Point of sale system
RPPD	Research, Policy and Planning Department, Tanzania Revenue Authority
SDC	Sales data controller
TRA	Tanzania Revenue Authority
TZS	Tanzanian Shilling
VAT	Value added tax

Introduction

Value added tax (VAT) has emerged as one of the main modes of raising revenue worldwide, but has significantly underperformed as a revenue collection tool in Africa (Cnossen 2015; Moore, Prichard and Fjeldstad 2018). An increasing body of research aims to explain this low performance. Emphasis has been put on widespread VAT exemptions, practical difficulties in administering the VAT system, and taxpayers' non-compliance (Keen and Michael 2009; Baunsgaard and Keen 2010; Carter 2013; Cnossen 2015; James 2015). A major barrier to the empirical study of compliance is that it is generally not observed. Instead, existing research relies on indirect measures of VAT compliance, typically changes in VAT revenues (Alm, McClelland and Schulze 1992; Alm and McClellan 2012; Lamberton, De Neve and Norton 2014).

Using a novel methodology, this paper provides a direct measure of VAT compliance and its links with key factors identified in the literature on tax compliance: the perceived risk of detection and punishment, tax morale and fairness of the tax, beliefs about others' compliance, and satisfaction with public services (Cowell 1990; Alm, McClelland and Schulze 1992; Andreoni, Erard and Feinstein 1998; McKerchar and Evans 2009; Fjeldstad, Schulz-Herzenberg and Sjursen 2012).

The study was conducted in Tanzania. Like governments in many other African countries, the Government of Tanzania has been striving to improve the effectiveness of its VAT regime by reducing tax evasion through a combination of measures, including improved tax legislation and more effective administrative processes (TRA 2018). A key initiative was the introduction of Electronic Fiscal Devices (EFDs) in 2010.[1] It was expected that the new technology would benefit both the Tanzania Revenue Authority (TRA) and business people by improving VAT compliance and reducing administrative and compliance costs. Despite the introduction of EFDs, VAT collection has not improved as expected. Although total VAT collection has been increasing steadily in nominal terms, it has been relatively flat as a share of gross domestic product (GDP) (Casey and Castro 2015: 32). In this paper, we focus on businesses that have an EFD, and try to understand the factors that influence the actual usage of the EFDs, which captures an important aspect of VAT compliance.[2]

To measure EFD usage, we approached a customer of each of the businesses in our sample and visually inspected whether they had received a VAT receipt for their purchases. The businesses were then defined as compliant if the surveyed customer had a verified receipt. Using this innovative survey design, we show that it is feasible to observe actual EFD compliance. In addition to checking the receipts, we asked customers and businesses questions intended to capture the key factors influencing tax compliance that have been identified in the literature. We then link these factors to the observed compliance.

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1 An Electronic Fiscal Device (EFD), also referred to as a till, is an electronic device for calculating, recording and transmitting sales transactions with the aim of ensuring accurate reporting of VAT (or sales taxes) to the tax administration. An EFD is comprised of a point of sale system (POS) and a connected sales data controller (SDC) that produces fiscal invoices. Once a sale is made, the POS sends the transaction data to the SDC, which formats the data into a fiscal invoice, attaches a digital signature and transmits this back to the POS. At this point, the receipt can be printed. While this process is ongoing, the SDC also transmits the fiscal data to the tax administration's server. The entire process is generally very fast. Digital certificates are issued for each EFD and these authenticate the EFD when it is linked to the tax administration's system. See URT 2010, URT 2012, and Casey and Castro 2015 for further details on EFDs.

2 In addition to EFD usage, businesses' VAT compliance, and ultimately VAT revenues collected, are also affected by factors such as input claims and enforcement. It is possible (and likely) that some businesses reduce their VAT payments by recording lower amounts than the real price paid on the receipts. For the remainder of this paper, the term 'compliance' refers to EFD compliance, and does not encompass these other factors affecting VAT compliance, unless specified otherwise.

An additional contribution of our work is that we are able to decompose the interaction between the businesses and the customers, and to investigate how the characteristics of both explain compliance. We find that the businesses are much more likely to comply (a mean increase in compliance of 24 percentage points) when they transact with a customer who is aware of her legal obligation to obtain VAT receipts and thinks that there is a real risk of punishment. This finding highlights the importance of the customers' awareness and perceptions in explaining businesses' tax compliance. In terms of the businesses' characteristics, we find that views about other businesses' compliance is the factor most strongly associated with a business's own compliance.

The rest of the paper is structured as follows. In the next section, we discuss our contributions to the related literature. We then describe the context of the study in greater detail in section 2. Thereafter, the research design is presented in section 3, followed by a discussion of the results in section 4. Finally, section 5 concludes.

1 Discussion of the literature

The paper relates to a growing literature on third-party reporting as an alternative to tax audits as an enforcement strategy (Kopczuk and Slemrod 2006; Gordon and Li 2009; Kumler, Verhoogen and Frías 2015; Dwenger, Kleven, Rasul and Rincke 2016). When employers, banks or trading partners directly provide the government with information about taxable income, the taxpayer may have little or no opportunity to evade tax, even when the probability of being audited is very low (Kleven, Knudsen, Kreiner, Pedersen and Saez 2011; Carrillo, Pomeranz and Singhal 2017). Thus, improvements in third-party information have the potential to significantly increase tax compliance. However, the enforcement capacity of the tax authority, which is often limited in developing countries, has been found to be crucial (Carrillo, Pomeranz and Singhal 2017).

VAT is a tax levied on all sales of commodities at every stage of production. It is added on the purchase price for the buyer, and the seller gains tax credits to offset any taxes previously paid on inputs. Because the sellers can only realise tax credits on their inputs if they have an invoice for the taxes paid, VAT gives sellers the incentive to collect the tax and pay it to the government, and to trade with other formalised firms (Keen and Lockwood 2010; Cnossen 2015). This creates a paper trail for transactions along the production chain and provides the government with essential information. When the transactions taking place are observed, collection and enforcement of taxes becomes easier and compliance is therefore argued to increase. Because of this built-in incentive for businesses to demand receipts from their suppliers, VAT is often referred to as 'self-enforcing' (Kopczuk and Slemrod 2006; Pomeranz 2015). However, the self-enforcing property of VAT often breaks down at the final stage of the supply chain, where a sale is made to an end customer that cannot claim a deduction on taxes paid and does not have an incentive to ask for the receipt, as this will typically imply a higher price. If a receipt is not issued at this final stage, the government cannot observe and enforce the tax, the seller does not have an incentive to ask for a receipt on inputs from suppliers, and non-compliance trickles up the supply chain. Using a field experiment in Brazil, Naritomi (2016) provides one possible solution to the problem. Introducing a receipt lottery for customers, thereby providing them with a monetary incentive to ask for the receipt, significantly increases the sales reported by businesses.

