Compliance With Tax at Household Level: The Case of Development Levy in Tanzania*

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Abstract: This paper is about compliance with tax at local government level in Tanzania. A simple generic model of tax compliance is set out to determine the factors that might influence the behaviour of taxpayers. The model is further specified to look on compliance with development levy in Tanzania. For simplicity and data constraints problem, logit model techniques are applied to sort out the major covariates of tax compliance.

Empirical results of the model have shown that individual characteristics, tax effort and terms of trade with local government authorities are all important in explaining compliance with development levy in Tanzania. However, rural-urban location constitutes the strongest effect in terms of who pays and who does not.

INTRODUCTION

Tax compliance is a subject matter of studies on performance of tax systems in developing countries. This paper forms one of those studies that investigate compliance issues. We examine survey data from Tanzania and carry out micro-analysis of household tax compliance behaviour. The focus is on why people evade development tax in Tanzania. We start by providing theoretical arguments and a simple model of household tax compliance. The analysis is purely micro and focuses on the behaviour of taxpayers. An econometric estimation of the compliance model is performed using survey data from three districts in Tanzania and the results discussed with complimentary findings from cross-tabs and other studies on the subject. There are two basic sections in this paper; theoretical modelling of compliance with development taxes and empirical analysis of the emerging issues.

To a large extent, local government authorities are financially dependent on the central government. Mobilisation of revenue from own sources has remained low over years. Recent estimates of own-revenue as a share of total council expenditure show that councils collect less than 30% of their total expenditure. For about two decades now, since the re- establishment of local government authorities in 1984, development levy has remained the major source of own revenue. Compliance with development levy has remained low despite councils' effort to increase collection. Local authorities claim that development levy is small and insignificant compared to their estimates of household incomes. This paper explores reasons that explain compliance with development tax in local government in Tanzania.

There are two blocks of theoretical explanation of why compliance with development levy has remained low in Tanzania. The first block is taxpayers or household related factors. People do not pay tax either because of poor terms of trade with their respective local government authorities or simply because of specific household characteristics. The second block of explanation relates to delivery capacity and tax effort by local government authorities. We would like to set out a simple model in order to formalize a few theoretical issues with regard to compliance.

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TAX COMPLIANCE AT HOUSEHOLD LEVEL: THEORETICAL ISSUES

Tax compliance refers to the rate at which taxpayers settle their statutory tax bills. We distinguish between nominal compliance and the actual collection ratio. Nominal tax compliance is a subjective (self-assessment) rate that measures the extent to which taxpayers would settle their statutory tax bills for an expected new or amended tax. Nominal compliance is the gross

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willingness to pay tax. And, collection ratio measures the actual settlement of tax bills.

People pay tax because of the opportunity costs associated with non-compliance. Tax compliance is also associated with moral obligations; people pay tax because of moral reasons. Therefore, the tax compliance function has two vectors, observable and non-observable. Apparently, moral obligations are not easily observable from taxpayers.

In principle, government provision of public services influences the behaviour of taxpayers. We expect that a good delivery system of public services (from the taxpayers point of view) would encourage taxpayers to settle their tax bills voluntarily, ceteris paribus. And; as a result, government coercive confrontation with taxpayers would be reduced. We can therefore subdivide the collection ratio into voluntary and involuntary compliance; the former measures the net willingness to pay tax while the latter provides a measure of government collection effort. Voluntary tax compliance is dependent on benefits enjoyed from tax revenue spending and the characteristics of taxpayers (e.g. education, geographical location, politics, etc).

The Tax Compliance Function

Lets denote the rate of compliance with a given tax (t) as C. Lets also denote vectors of I individual characteristics, benefits enjoyed from tax revenue and tax collection effort as I,B and E, respectively. We then specify the compliance function, C_t, for a given tax, t, as follows:

$$C_t = f(I,B,E) \qquad (1)$$

and therefore $f_B, f_E > 0$

where I includes all individual factors that might influence compliance with tax (e.g. age, training, geographical location, attitude or perceptions about the government, moral obligations, etc). We would want to estimate the tax compliance function as an econometric model in order to determine the strength of each of its arguments in explaining compliance with taxes in Tanzania.

