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ABSTRACT

We investigate the impact of corruption on tax compliance using a sample of 700 small business in Bamako, Mali. The main contribution of this paper is to focus on micro-enterprises (including semi-formal and informal ones), while existing works concentrate on large and formal firms. Our results show that (i) even very small firms pay taxes (two-thirds of firms pay taxes in our sample); and, (ii) paying bribes reduces significantly tax compliance. This latter finding is robust (i) to the addition of a set of control variables accounting for other determinants, (ii) to treatment for endogeneity, and (iii) the use of a different proxy for tax compliance.

I. Introduction

This study aims to measure the impact of corruption on tax compliance by small retailers in Bamako (Mali), controlling for possible confounding factors and mismeasurement. Rates of (direct) tax mobilization are known to be particularly low in Sub-Saharan Africa (Abramovsky, Klemm, and Phillips 2014; Gordon and Li 2009), and much lower in the informal sector (Joshi, Prichard, and Heady 2014), which is the focus of our study. But, as Keen (2013, 26) points out, the degree of informality is not enough to explain tax mobilization and we need 'to probe deeper into the anatomy of non-compliance'. Tax compliance is multifaceted and includes cultural, social and political aspects. Among them, governance quality seems to play a central role in developing countries (Gupta 2007; Botlhole, Asafu-Adjaye, and Carmignani 2012). This paper focuses on one dimension of (bad) governance, namely corruption. Corruption may negatively influence the tax payment through two channels. First, some individuals or firms can pay bribes to reduce or avoid tax payment. Bribes are viewed as a substitute for tax payments. Second, fiscal contract theories (Andreoni, Erard, and Feinstein 1998; Timmons and Garfias 2015) posit that tax yields depend on agents' willingness to accept them. Consequently, generalized corruption for public service procurement reduces the willingness to accept tax payment.

Most empirical works use a cross-country framework to prove a negative relationship between perception indicators of corruption or tax morale and tax compliance (e.g. Torgler 2005; Richardson 2006; Attila, Chambas, and Combes 2009; Lago-Peñas and Lago-Peñas 2010; Baum et al. 2017; Jahnke 2017). By contrast, econometric studies at the firm level are very scarce. The micro-level evidence allows controlling for country-level factors that could explain differences in tax compliance and therefore improve identification. Uslaner (2010), Alm, Martinez-Vazquez, and McClellan (2016); and Gauthier and Goyette (2014) obtained a negative impact of corruption on tax compliance using extensive firm surveys of the World Bank, respectively in transition countries, in various European countries and in Uganda. However, these studies are based on relatively large and formal firms. For instance, in the sample of Ugandan firms used by Gauthier and Goyette (2014), the average number of employees is 124. By contrast, our work contributes to this burgeoning literature by relying on the results of an original survey focusing on 700 micro enterprises, essentially informal or semi-formal, in the retail sector of a huge and poor African city. We show that corruption always deters tax payments, and these results are robust to various tax compliance indicators and after controlling for the potential endogeneity of corruption.

II. Data and variables

The survey: Data were retrieved from face-to-face interviews conducted with 700 micro-retailers in Bamako in October and November 2016. Our sample includes a large proportion of informal or semi-formal microenterprises, which by definition cannot be drawn at random from an official list of retailers registered in the Malian statistical office. Following the 'Intercept point survey' method (McKenzie and Mistiaen 2009), our sampling scheme attempts to respect the geographical and sectoral concentrations of retail activities in Bamako.

Dependent variable: Our main indicator representing tax compliance is a binary measure, signalling the payment of direct taxes. In Mali, the normal rate of corporate income tax is 30% but small firms are subject to a 'synthetic tax' based on turnover (Rota-Graziosi, Geourjon, and Ménard 2014). Even informal firms do have to comply with the payment of a direct tax. For very small firms, there is a lump sum payment which is actually foreseen, amounting to 14 500 CFA (25 USD). Our survey also provides information on the amounts of tax payments, but we casted serious doubts about the accuracy of these amounts. As an additional measure of tax compliance, we relied an indicator based on the registration of the retailer with the tax authority (*Tax_regist*).