More broadly, the paper is related to the large literature on tax compliance originating with Allingham and Sandmo (1972). Their model is the basis of the 'deterrence approach' to taxpayer behaviour, which posits that tax compliance increases with the probability of audit and severity of punishment. Lab and field experiments generally confirm that increasing the taxpayer's perceived detection probability, or the severity of sanctions, increases

compliance.[3] However, the deterrence approach cannot fully explain observed levels of tax compliance. Given the prevailing probabilities of audit and severity of sanctions, the model predicts more evasion than we actually observe, at least in rich countries (Alm 2012; Hallsworth 2014; Dwenger *et al.* 2016).

Because of this, the 'non-deterrence approach', which suggests that taxpayer behaviour is additionally influenced by factors such as social norms, morale, fairness considerations and public service provision, is increasingly common in tax compliance research (Hallsworth 2014). The overall evidence on the importance of such factors is mixed. A number of field experiments have investigated the effect of appealing social norms on tax compliance. The idea is that not complying with the social norm has a moral cost and that reminding/telling people about the social norm for paying tax will increase compliance in settings where most people comply (Luttmer and Singhal 2014; Hallsworth, List, Melcalfe and Vlaev 2017). Hallsworth *et al.* (2017) find that including a short message referring to the fact that the majority of people pay their taxes in time significantly increases payment rates for overdue taxes in the UK. Bott, Cappelen, Sørensen and Tungodden (2017) and Del Carpio (2014) find positive effects of similar letter messages on declared foreign income in Norway and property tax payment in Peru, respectively.[4] In a randomised controlled trial of two anti-tax evasion schemes in Ethiopia, Shimeles, Gurara and Woldeyes (2017) find that appealing to tax morale promotes compliance, but slightly less than audit threat does. Slemrod, Blumenthal and Christian (2001) and Fellner, Sausgruber and Traxler (2013), on the other hand, find no significant (average) effect of social norm messages on reported income tax compliance in the US and on payment of TV licence fees in Austria, respectively. Fellner, Sausgruber and Traxler (2013), Del Carpio (2014) and Castro and Scartascini (2015) all find heterogeneous effects of social norm messages depending on prior beliefs about other people's compliance.

Another non-deterrence factor that has received much attention in the literature is public service provision, or reciprocity. The idea is that people comply with paying taxes because they receive something in return and that reminding people that tax finances public services will increase compliance (Luttmer and Singhal 2014; Carrillo, Castro and Scartascini 2018; Hallsworth *et al.* 2017). Also, in this case, the evidence from field experiments is mixed. In a field experiment from Rwanda, Mascagni, Nell and Monkam (2017) find that information to taxpayers about how tax revenues are spent and gentle reminders of deadlines for tax filing are generally more effective in increasing compliance than deterrence. Similarly, Hallsworth *et al.* (2017) and Bott *et al.* (2017) find that reminding the taxpayer that taxation finances vital public services increases payments of overdue taxes in the UK and foreign income and assets declared in Norway. On the other hand, Fellner, Sausgruber and Traxler (2013), Castro and Scartascini (2015) and Dwenger *et al.* (2016) find no significant effects of these kind of messages.

As Torgler (2007), Alm and McClellan (2012) and Hallsworth (2014) point out, the non-deterrence literature has mainly focused on the tax compliance of individuals, not organisations or businesses.

This article contributes to the literature on VAT compliance by using a novel methodology that gives a direct measure of the businesses' EFD compliance. We also collect survey information about the business, the salesperson and the customer with whom the transaction is made. This enables us to identify important determinants of EFD compliance at the customer, salesperson and business level. Doing this, we demonstrate that the customer's knowledge about the law and perceptions about deterrence are crucial to businesses'

[3] See Hallsworth (2014) for a review of field experiments and Alm (2012) for a more general overview of the literature on tax compliance.

[4] Bott *et al.* (2017)'s message also included a fairness argument: 'In order to treat taxpayers fairly, it is therefore important that foreign income and assets are reported in the same manner.' (p.9).

compliance. These characteristics of the customer turn out to be more important than the business's characteristics and business peoples' perceptions in explaining EFD compliance, highlighting the important role of the customer in solving the 'last-mile problem' of VAT compliance.

We also contribute to the broader literature on determinants of tax compliance by studying how both deterrence and non-deterrence factors affect compliance behaviour. In line with previous literature on deterrence factors, we find that the salesperson's initial decision to comply is significantly correlated with perceived deterrence. Further, we find that the total compliance is significantly associated with the customer's beliefs about deterrence. In terms of non-deterrence factors, few studies have investigated how these relate to businesses' (as opposed to individuals') compliance behaviour. We contribute to the literature by showing that businesses are more compliant when they perceive other businesses to be compliant too, and when they overall are satisfied with public service provision.

2 Context

First introduced in France in 1948, VAT is now in place in more than 150 countries (Ebeke, Mansour and Rota-Graziosi 2016). Currently, around 80 per cent of the countries in sub-Saharan Africa levy a VAT, typically raising about one-quarter of all tax revenue (Keen 2012: 11). It was introduced, mainly at the urging of the International Monetary Fund (IMF) and in the context of structural adjustment programmes in the 1980s and 1990s, to replace revenues that would be lost through large cuts in import and export duties (Gillis 1990: 77–8), but it has not yet replaced those lost revenues (Baunsgaard and Keen 2010; Keen 2012). The productivity of the tax – the ratio of actual to potential collections – is much lower for sub-Saharan Africa than for any other continent.[5] VAT systems in many African countries are so riddled with exemptions and zero rates on domestic goods that they resemble extended excise tax systems, while the standard rate is mainly confined to luxury goods (Cnossen 2015).[6] These exemptions have been actively defended – and sometimes expanded – through lobbying by the beneficiaries. From an administrative perspective, VAT can also be demanding for both tax administrators and taxpayers (Fjeldstad 2014: 184).[7] Yet, VAT is in Africa to stay. It is highly unlikely that any government would want to relinquish a tax that has such a high revenue collection potential (Moore, Prichard and Fjeldstad 2018).