Estimation Technique

There are four key issues to address in order to set the compliance function in (1) above for econometric estimation. These include specification and functional form of the model and measurement of its covariates. We also need to discuss data availability and the .corresponding issues of sampling and data reliability.

The functional form of a model specifies the relationship between the function and its .arguments. The compliance function presented in Section One above has three vectors; individual specific factors, benefits enjoyed from tax revenue spending and the government effort to collect tax. It is obviously difficult to capture all individual specific factors that influence compliance with tax; for example, moral factors or obligations are not easily observable. We also understand that individual specific factors that influence compliance with tax are many, and therefore it would be difficult to have a data set that captures all individual specific variations. We also note that some variations are household rather than individual specific. For example, issues of income, assets, household size, and economic activities are more appropriately considered as household characteristics than individual specifics. However, we would want to distinguish between two sets of variables in the vector of individual variations; the commonly used covariates in household models (with notations bracketed): income (y), age (a), education or training (e), gender (s), marital status (m), household size (h), religion (r), economic activities (c) and location (l) in addition to migration (g), taxpayer's knowledge about compliance of other taxpayers (d), taxpayer's involvement in corruption (0), individual experience with non compliance costs (e.g. penalties) (P) and the number of tax bills that the taxpayer has to settle (n). Hence, *a priori* individual factors that might influence compliance with tax are y, a, t, s, m, h, r, c, I, g, d, 0, p, I and n; *ceteris paribus*.

It is difficult to measure individual benefits enjoyed from consumption of public services. People's tastes for public services are not necessarily the same; also the benefits enjoyed from the consumption of those services differ across individuals even if the level of services consumed is the same. Hence, neither the volume nor quality (from social planner's point of view) of public services available to a community can precisely tell us the satisfaction accruing to individual consumers. Community or individual revelation of their value judgment of public services is important in estimating benefits that are derived from consumption of public services. We shall denote this value judgment of benefits by *b*.

Lastly is specification of government effort covariates. Effort to collect tax refers to the efficiency of tax administration; setting the tax rates (t), follow-ups (w), auditing (e), and penalties (P) for difficult-to pay-taxpayers. Hence, we further re-specify equation (1) as follows:

$$C_i = f(y,a,e,s,m,h,r,c,l,g,d,o,p,n,b,t,w,u,p,k) \qquad (2)$$

Where k stands for unspecified factors of the model.

Tax is usually paid in full amount within a specified period of time and therefore individuals choose to pay tax in specified amounts or refuse to do so and face the consequences. The dependent variable, therefore, takes discrete values, for 'paid' or 'didn't pay'. This implies that the compliance function that we have set out constitutes a discrete choice model, and hence C_i takes discrete values. Using the principles of discrete choice models, and consequently logit estimates, we express the probability that individual i will comply with tax, t, as:

$$\text{prob}(Pc_{ti}=1) = \frac{e^{\alpha+\beta_1 I+\beta_2\beta+\beta_3 E}}{1+e^{\alpha+\beta_1 I+\beta_2\beta+\beta_3 E}} \qquad (3)$$

I And with further manipulation we have

$$\text{In}\ \frac{Pc_{ti}}{I-Pc_{ti}} = \alpha+\beta_1 1+\beta_2\beta+\beta_3 E \qquad (4)$$

Where β_1, β_2 and β_3 are vectors of parameters, which we would want to estimate; and l, B, and E are vectors of covariates that might influence compliance with the tax.

Variable Description and Measurement

Measurement of individual characteristic variables like age, education, gender, etc is standard. However, there are a few non-standard variables that we have included in the compliance function in equation (2) and therefore we provide clarification.

Taxpayer's Involvement in Corruption

A taxpayer who pays unofficial fees to access public I services is considered as being involved in corruption. Corruption, in this context, forms double payment for public services; and as a result, compliance with tax is reduced.

Individual Experience With Non-compliance Costs

Taxpayers knowledge or information about the opportunity cost of tax evasion influences compliance with tax. If a taxpayer knows other taxpayers who evade tax, his decision to comply with tax is also affected accordingly, *ceteris paribus*.