Independent variables: The payment of bribes, declared by survey respondents, is our main explanatory variable of interest. It is worth mentioning that we had a response rate of 89.3 per-cent (possibly excluding selection bias), of which 13 per-cent declared that they have paid bribes in the past.

Drawing on literature regarding the drivers of formality and taxation, we include the following individual-level variables (chiefs of retail unit): *Female*, with value 1 indicating that the retailer is a woman and 0 for a man; *Age*, continuous variable; *Educ_Second* for interviewees that attended high school or university; Close_to_admin Existence of a close family member in public administration. Further, we included business-level characteristics: the firm size (*Size*) variable is measured as the logarithm of the firm's turnover; *Employment* represents the total number of employees; *Other_activities*, is a binary variable that takes a value of 1 if the retailer developed other activities; *Multi_activities*, takes a value of 1 if the retailer manages several businesses;

Tax_audit is a dummy variable taking value a value of 1 if the retailer has experienced a tax audit during the recent past; *Fixed_premises* is a dummy variable with a value of 1 for if the business is located in fixed business premises and 0 otherwise; and *Industry effects* are the retail sub-sector dummy variables: food, textiles, electrical products, various equipment, multiple products and others.

III. Empirical methodology

To measure the impact of corruption on the propensity to pay corporate taxes, we use the following specification:,

$$P(tax_i = 1) = \Phi(\beta_0 + X_i\beta)$$

where i denotes the retailer, and X is a vector of covariates (as listed in section 2), including our measure of corruption. Given the binary nature of our dependent variable, we rely on a probit model to estimate the β parameters, and hence, Φ is the standard normal cumulative density function.

As the tax payment and the corruption data are based on self-reporting, we faced a serious issue of over-or understatement of the actual values. While the former introduces noise in our estimates, the latter may bias our results (Wooldridge 2010). We address tackle in the following manner: first, as an alternative to the 'tax payment' variable, we use the information on registration at the tax administration to proxy the fact of paying taxes. Second, we instrument the corruption variable (i.e. declared active corruption by the survey respondent) with a variable of corruption perception (i.e. does the survey respondent consider corruption to be more important in her sector than in others). Both corruption variables were significantly correlated (0.41***), and take the same value in 85% of the cases.

IV. Results

Our data indicate that even small firms pay taxes, mainly through a lump sum required to operate in the local market. In our sample, two-thirds of firms declare to pay taxes and more than 80% of them are registered with the tax authority.

Table 1 displays the determinants of tax compliance. In columns (1) to (3), we focus on our preferred measure of tax compliance based on tax payment. In the first column, we report the marginal effects of simple probit estimations for the whole sample (appropriately adjusted in case of binary explanatory variables). Our results highlight that corruption has a negative and statistically significant effect on tax compliance, even when controlling for a standard control variables among which size, age, tax audit, fixed premises are significant and of the expected sign. The same result holds in column (2), when we restrict our sample to observations that are also available for our instrument. The results remain unchanged.

To control for endogeneity, we instrument our corruption variable as explained in the previous section. The results are displayed in column (3). The F-value of the first stage reported at the bottom of the table dispels the weak instrument eventuality. We confirm that corruption has a negative and significant impact on tax compliance.

Corruption is not only statistically significant but also economically sizeable. On average, two-thirds of the surveyed retailers comply with tax payment in our sample. However, paying bribes reduced this ratio by 20 percentage points.

In columns (4) to (6), we provide a robustness check by employing an alternative dependent variable for tax payment. As mentioned in the previous section, registration with the tax authority is not perfectly correlated with tax payment. Almost one-quarter of firms that are registered with the tax authority do not pay taxes (the opposite occurs as well but is rarer). The results with our alternative indicator of tax compliance confirm our main findings. Corruption is negatively associated with tax compliance. The economic impact is also far from negligible. While 85% of the firms are registered with tax authorities, paying bribes reduced this likelihood by almost 10 percentage points.

Finally, we observe that control variables are often in line with predictions. In particular, larger firms, fixed businesses and those that experienced a tax audit are more likely to comply.