In Tanzania, the introduction of EFDs started in July 2010, under the The Value Added Tax (Electronic Fiscal Device) Regulation.[8] It had multiple objectives. First, to provide the TRA with correct sales information from businesses; second, to reduce tax collection costs; and third, to encourage taxpayer compliance. By 2012, 22,000 EFDs were in use by VAT-registered taxpayers across the country (TRA 2018). In 2013, the number of EFD users was expanded to also include non-VAT-registered businesses. In spite of these efforts, the take-up and use of EFDs in Tanzania remains a major challenge for the TRA, and VAT collection

5 In 2010, the estimated average collection efficiency (also called C-efficiency) of VAT clustered around 55 per cent for all major regions of the world except sub-Saharan Africa, where it was 37 per cent (Keen 2013: 9).

6 The features of VAT in developing countries have often been influenced by foreign experts. James (2015: 172) argues that these experts' advice commonly replicates practices that have been developed in their own countries, explaining, for example, the complex rate and threshold structures, and widespread tax exemptions.

7 The issue of complexity depends on what is used as comparator (James 2015: 31-32). Compared to income tax, a well-designed VAT is considered superior because of the supposed ease of taxing consumption over income, and VAT involving fewer taxpayers (i.e. registered entities as opposed to all income earners). However, when compared to the retail sales tax, it is generally agreed that VAT is administratively more demanding.

8 The introduction of EFDs only applies to mainland Tanzania and does not include Zanzibar. Various circumstances, including a national general election that took place over the proposed implementation period, resulted in a slower than planned deployment pace. Thus, effective implementation of EFDs did not begin until January 2011 (Casey and Castro 2015: 33).

has not performed as expected.[9] As illustrated in Figure 1, the annual growth in VAT revenue collection was between 13.5 and 21.7 per cent in the period from 2010/11 to 2016/17. The average annual growth has been 16.8 per cent, which is below the projected rate of 18 per cent.

Figure 1 Annual VAT collection growth for the period 2010/11-2016/17

Source: TRA flash reports date (2017) and authors' calculations

The legislation under The Value Added Tax (Electronic Fiscal Device) Regulation orders all businesses with a turnover above a certain threshold to acquire and use EFDs (URT 2010; URT 2012). Initially, the legislation covered only VAT-registered businesses with a turnover of TZS [Tanzanian Shilling] 40 million and above. In 2015 the VAT threshold was increased to TZS 100 million (TRA 2018). Further, the requirement to use EFDs was extended to non-VAT-registered businesses with an annual turnover of TZS 14 million and above (ibid.).[10] The legislation has provisions towards those who fail to issue fiscal receipts or invoices when receiving payment for sales of goods and services. Penalties can also be imposed on customers who fail to demand a receipt or fail to report that they have been denied a fiscal receipt upon payment (URT 2016: 69-70).

By using EFDs, business people, in principle, are able to prepare and file their VAT returns in time to meet deadlines. The use of EFDs also reduces the time required for preparation of VAT returns, as compared to previously when VAT returns were prepared manually. However, in spite of these efforts, the take-up and use of EFDs by enterprises remains a major challenge for the TRA.

3 Research design

The purpose of this study is to examine EFD (non-)compliance behaviour and to identify the factors that influence it. To achieve this, we develop a direct measure of EFD compliance among Tanzanian businesses. Both government authorities and researchers have requested more precise information about the extent of the non-compliance problem. In addition, the compliance measure can be linked to standard factors that are expected to influence businesses' behaviour, measured at both the business and the customer level, to improve our understanding of EFD compliance.

[9] In all the annual budget speeches since 2014, the Minister of Finance has pointed at 'underutilisation of EFDs' as a major challenge for domestic revenue mobilisation.

[10] In August 2018, TZS 40 million, TZS 100 million and TZS 14 million were equivalent to approximately US$ 17,500, US$ 43,700 and US$ 6,100 respectively (www.xe.com/currencyconverter/).

The study was designed and conducted in collaboration with the Research, Policy and Planning Department (RPPD) of the TRA. The data collection was implemented in June-July 2017 in Dar es Salaam Region, the commercial centre of Tanzania. It covered five tax centres: Upanga, Kariakoo, Buguruni, Tegeta and Mwenge.[11] The selection of these centres was based on the following two criteria: (a) the centre has a large number of VAT-registered taxpayers, and (b) belongs to one of the busiest centres in Dar es Salaam. The data was collected by surveying a random sample of business operators ('taxpayers') from the five selected tax centres and one customer on each of the businesses' premises.[12] The final sample contains a total of 314 business-customer pairs.

3.1 Innovative measurement of EFD compliance

Enumerators collected the survey data by approaching a shop or business to interview the business operators, i.e. the EFD users.[13] One of the main challenges facing compliance studies is to observe actual compliance behaviour and to identify the factors that influence it. A major innovation in this study is that the design of the survey allowed us to identify the EFD users who complied as well as those who did not. To do this, customers who departed from the surveyed businesses were asked whether they were automatically given a receipt by the business operator. If not, they were asked whether they demanded one. If so, they were asked whether they eventually received a receipt. The enumerators visually inspected whether each of the interviewed customers had a TRA receipt. This design enabled us to observe each business's actual compliance in issuing TRA receipts, thus circumventing the problem of dishonest reporting, which is common in self-reported survey data.[14]

Based on these observations, we constructed three complementary measures of EFD compliance.

1. *Voluntary compliance:* a business is defined as voluntarily compliant if it issued a receipt without being requested to do so by the customer.
2. *Induced compliance:* a business is defined as having been induced to comply if it issued a receipt when requested to do so by the customer.
3. *Total compliance:* a business is defined as having a total compliance equal to 1 in our calculations if it issued a receipt, either automatically or because the customer requested a receipt.

3.2 Factors explaining EFD compliance

In addition to the questions about compliance, we collected information about the business operators and customers on factors that might explain EFD (non-)compliance and followed the literature on tax compliance in selecting those variables (Ali, Fjeldstad and Sjursen 2014; Hallsworth 2014; Luttmer and Singhal 2014). For the business operators, we use measures of perceived risk of punishment, tax morale and fairness, beliefs about other businesses' compliance, and satisfaction with public services. For customers, we use knowledge about the law that they can be fined for not having a receipt, and the perceived probability of detection.

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11 A tax centre is an administrative unit within a tax region (e.g. Dar es Salaam Tax Region). Tax centres carry out activities related to registration of taxpayers, data processing and broader tax compliance measures.

12 From a statistical standpoint, to accurately measure the compliance of each business, we would want more observations per business. However, after the first interview, and given that we ask many questions about tax and EFD compliance, it is likely that the business complies more, fearing to be detected in future interviews. For that reason, we chose to do only one interview per business, after the transaction was completed.

13 Of the business operators interviewed, 29 per cent were owners, 28 per cent managers, and 40 per cent employees. The remaining 3 per cent were relatives or acquaintances temporarily helping with the business.