Benefits Enjoyed From Public Services

We indicated earlier on that benefits accruing to individuals in the form of public services are difficult to measure. In the first place, most public services are marginally non-rival and non-deplitable in consumption by their nature. The marginal cost and benefits for an additional consumer or user are difficult to measure. As a matter of simplicity, personal assessment of the quality of public services can be used to gauge the benefits of the services that accrue to taxpayers.

Government Collection Effort

We stated earlier on that collection effort refers to the measures by tax authorities towards achieving revenue targets. The measures differ across different forms of tax. For instance, auditing is common in business entities (for income and profit assessment), but for poll or development levy, a different approach is required (e.g. penalties, house-to-house inspection, etc). The data we intend to use in our analysis are basically household information, which contain data on development levy. Hence, we would want to estimate compliance with development levy in Tanzania. Our measure of compliance is a discrete variable that takes the values of one when compliance is observed, and zero otherwise. The effect of collection effort on compliance can either be traced through penalties issued or campaigns to mobilize taxpayers to settle their bills. The later effort is not directly available in the data[1]. The datum has information on respondents' awareness of people who paid tax plus penalty, and some who did not pay though they were required by law to do so. The respondent s' knowledge about compliance and penalties to other taxpayers provide an indication of non-compliance costs, which is also a function of government effort. We shall use the said knowledge to gauge the effect of government collection effort in the tax compliance function.

Data

Between September and November 2000, REPOA, CMI (Christian Michelsen Institute) and CDR (Center for Development Research) carried out household and firm surveys to study tax compliance in Tanzania. The surveys took place in selected regions; Dar es Salaam, Coast and Kilimanjaro. The household interviews involved 405 randomly selected households and 172 small-scale firms. Sample selection for regions and districts was based on accessibility, economic activities and rural versus urban location.

The household survey data contain information about compliance with local government taxes, taxpayers' opinions about taxes and provision of public social services. The data have two year detailed information on local government development levy, including compliance rates, statutory taxpayers, collection efforts, etc. The survey provides the best available survey data for the estimation of the tax compliance model in Tanzania.

The survey data shows that 71.1% of the respondents reported that they were obliged by law to pay development levy. Many respondents opined that the tax rates for development levy were too high (about 76%) while 13% indicated their opinion in favour of increasing the tax.

EMPIRICAL RESULTS

Presentation and discussion of the empirical results is organized into two parts. First we provide the results of logit estimates of compliance with development levy in selected regions in Tanzania and compute average probabilities for making comparisons at district level. Regression results are presented in graphic form that allows easy comparison between the covariates[2].

Development levy is the main source of own revenue to local government authorities in Tanzania. Development levy, like any other direct tax, is the most unpopular and therefore difficult to collect in district and urban councils. Compliance with development levy is, in principle, more related to local government performance than other taxes for at least two reasons. First, the incidence of its burden falls directly on the statutory payer. The taxpayer knows the amount he or she pays and that which is paid by others. The two provide taxpayers with an estimate of the financial strength of the council in question

[1] We refer to household tax compliance, which we discuss in the next section.

[2] Also see Appendix 1 for comprehensive results.

The assessment of the council performance by taxpayers is based on perceived financial strength from the council's collection. Secondly, development levy is paid by all adult citizens of working age (with few exceptions), and hence making the tax burden collectively felt for collective action. In principle, therefore, people expect provision of social services on the basis of the taxes they pay, and what they think are local government responsibilities.

The results that we present distinguish between compliance-reducing factors and compliance-increasing factors for development levy at the local government level.

"mouths" in the household without a necessarily corresponding increase in disposable income. Tax evasion (under zero opportunity cost) increases disposable income. Marriage also reduces geographical mobility of taxpayers (especially female partners), and hence, chances of being harassed by tax officers are reduced. In addition, most married women (housewives) may not feel obliged to pay tax once the husband has done so. In this case, the effect is captured by the marriage factor.