Table 1. Determinants of tax compliance.

	Tax payment			Tax authority registration		
	probit All	probit Rest.	IV-probit Rest.	probit All	probit Rest.	IV-probit Rest.
	(1)	(2)	(3)	(4)	(5)	(6)
Corruption	−0.1653***	−0.1672***	−0.2012***	−0.0663*	−0.0837**	−0.0485***
	(−3.45)	(−3.37)	(−3.28)	(−1.75)	(−2.01)	(−2.66)
Age	0.0056***	0.0042**	0.0061*	0.0015	0.0002	0.0003
	(2.98)	(1.96)	(1.85)	(1.13)	(0.17)	(0.22)
Educ_Second	−0.0437	−0.0726	−0.0874	0.0058	−0.0324	−0.0166
	(−1.11)	(−1.55)	(−1.39)	(0.21)	(−1.01)	(−0.89)
Female	−0.0632	−0.0262	−0.0528	−0.0592*	−0.0385	−0.0344
	(−1.34)	(−0.46)	(−0.22)	(−1.85)	(−1.16)	(−1.17)
Close_to_admin	0.0755**	0.0282	0.0404	−0.0204	0.0100	0.0061
	(2.08)	(0.70)	(0.72)	(−0.89)	(0.39)	(0.42)
Size	0.0650***	0.0477***	0.0731*	0.0330***	0.0182	0.0124
	(4.24)	(2.57)	(1.78)	(2.93)	(1.43)	(0.66)
Employment	0.0029	0.0028	0.0434	0.0117	0.0153	0.0083*
	(0.35)	(0.31)	(0.15)	(1.27)	(1.46)	(1.90)
Other_activities	0.0349	0.0508	0.0825	0.0055	0.0067	0.0057
	(0.94)	(1.17)	(0.98)	(0.22)	(0.24)	(0.04)
Multi_activities	−0.1635***	−0.1003**	−0.1653**	0.0881***	0.0792**	0.0443*
	(−3.77)	(−2.04)	(−1.96)	(2.56)	(2.17)	(1.94)
Tax_audit	0.0997**	0.2759***	0.3845***	0.0896***	0.0654*	0.0640**
	(2.37)	(3.95)	(4.53)	(2.98)	(1.67)	(2.45)
Fixed_premises	0.2582***	0.1904**	0.4989*	0.3051***	0.03894***	0.3715***
	(3.77)	(2.26)	(1.64)	(4.77)	(4.12)	(3.30)
Industry dummies	Incl.	Incl.	Incl.	Incl.	Incl.	Incl.
Obs.	548	388	388	552	343	343
Pseudo R2	0.35	0.36	-	0.56	0.60	-
F-1st (excl. IV)			49.14			39.44
Wald-test			3.25*			2.03
Avg. Dep. Var.	0.633	0.657	0.657	0.817	0.857	0.857

The dependent variable is a dummy equals to one if a firm pays a direct tax in columns (1) to (3); and, a dummy equals to one if a firm is registered with tax authority in columns (4) to (6). Table reports marginal effects and associated z-score in parentheses. *, **, *** denote an estimate significantly different from 0 at the 10%, 5% or 1% level.

While one might expect corruption to reduce tax compliance only for large and formal firms as indicated in previous works using micro-level data (Uslaner 2010; Alm, Martinez-Vazquez, and McClellan 2016; Gauthier and Goyette 2014), our analysis documents that (i) even very small firms pay taxes, and (ii) the relationship between corruption and tax compliance also holds for these firms.

V. Conclusion

Our study investigates the determinants of tax compliance of micro-enterprises in Africa using a survey of 700 retailers in Bamako (Mali) including very small retailers, both informal and semi-formal, whereas most of the existing literature relies on macro data (or micro data on the formal sector). Two major conclusions can be drawn. First, contrary to a common belief, a significant number of small firms pay taxes. Second, corruption provides a way to avoid complying with tax requirements or is considered as a substitute thereof. This confirms previous results on more aggregate data.

Disclosure statement

No potential conflict of interest was reported by the authors.

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