14 Of the customers stating that they received a receipt, 12 per cent refused to let the enumerator inspect it. Two per cent agreed to let the enumerator investigate the receipt, and it was found that the receipt was not a TRA receipt. In both these instances, the business was defined as non-compliant.

We define the variables in the following way. *'Business: low punishment risk'* is a binary variable equal to 1 if the business representative believes that the probability of being punished when avoiding paying VAT is lower than 20 per cent (the median risk in the sample). *'Higher tax morale'* is a binary variable equal to 1 if the business's representative states that it is 'wrong and punishable' to avoid paying taxes (compared to 'not wrong' or 'wrong but understandable'). *'VAT rate is fair'* is equal to 1 if the representative states that the rate of VAT is fair. *'Other firms never evade VAT'* is equal to 1 if the representative reports that the other businesses in their area never avoid paying VAT. *'Satisfaction with public services'* is an index of overall satisfaction with public services and *'satisfaction with tax and admin'* is an index of overall satisfaction with tax and administration. Both are standardised with mean 0 and standard deviation equal to 1 and are derived using principal component analysis on the question 'To what degree are the following issues an obstacle to the current operations of this firm?'.[15]

When explaining whether the customer asks for a receipt and assessing the total compliance, we define the following customer-level variables: *'Customer: low punishment risk',* which is a binary variable taking the value of 1 if the customer knows she can be fined if she does not get a receipt (i.e. answers 'yes' to the question: 'Is it true that TRA can fine you if you do not get a receipt when you buy an item or a service?'), and perceives the probability of being punished to be 0 (i.e. answers '0' to the question 'Out of 100 people not having a TRA receipt, how many do you think are punished?'). *'Customer: high punishment risk'* is a binary variable equal to 1 if the customer knows she can be fined if she does not get a receipt and perceives the probability of being punished to be larger than 0. The missing category is comprised of the customers who think that there is no fine.

We summarise the compliance measures and the other variables collected in the next section.

4 Results

We start by decomposing the compliance process and the interaction between the businesses and the customers. Then we present the summary statistics of our other variables, before showing the associations between the compliance measures and the factors that could explain compliance.

4.1 The compliance process

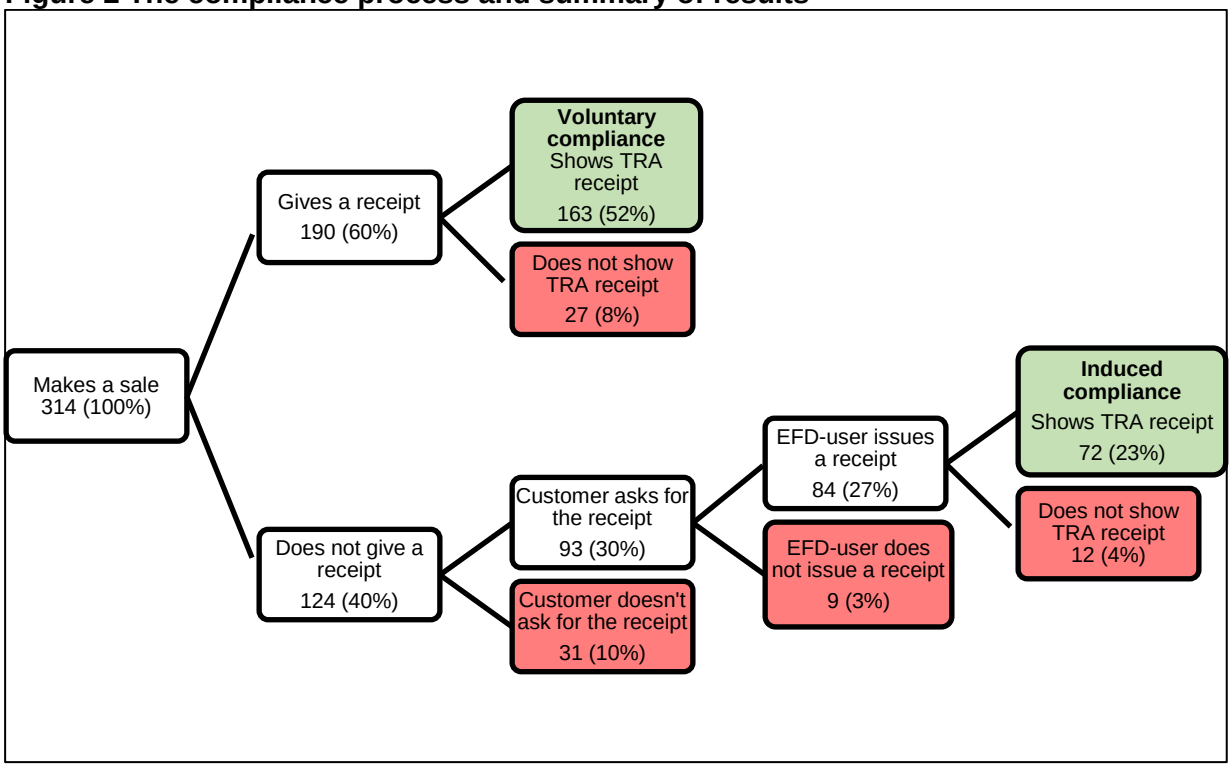
Figure 2 illustrates the compliance process. The green boxes show the cases in which a TRA receipt is eventually issued and the red boxes indicate the cases where there is no record of the transaction (no receipt or a non-TRA receipt). The figure also illustrates the findings on compliance behaviour. We decompose the compliance process as follows. We start with 314 businesses. Among them, 163 gave a receipt to their customer without being asked to do so. We call those businesses *'voluntarily compliant'* and our first dependent variable is an indicator equal to 1 if the business is voluntarily compliant and to 0 otherwise. Among the 151 customers who didn't receive a receipt at that point, 93 requested one. This gives us our second dependent variable, *'Customer asks for receipt'*: an indicator equal to 1 if the customer asked for a receipt and to 0 otherwise. Among the 93 businesses who were asked

[15] The principal component for satisfaction with public services utilises the categories: electricity, water supply, roads, health services, education/qualification of staff, law and order, sewage and street lighting. The principal component for satisfaction with tax and administration utilises the categories: tax rates, tax administration, business licensing and permits, political intervention and corruption. The alternative responses were 'no obstacle', 'minor obstacle', 'moderate obstacle', 'major obstacle' or 'very severe obstacle'.

to provide a receipt, 72 gave one. Our third dependent variable is equal to 1 if the business gave a receipt when asked for one. We refer to this as *'induced compliance*'. Finally, our last dependent variable *'total compliance'* is equal to 1 if a receipt has been given overall (either because the business gave it automatically, or because the customer requested and obtained one).