Respondents were asked to indicate whether they had paid development levy for 1999 and 2000. The answers constitute the dependent variable

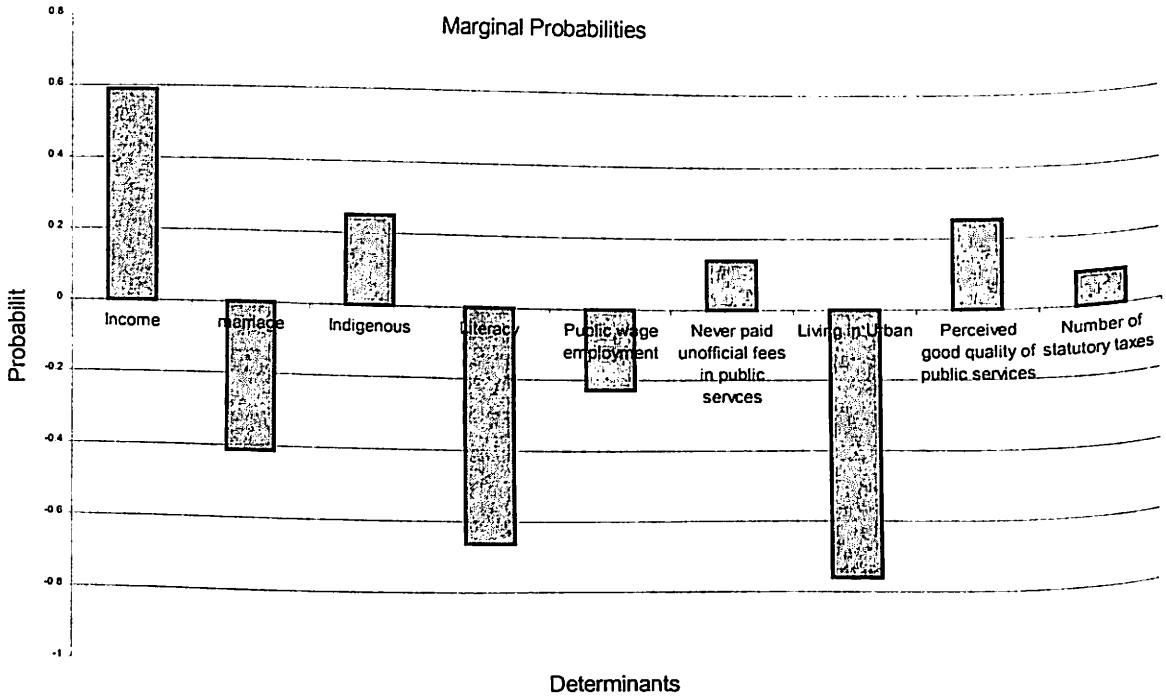

Figure 1: Logit estimates for major detenninants of compliance wth development levy in Tanzania (1999 -2000):

Compliance-Reducing Factors

The results indicate that the chance that a development levy taxpayer will settle his tax bill is reduced by 40% if the same is married. Marriage in Tanzania is associated with social economic responsibilities, which reduce individual disposable income. Marriage implies additional

of the compliance equation whose arguments are among others, education or literacy. The results show that education and public wage employment have negative effects on tax compliance. Education increases the chances of getting a job in both private and public institutions; and once employed, development levy is directly deductible

from salaries. However, most employees in local government institutions in Tanzania do not bother to collect their salary slips, which among other things, indicate deductible tax bills. In addition, salary slips take an average of three months before they are issued. Consequently, employees might not have been aware of the tax deductions for that particular year at the time of the compliance survey; this is actually the source of the negative effect of the public employment. But even with full knowledge of the timing and status of the deduction of development levy, we would still need to derive the behaviour of the taxpayer in the context of non-deductible salary incomes in order to estimate our model of compliance. This is essentially because direct deductions do not reveal the true compliance behaviour of the payer. But since it is understood that salaries are tax deductible, it is therefore obvious that public employees had paid their tax bills at the time of the survey. However, many were not informed about the deductions; and as a result, they reported, "did not pay" while they had paid. This constitutes the negative effect of public employment on the results. Earlier on Semboja and Odd (1998) found that the highest compliance rate with development levy came from wage employees in the public sector. Of course this would always be the case under wage tax-deductible system though the true compliance behaviour might be different under a non-salary deductible system. Direct tax deductions do not reflect voluntary compliance behaviour of taxpayers; rather it is the collection effort that features most.

Earlier on, we had indicated that compliance could either be measured by actual collection ratio or self-assessment of compliance with tax. Unfortunately, data at hand do not have information on the collection ratio and the corresponding turn up of taxpayers. Even with that information at hand, we would need time series data before using the collection ratio to estimate the compliance model. Our estimation lies between actual collection ratio and self-assessment. People had paid tax or not by the end of the payment period and the time the compliance survey took place; and we went to ask them whether they had paid or not. Under perfect self-reporting scenario, the resulting reported payment ratio would not be different from actual collection ratio. Nevertheless, it is common knowledge that self-reporting bias is a problem in household surveys, either because of asymmetric information or moral hazard. The case of employee taxpayers, who reported that they had not paid tax while they had paid, is therefore explained by information asymmetry rather than moral hazard.

The results indicate that education has a negative effect on compliance with development levy. Education increases geographical mobility of people in search for economic opportunities. The resulting migration makes it difficult to subject them to follow-ups by the tax authorities. It might also be true that education makes someone more critical and less dependent on public services; and therefore less willing to pay development levy. Education is also the basic pre requisite for employment in public institutions; and hence, its effects on tax compliance are reinforced by the effect of wage employment, which was discussed in the previous discussions.

It is also observed from the results that urban located taxpayers have significantly higher chances of evading development levy relative to rural taxpayers. The chance that an urban citizen will not pay development tax is about 75%. Contrary to urban councils, rural councils in Tanzania are dependent on development levy as the major source of revenue and as result, they exert more effort in collection than urban councils. In addition, cost of head tax collection in urban areas is higher than that of rural councils because internal mobility and migration. Moreover, revenue sources for urban councils are more diversified than rural ones. Development levy forms a small proportion of the council's revenue; and therefore effort to collect tax is low compared to rural councils..

Compliance-Increasing Factors

Studies on development levy show that poverty is one of the major factors, which reduce tax compliance (Semboja and Odd, 1998). Poor people find it difficult to settle their tax bills simultaneously with meeting expenditure on basic needs. The findings of this study support the conclusion that poverty is a major problem in tax compliance. Household income has a strong effect (5% significant level) on compliance with development levy. Other studies have also shown that poverty reduces compliance with user fees (see David Booth, 1992; Mushi, 2000; and Mwabu and Wangombe, 1996).

On *a priori,* indigenization has a positive effect on compliance with development levy. Collection of own tax for local development is more compliance enhancing relative to other taxes. In principle, localization of both tax revenue collection and expenditure benefits would have a positive effect on compliance. The results of this paper are consistent with the localization or indigenisation contention. Indigenous people have higher chances of paying development levy than migrant taxpayers. However, these results contradict findings by Semboja and Odd (1998) that indigenous people are more likely to evade tax than migrants. Their study did not distinguish between the effect due to migration and that due to wage employment. Wage employment (especially in the public sector) is a basic factor in explaining migration and compliance. The probability that a migrant taxpayer is a wage employee in the public sector is higher than that of indigenous people. And it is also true, according to their study, that employees (especially in public sector) pay their tax bills more promptly than their counterparts. But then, the results of this study show opposite results for compliance with development levy and so with the previous conclusion on indigenisation. Hence, the conflict of the results between the two studies is an indication that employment in the public sector is associated with migration, and therefore the effects of the two are opposed to each other.

Corruption has been noted as a negative factor in explaining tax revenue performance in most countries (Feinstain,J. S., 1991; Friedland, N. *et al.*, 1978; Berdgnon, M., 1993). Tax officials can conspire with taxpayers to evade tax. Although the conspiracy argument is obvious, the incidences of corruption are not so easily observable. Information on self- reporting on corruption is difficult to solicit, let alone reliability. In view of the constraint on data on corrupt officials, this study looks on the effect of paying bribes for public services on tax compliance as an alternative avenue for studying corruption. If people have to pay unofficial fees in order to be served with public services, their willingness to pay tax is reduced. People will be paying twice for public services; and as a result, they are motivated to evade tax. The tax compliance survey asked taxpayers whether they had paid any unofficial fee to access public services. The results of the analysis of the data show that respondents who indicated that they had not paid unofficial fees to access public services were also less likely to evade tax compared to those who had bribed service outlets.