The total compliance rate observed is in line with the estimates from TRA.

Figure 2 The compliance process and summary of results



4.2 Summary of the factors that affect compliance

In Table 1, we present a summary of the compliance measures, as in Figure 2, and of the main variables that we will use to test the factors that explain different compliance levels.

On the business side, we see that the perceived risk of punishment is low: 48 per cent of the businesses state that it is below 20 per cent. Half of the businesses report that it is 'wrong and punishable' to avoid paying taxes and are labelled as holding 'higher tax morale'. Only 19 per cent think that the rate of VAT is fair. The businesses report that 87 per cent of the other businesses in the area 'never' evade paying VAT (compared to 'rarely', 'sometimes', 'often', or 'always'). This is plausibly exaggerated, but we believe that the difference between those who say 'never' and those who admit higher frequencies is still informative. The indices of satisfaction with public services and with the administration are standardised and have a mean of 0 and a standard deviation of 1 by definition.

On the customer side, 43 per cent believe that there is absolutely no risk of punishment if they make purchases without a VAT receipt, 27 per cent think that the risk is low and 30 per cent report a high risk.

Table 1 Summary statistics of the main covariates

Variable	Mean	Median	Std. dev.	Min.	Max.	Count
Outcome variables						
Business voluntarily compliant	0.52		0.50	0	1	314
Customer asks for receipt	0.62		0.49	0	1	151
Business gives receipt if asked	0.77		0.42	0	1	93
Total compliance	0.75		0.43	0	1	314
Explanatory variables						
Business: low punishment risk	0.48		0.50	0	1	314
Higher tax morale	0.50		0.50	0	1	314
VAT rate is fair	0.19		0.39	0	1	314
Other businesses never evade VAT	0.87		0.33	0	1	314
Satisfaction with public services	0.00	0.48	1.00	-3.36	0.48	314
Satisfaction with tax and admin	0.00	0.74	1.00	-2.77	0.74	314
Customer: low punishment risk	0.27		0.45	0	1	314
Customer: high punishment risk	0.30		0.46	0	1	314

We give some basic background descriptions of the businesses surveyed in Table 2. They have eight employees on average, 75 per cent of them do exclusively business-to-customer sales (B2C) and only a fourth are part of a larger company, the rest being stand-alone businesses. The majority of the individuals surveyed are women (59 per cent) with some level of higher education (46 per cent).

Table 2 also shows that 39 per cent of the customers are women, and that the customer spent TZS 747,000 on average, and the maximum amount spent was TZS 80 million.[16]

Table 2 Summary statistics for background variables

Variable	Mean	Median	Std. dev.	Min.	Max.	Count
Business side						
Business: more educated	0.46		0.50	0	1	314
Business: woman	0.59		0.49	0	1	314
Part of larger firm	0.24		0.43	0	1	314
B2C	0.75		0.44	0	1	314
Full-time employees	7.96	3	19.84	0	280	314
Customer side						
Item cost (TZS 1,000)	781.59	54	5,504.99	0.60	80,000	300
Woman customer	0.39		0.49	0	1	314

4.3 Associations between the compliance process and the characteristics of the businesses and of the customers

To estimate the correlations between the different compliance measures and the characteristics of the businesses and of the customers, we use the following specification:

$$Y_{ij} = \alpha + \beta * F_i + \gamma * C_j + \varepsilon$$

Where Y_{ij} is the outcome observed in the transaction between business *i* and customer *j (voluntary compliance, customer asks for receipt, induced compliance and total compliance,*

[16] In August 2018, TZS 781,590 was equivalent to approximately US$ 342, and TZS 80 million was equivalent to approximately US$ 35,000 (www.xe.com/currencyconverter/). The payment of TZS 80 million was for a contract related to the construction of a house. The number of observations for 'item cost' is 300 and not 314 because of customers who refused to tell what they purchased.

respectively), F_i is a vector of characteristics of business *i*, and C_j a vector of characteristics of customer *j.* We present the results with the different characteristics included one at a time in the model, and all together. We use robust standard errors.

In our presentation of the results, we follow the compliance process outlined above. We first look at the voluntary compliance in Table 3. Then Table 4 reports whether the customer requests a receipt when she is not given one, Table 5 examines the response of the business to that request, and Table 6 concludes with the total compliance measure.

We report the linear probability model estimates in the text and the logit estimates in Appendix 2. We also report the results with additional covariates in Appendix 1. The results are very consistent across estimations and the choice between the different specifications does not affect our conclusions.

4.3.1. Voluntary compliance

Two compliance motives stand out when we study the voluntary compliance in model (5), Table 3: beliefs about the other businesses' behaviour and satisfaction with the tax administration. We observe that the rate of voluntary compliance is 28 percentage points larger when the business believes that others also comply. Furthermore, a 1 standard deviation increase in the 'satisfaction with the administration' index is associated with a 6 percentage point higher likelihood of the firm being compliant. In line with the deterrence approach, there is also a significant correlation between perceived risk of punishment and compliance in model (1), but not when all the motives are included.[17] Table 7 in Appendix 1 reports regressions of voluntary compliance where a range of background variables are included.[18] It shows that the main findings are robust to the inclusion of background variables. It also shows that the business is more likely to be voluntarily compliant when the business representative is a woman and when the customer is a woman.

[17] The perceived risk of punishment is in fact strongly correlated with satisfaction with the tax services and administration.

[18] Education and gender of the business representative; whether the business is part of a larger firm; whether the number of employees is higher than the median; if it is a B2C type of business; if the cost of the purchase was above the median; and the gender of the customer.

Table 3 The business is voluntarily compliant

	(1)	(2)	(3)	(4)	(5)
Business: low punishment risk	-0.126**				-0.086
	(0.056)				(0.056)
Higher tax morale		0.074			0.059
		(0.057)			(0.056)
VAT rate is fair		-0.051			-0.002
		(0.073)			(0.070)
Other businesses rarely evade VAT			0.308***		0.281***
			(0.075)		(0.077)
Satisfaction with public services				0.005	-0.015
				(0.030)	(0.030)
Satisfaction with tax and admin				0.071**	0.061**
				(0.031)	(0.030)
Constant	0.580***	0.491***	0.250***	0.519***	0.286***
	(0.039)	(0.043)	(0.069)	(0.028)	(0.082)
Observations	314	314	314	314	314
R^2	0.016	0.007	0.042	0.021	0.070

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Ordinary least squares regressions of voluntary compliance (=1 if the business gave a receipt to their customer without being asked to do so) as the dependent variable. *'Business: low punishment risk'*: binary variable equal to 1 if the business believes that the probability of being punished when avoiding paying VAT is lower than 20 per cent (the median risk in the sample). *'High tax morale'*: binary variable equal to 1 if the business states that it is 'wrong and punishable' to avoid paying taxes (compared to 'not wrong' or 'wrong but understandable'). *'VAT rate is fair'*: is equal to 1 if the business states that the rate of VAT is fair. *'Other businesses never evade VAT'* is equal to 1 if the business reports that the other businesses never avoid paying VAT. *'Satisfaction with public services'* is the standardised principal component for satisfaction with electricity, water supply, roads, health services, education/qualification of staff, law and order, sewage and street lighting. *'Satisfaction with tax and admin'* is the standardised principal component for tax rates, tax administration, business licensing and permits, political intervention and corruption.