Tax compliance is *a priori* related to provision of tax revenue-fmanced public services. People pay tax anticipating that they will be served with social services. On the other hand, service delivery would in principle induce voluntary compliance with development levy. Earlier on, it was noted that provision of public services and the resulting benefits to individuals are difficult to measure. Individuals differ in their taste for public services. Provision of public services also differs across councils in terms of volume and quality. The survey made assumption that people are generally more sensitive to quality than volume of services, but also bearing in mind the trade off between quality and coverage. The survey then asked people about their perception of quality of local public services. The responses have been used in the compliance model as a dummy variable; taking the values of 1 and 0 for perceived good and poor quality, respectively. The results

show that quality of public services matters in the taxpayers' compliance behaviour. Satisfaction with the provision of public services reduces evasion of development levy. District and urban councils, whose people perceive the provision of local public services to be good, have higher chances of reaching their revenue targets with relatively small effort compared to those that face the opposite perception.

Panel One shows two figures; perceived quality of public services by districts and the corresponding compliance with development levy in Figure 3. The panel shows that quality of public services is related to the aggregate district compliance rate with development levy.

Panel 1

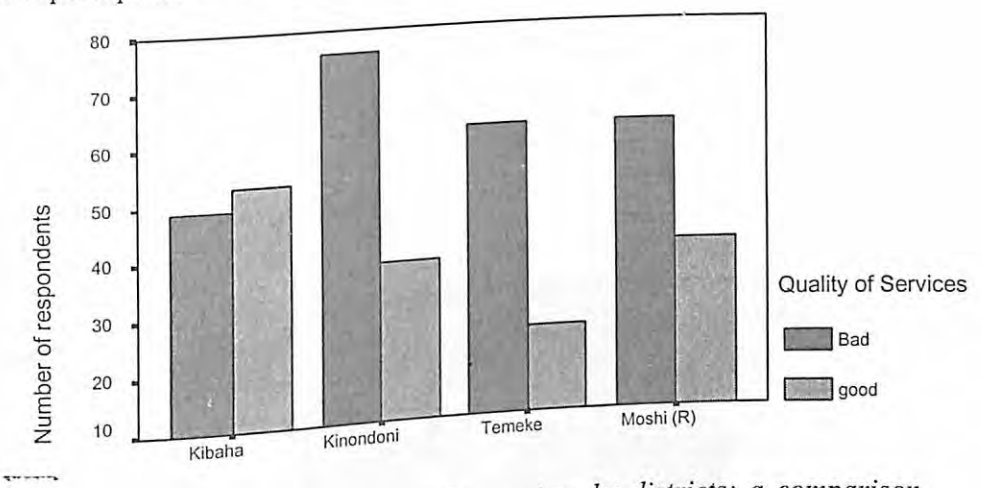

Figure 2: *Perceived quality of public services by districts: a comparison*

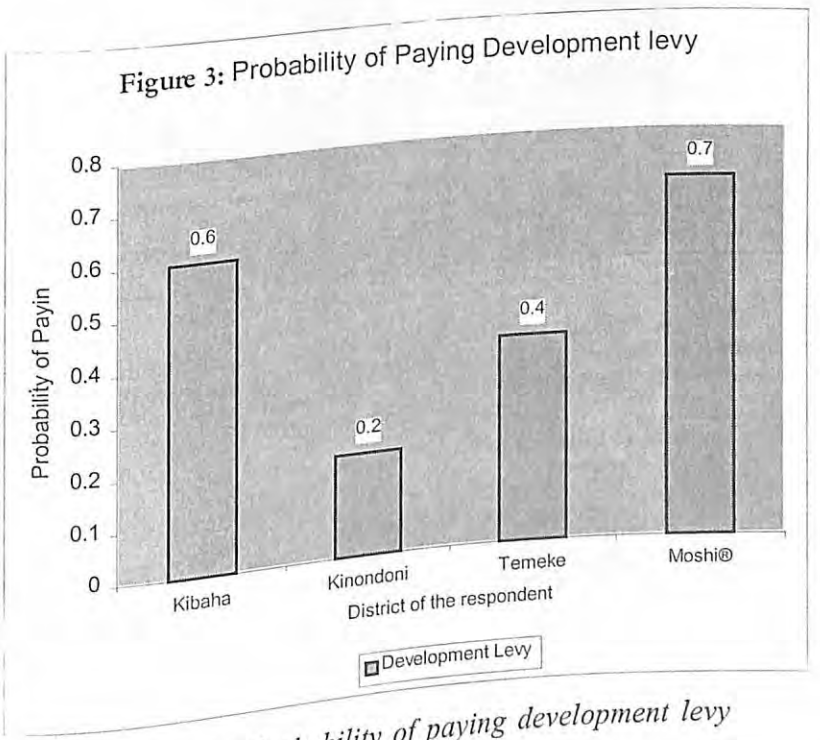

Fig 3: *Probability of paying development levy*

The two figures show clearly that perception that quality of public services is good increases compliance with development levy. For example, Kinondoni has more than 70% of its respondents who said that public services are poor; and the corresponding district level effect on aggregate compliance is 80% chances of evading development levy.

Quality of public social services is a controversial subject; demand for social services differs across social groups and geographical locations. For example, perception of quality between rural and urban might differ because of social pressure and location specific factors. It is also possible that income might have influenced assessment of quality of public services.

Table 1:*Household income and rating of quality of local gvt services crosstabulation*

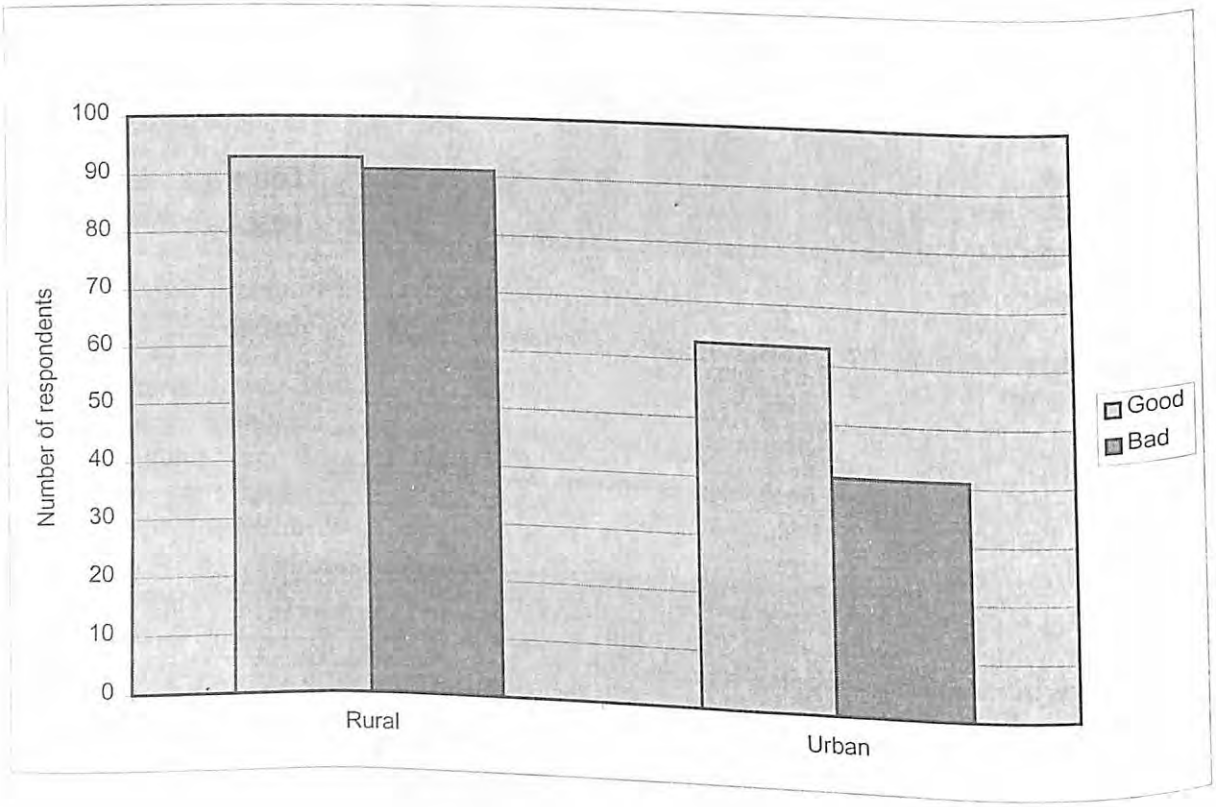

Figure 4: Rating of quality of public services: Rural versus Urban

However, we controlled for these variations in the estimation of the model, and we have also provided more elaboration in Table 1 and Figure 4.

Table 1 shows how people with different levels of income perceive quality of local government services in Tanzania. The results show that perception about quality of local public services is irresponsive to income changes though the poor would in principle appear more demanding for public services than the relatively rich. Figure 4 indicates that majority of taxpayers in urban areas are convinced that quality of public services is good. In rural areas, the perceptions split symmetrically between "poor" and "good" quality of public services. Obviously, urban citizens enjoy more public services than rural districts.

Taxpayers are normally faced with more than one tax bills/fees to settle. The 1971 Tax Act in Tanzania specifies that payment of one tax bill creates an automatic obligation for simultaneous settlement of other outstanding tax bills. For example, payment of a license fee requires pre-payment of other outstanding tax liabilIties. Hence, the higher the number of tax bills which a taxpayer has to settle, the higher the chance that development levy will also be paid. Paying any of your tax bills creates an automatic obligation to pay all your other outstanding tax bills simultaneously.

CONCLUSION

This paper aimed at studying compliance with tax at local government level. A simple generic model of tax compliance was set out to determine the factors that might influence the behaviour of taxpayers. The model was further specified to look on compliance with development levy in Tanzania. For simplicity and data constraints problem, logit model techniques were applied to sort out the major covariates of tax compliance. Empirical results of the model have shown that individual characteristics, tax effort and terms of trade with local government authorities are all important in explaining compliance with development levy in Tanzania. However, rural-urban location constitutes the strongest effect in terms of who pays and who does not.