4.3.2 The customer's behaviour

Next, we investigate the factors determining whether the customer asked for a receipt in Table 4. When the customers have not received a receipt spontaneously, those who believe that the risk of punishment is low request a receipt in a significantly higher proportion (28 percentage points), compared to those who believe that there is no risk of punishment. The difference is similar in the group that believes that there is a high risk of punishment (21 percentage points). Table 8 in Appendix 1 reports regressions with controls. It shows that the effect of the low punishment perception is robust to the inclusion of background variables, but the effect of the high punishment perception is not.

Table 4 The customer asks for a receipt

	(1)
Customer: low punishment risk	0.280***
	(0.086)
Customer: high punishment risk	0.214**
	(0.103)
Constant	0.500***
	(0.056)
Observations	151
R^2	0.070

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Ordinary least squares regressions of if the customer asks for a receipt (=1 if the customer asks for a receipt and to 0 otherwise). *'Customer: low punishment risk'* is an indicator variable equal to 1 if the customer believes that the risk of being punished if caught without a receipt is low. *'Customer: high punishment risk'* is an indicator variable equal to 1 if the customer believes that there is a risk of being punished if caught without a receipt. The omitted category is comprised of the customers who think that there is no fine.

4.3.3 Induced compliance

We then turn to the businesses' induced compliance in Table 5. Ninety-three customers requested a receipt. The table shows that the perceived fairness of the VAT rate is the dominant factor explaining induced compliance.[19] On average, the businesses who state that the rate is fair print VAT receipts when requested to do so 22 percentage points more often than the businesses who say that the rate is unfair (and too high). This factor was not correlated with the voluntary measure of compliance, but seems to influence the choice of those businesses that are not voluntarily compliant when faced with a demanding customer.[20] On the other hand, the factors that explained the voluntary compliance do not significantly affect the decisions of the businesses that did not voluntarily comply. As shown in Table 9 in Appendix 1, these results are robust to the inclusion of background variables, none of which are significantly correlated to induced compliance.

Table 5 The business gives a receipt when asked (induced compliance)

	(1)	(2)	(3)	(4)	(5)	(6)
Business: low punishment risk	-0.031					-0.039
	(0.088)					(0.088)
Higher tax morale		-0.005				-0.020
		(0.088)				(0.092)
VAT rate is fair		0.204**				0.224**
		(0.079)				(0.091)
Other businesses never evade VAT			0.049			0.109
			(0.125)			(0.127)
Satisfaction with public services				0.037		0.034
				(0.053)		(0.051)
Satisfaction with tax and admin				-0.046		-0.043
				(0.045)		(0.047)
Constant	0.791***	0.739***	0.733***	0.772***	0.774***	0.670***
	(0.063)	(0.067)	(0.115)	(0.044)	(0.044)	(0.141)
Observations	93	93	93	93	93	93
R^2	0.001	0.036	0.002	0.013	0.000	0.057

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Ordinary least squares regressions of induced compliance (=1 if the business issued a receipt after the customer asked for it). See Table 3 for definitions of the explanatory variables.

4.3.4 Total compliance

Finally, we turn to the businesses' total compliance in Table 6. Among all the factors that we are testing, only two are actually strongly correlated with total compliance: the customer's beliefs about the risk of punishment and the business's belief about other businesses' behaviour. As shown in Table 10 in Appendix 1, these findings are robust to the inclusion of background variables.

[19] Note, however, that the sample size is small, and that most businesses do issue a receipt when asked for one. Indeed, only nine out of 93 businesses did not issue a receipt despite the customer's request. The precision of our estimates is therefore lower than in the other estimations presented in this paper.

[20] It should be noted that the effect of the 'VAT rate is fair' variable is not significant in the binary logit specification in Table 13 in Appendix 2.

Table 6 Total compliance

	(1)	(2)	(3)	(4)	(5)	(6)
Firm: low punishment risk	-0.086*					-0.005
	(0.049)					(0.051)
Higher tax morale		0.035				0.022
		(0.049)				(0.047)
VAT rate is fair		-0.001				0.026
		(0.064)				(0.060)
Other firms never evade VAT			0.256***			0.203**
			(0.083)			(0.085)
Satisfaction with public services				0.022		-0.004
				(0.028)		(0.027)
Satisfaction with tax and admin				0.047*		0.035
				(0.027)		(0.027)
Customer: low punishment risk					0.174***	0.150**
					(0.061)	(0.062)
Customer: high punishment risk					0.278***	0.243***
					(0.053)	(0.057)
Constant	0.790***	0.731***	0.525***	0.748***	0.617***	0.443***
	(0.032)	(0.039)	(0.079)	(0.024)	(0.042)	(0.096)
Observations	314	314	314	314	314	314
R^2	0.010	0.002	0.039	0.018	0.076	0.108

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Ordinary least squares regressions of total compliance (=1 if the customer received a TRA receipt). See Table 3 and Table 4 for definitions of the explanatory variables.

5 Conclusions and implications for policy

In order for VAT to be self-enforcing, consumers and businesses at the final stage of the VAT chain have to ask for/issue receipts, but typically neither have the incentive to do so (Naritomi 2016). The present study has shed more light on this 'last-mile problem' of VAT compliance. By using a novel measure of the businesses' EFD compliance and tying it to survey information about the business, the salesperson and the customer with whom the transaction is made, we were able to measure actual EFD compliance and its important determinants.

We find that EFD compliance is strongly associated with the customer's perception of detection and punishment risks, and with the business operator's perception of other businesses' compliance behaviour. Compliance does not correlate with the business's perception about detection and punishment risk, tax morale and fairness, or satisfaction with public services, all factors that are commonly seen in the literature as crucial to explaining tax compliance.