The results of this study suggest that more compliance is attained if development levy is made income deductible (e.g. salary incomes). In a way, the approach introduces compulsory deductions that are free from employee's compliance behaviour. It might also be true that direct tax deductions reduce costs of administration significantly. Tax is directly deducted from salaries making it easier for tax authorities to collect.

Terms of trade between taxpayers and local government authorities matter in tax compliance. Results of previous studies and this paper show clearly that under-performing local councils will find it difficult and expensive to mobilize development tax revenue. In general, this study supports previous results on similar issues. However, the econometric technique applied in this paper is not without the conventional shortfalls of logit models and specific measurement problems. Nevertheless, the model manages to sort out strong and week factors that influence compliance with development levy in Tanzania.

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Appendix 1: Logit estimates
Marginal effects: Tax compliance
Dependent variable: Paid development levy in 1999/2000 (Yes = 1 and No = 0).

Variable	Coefficient[3]	Significance
Household income	.590	0.022**
Age of the Taxpayer	.003	0.348
Gender of the Tax payer	-.160	0.226
H the Tax payer is married	-.413	0.003***
Household size	-.006	0.651
T/payer born in the village	.249	0.008**
Head Taxpayer is a Christian	-.113	0.163
Education/Literacy	-.644	0.013**
Public wage employment	-.228	
Number of household membersself-employed in trade	.034	0.610
Number of household members wage employee-private sector	.015	0.896
H the payer knows many people who do not pay the tax	-.228	0.051 *
H the payer knows only one person who has paid tax plus penalty	.121	0.177
H the payer has never paid unofficial fee to access public services	.138	0.121*
H tax evaders have to pay tax plus penalty	.003	0.971
Urban Rural 2*	-.762	0.000***
H the tax payer rates the quality of public services to be good	.253	0.001 ***
Number of taxes a tax payer is obliged to pay	.095	0.001 ***

* -10% significance level; ** -5% significance level; *** -1% significance level.

3 Marginal effects for discrete variables are for the change from 0 to 1.