A main finding of the study is that the customer is king. Requesting a receipt is crucial to increasing compliance, and customers who know about the law are more likely to request a receipt when not given one. If customers never asked for a receipt, we can presume that VAT revenues would be reduced by one-third.

Based on this finding, we derive the following policy recommendations from the study.

1. The TRA's taxpayer education programme and information campaigns should emphasise customers' rights and obligations to get a proper TRA receipt when they purchase goods and services.

2. Business compliance can be improved by strengthening detection probabilities and enforcing penalties for non-compliance.

One limitation of the study is that we can only report whether a receipt was printed or not, and the transaction recorded by the EFD. We could not control whether the amount stated on the customers' receipts was correct. It is possible (and likely) that some businesses reduce their VAT payments by recording lower amounts than the real price paid on the receipt. This form of non-compliance could not be measured here and total compliance is therefore probably lower than what we have estimated in this study. Further, the study was limited to five tax centres in Dar es Salaam. Businesses and customers were located in areas that were relatively easy to access by the enumerators. It is reasonable to assume that the compliance rate in these locations is higher than in other areas.

The study provides us with some directions for further research. In particular, empirical investigations of exogenous changes in the incentives that the customers face (for example through information campaigns, or customer lotteries) should be used to confirm or inform our interpretations.

Appendices

Appendix 1 OLS tables with background variables

Table 7 The firm is voluntarily compliant, with background variables

	(1)	(2)	(3)	(4)	(5)	(6)
Firm: low punishment risk	-0.126**					-0.090
	(0.057)					(0.057)
Higher tax morale		0.076				0.071
		(0.059)				(0.058)
VAT rate is fair		-0.028				0.028
		(0.076)				(0.073)
Other firms never evade VAT			0.298***			0.290***
			(0.081)			(0.080)
Satisfaction with public services				-0.007		-0.018
				(0.031)		(0.031)
Satisfaction with tax and admin				0.068**		0.060*
				(0.032)		(0.032)
Firm: more educated	0.026	0.052	0.050	0.038	0.047	0.033
	(0.058)	(0.058)	(0.057)	(0.058)	(0.058)	(0.057)
Firm: woman	0.123**	0.125**	0.132**	0.123**	0.117**	0.145**
	(0.059)	(0.060)	(0.059)	(0.059)	(0.059)	(0.059)
Part of larger firm	-0.002	-0.010	-0.004	-0.021	-0.015	0.005
	(0.069)	(0.071)	(0.068)	(0.069)	(0.070)	(0.068)
B2C	0.041	0.039	0.022	0.042	0.049	0.002
	(0.066)	(0.068)	(0.067)	(0.067)	(0.067)	(0.066)
Employees>median	0.035	0.024	0.038	0.037	0.036	0.024
	(0.059)	(0.061)	(0.059)	(0.060)	(0.060)	(0.059)
Cost above median	0.049	0.039	0.053	0.059	0.043	0.066
	(0.058)	(0.059)	(0.058)	(0.059)	(0.059)	(0.059)
Woman customer	0.172***	0.171***	0.167***	0.158***	0.168***	0.170***
	(0.059)	(0.060)	(0.059)	(0.060)	(0.059)	(0.059)
Constant	0.377***	0.285***	0.051	0.314***	0.311***	0.071
	(0.094)	(0.095)	(0.113)	(0.088)	(0.089)	(0.123)
Observations	300	300	300	300	300	300
R^2	0.057	0.048	0.077	0.059	0.042	0.106

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Ordinary least squares regressions of voluntary compliance (=1 if the business gave a receipt to their customer without being asked to do so) as the dependent variable. See Table 3 for definitions of the main variables. 'Firm: more educated' is equal to 1 if the business representative has completed lower secondary schooling or higher. 'Firm: woman' is equal to 1 if the business representative is a woman. 'Part of larger firm' is equal to 1 if the business is part of a larger firm. 'B2C' is equal to 1 if the business makes business-to-customer transactions only. 'Employees>median' is equal to 1 if the business's number of employees is higher than the median number of employees in the sample (3). 'Cost above median' is equal to 1 if the cost of the purchase is higher than the median in the sample (TZS 50,000: approximately US$ 22). 'Woman customer' is equal to 1 if the customer is a woman.

Table 8 The customer asks for a receipt, with background variables

	(1)
Customer: low punishment risk	0.238***
	(0.089)
Customer: high punishment risk	0.118
	(0.110)
Firm: more educated	0.219***
	(0.080)
Firm: woman	-0.098
	(0.079)
Part of larger firm	0.004
	(0.093)
B2C	0.010
	(0.094)
Employees>median	-0.086
	(0.087)
Cost above median	0.077
	(0.084)
Woman customer	-0.129
	(0.088)
Constant	0.543***
	(0.134)
Observations	139
R^2	0.118

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Ordinary least squares regressions of a customer asking for a receipt as the dependent variable. See Table 4 for definitions of the main variables and Table 7 for definitions of the background variables.

Table 9 The firm gives a receipt when asked (induced compliance) with background variables

	(1)	(2)	(3)	(4)	(5)	(6)
Firm: low punishment risk	-0.052					-0.072
	(0.098)					(0.094)
Higher tax morale		-0.018				-0.042
		(0.089)				(0.093)
VAT rate is fair		0.230**				0.253**
		(0.097)				(0.114)
Other firms never evade VAT			0.036			0.110
			(0.119)			(0.137)
Satisfaction with public services				0.032		0.039
				(0.060)		(0.057)
Satisfaction with tax and admin				-0.034		-0.030
				(0.048)		(0.049)
Firm: more educated	-0.120	-0.102	-0.102	-0.105	-0.101	-0.134
	(0.098)	(0.085)	(0.088)	(0.088)	(0.086)	(0.098)
Firm: woman	-0.053	-0.113	-0.058	-0.071	-0.063	-0.099
	(0.089)	(0.090)	(0.090)	(0.088)	(0.088)	(0.091)
Part of larger firm	0.044	0.037	0.037	0.024	0.039	0.022
	(0.092)	(0.091)	(0.096)	(0.095)	(0.096)	(0.087)
B2C	-0.054	-0.034	-0.056	-0.044	-0.051	-0.042
	(0.088)	(0.087)	(0.083)	(0.090)	(0.087)	(0.086)
Employees>median	-0.008	-0.011	-0.006	0.012	-0.010	0.028
	(0.088)	(0.089)	(0.089)	(0.095)	(0.088)	(0.096)
Cost above median	0.066	0.082	0.069	0.066	0.063	0.118
	(0.088)	(0.092)	(0.091)	(0.090)	(0.089)	(0.103)
Woman customer	-0.013	0.005	-0.016	-0.005	-0.012	-0.010
	(0.096)	(0.096)	(0.097)	(0.104)	(0.096)	(0.103)
Constant	0.903***	0.837***	0.841***	0.863***	0.873***	0.776***
	(0.137)	(0.114)	(0.157)	(0.115)	(0.109)	(0.206)
Observations	90	90	90	90	90	90
R^2	0.041	0.083	0.038	0.045	0.037	0.103

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Ordinary least squares regressions with induced compliance as the dependent variable. See Table 3 and 4 for definitions of the main variables and Table 7 for definitions of the background variables.

Table 10 Total compliance, with background variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Customer: low punishment risk						0.127**	0.106*
						(0.062)	(0.063)
Customer: high punishment risk						0.225***	0.187***
						(0.055)	(0.060)
Firm: low punishment risk	-0.084*						-0.022
	(0.049)						(0.051)
Higher tax morale		0.038					0.032
		(0.050)					(0.049)
VAT rate is fair		0.031					0.059
		(0.065)					(0.062)
Other firms never evade VAT			0.210**				0.183**
			(0.088)				(0.089)
Satisfaction with public services				0.011			-0.005
				(0.028)			(0.027)
Satisfaction with tax and admin				0.047*			0.037
				(0.027)			(0.028)
Firm: more educated	0.050	0.066	0.065	0.057	0.063	0.038	0.039
	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)	(0.048)
Firm: woman	-0.004	-0.006	0.003	-0.003	-0.008	-0.011	0.003
	(0.050)	(0.051)	(0.050)	(0.050)	(0.051)	(0.050)	(0.051)
Part of larger firm	0.011	0.007	0.010	-0.001	0.003	-0.002	0.009
	(0.056)	(0.058)	(0.056)	(0.058)	(0.058)	(0.056)	(0.055)
B2C	0.010	0.010	-0.004	0.009	0.015	0.019	-0.008
	(0.057)	(0.058)	(0.057)	(0.057)	(0.058)	(0.056)	(0.056)
Employees>median	-0.014	-0.021	-0.012	-0.013	-0.013	-0.014	-0.020
	(0.050)	(0.052)	(0.050)	(0.050)	(0.050)	(0.049)	(0.050)
Cost above median	0.080	0.076	0.083	0.093*	0.076	0.072	0.090*
	(0.052)	(0.052)	(0.051)	(0.052)	(0.052)	(0.050)	(0.051)
Woman customer	0.050	0.053	0.047	0.038	0.048	0.052	0.053
	(0.049)	(0.050)	(0.049)	(0.050)	(0.050)	(0.049)	(0.049)
Constant	0.730***	0.664***	0.503***	0.688***	0.686***	0.591***	0.434***
	(0.084)	(0.082)	(0.112)	(0.079)	(0.079)	(0.087)	(0.127)
Observations	300	300	300	300	300	300	300
R^2	0.025	0.018	0.040	0.030	0.015	0.066	0.094

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Ordinary least squares regressions with total compliance as the dependent variable. See Table 3 and Table 4 for definitions of the main variables and Table 7 for definitions of background variables.

Appendix 2 Logit tables

Table 11 The firm is voluntarily compliant, binary logit model

	(1)	(2)	(3)	(4)	(5)
Firm: low punishment risk	-0.509**				-0.357
	(0.228)				(0.238)
Higher tax morale		0.299			0.256
		(0.227)			(0.235)
VAT rate is fair		-0.204			-0.011
		(0.292)			(0.303)
Other firms never evade VAT			1.333***		1.248***
			(0.385)		(0.389)
Satisfaction with public services				0.021	-0.062
				(0.126)	(0.129)
Satisfaction with tax and admin				0.291**	0.261*
				(0.130)	(0.134)
Constant	0.324**	-0.035	-1.099***	0.075	-0.978**
	(0.159)	(0.171)	(0.366)	(0.114)	(0.408)
Observations	314	314	314	314	314
Pseudo R^2	0.012	0.005	0.032	0.016	0.052

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Binary logit regressions of voluntary compliance (=1 if the business gave a receipt to their customer without being asked to do so) as the dependent variable. See Table 3 for definitions of variables.

Table 12 Customer asks for receipt, binary logit model

	(1)
Customer: low punishment risk	1.269***
	(0.439)
Customer: high punishment risk	0.916*
	(0.475)
Constant	0.000
	(0.222)
Observations	151
Pseudo R^2	0.054

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Binary logit regressions with customer asking for a receipt as the dependent variable. See Table 4 for definitions of the explanatory variables.

Table 13 Induced compliance, binary logit model

	(1)	(2)	(3)	(4)	(5)
Firm: low punishment risk	-0.176				-0.254
	(0.503)				(0.507)
Higher tax morale		-0.029			-0.125
		(0.513)			(0.523)
VAT rate is fair		1.741			1.883
		(1.076)			(1.161)
Other firms never evade VAT			0.266		0.653
			(0.649)		(0.726)
Satisfaction with public services				0.206	0.161
				(0.275)	(0.270)
Satisfaction with tax and admin				-0.279	-0.254
				(0.284)	(0.298)
Constant	1.329***	1.044***	1.012*	1.240***	0.672
	(0.377)	(0.365)	(0.587)	(0.253)	(0.763)
Observations	93	93	93	93	93
Pseudo R^2	0.001	0.042	0.002	0.012	0.062

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Binary logit regressions with induced compliance as the dependent variable. See Table 3 for definitions of the explanatory variables.

Table 14 Total compliance, binary logit model

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Firm: low punishment risk	-0.460*						-0.055
	(0.263)						(0.295)
Higher tax morale		0.186					0.121
		(0.262)					(0.278)
VAT rate is fair		-0.007					0.152
		(0.336)					(0.369)
Other firms never evade VAT			1.172***				0.964**
			(0.349)				(0.387)
Satisfaction with public services				0.106			-0.022
				(0.129)			(0.142)
Satisfaction with tax and admin				0.231*			0.190
				(0.126)			(0.144)
Customer: low punishment risk						0.854***	0.746**
						(0.320)	(0.328)
Customer: high punishment risk						1.665***	1.513***
						(0.380)	(0.403)
Constant	1.326***	1.000***	0.100	1.109***	1.090***	0.475***	-0.325
	(0.193)	(0.196)	(0.317)	(0.132)	(0.130)	(0.179)	(0.465)
Observations	314	314	314	314	314	314	314
Pseudo R^2	0.009	0.001	0.031	0.015	0.000	0.071	0.097

Notes: Robust standard errors in parentheses, * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Binary logit regressions with total compliance as the dependent variable. See Table 3 and Table 4 for definitions of the explanatory variables.

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