

Poultry farmers willingness to pay for agricultural tax: evidence from the Bono region, Ghana

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Abstract

Purpose – The purpose of this paper is to examine the poultry farmer's willingness to pay for agricultural tax in the Dormaa Municipality of Ghana. Besides, the study analysed the mean agricultural tax and constraints impeding the payment of the agricultural tax.

Design/methodology/approach – One hundred (100) poultry farmers were selected for the study. The logit and Kendall's coefficient of concordance were used to examine the factors that influence payment of agricultural tax and the constraints impeding the payment of the agricultural tax, respectively.

Findings – Instructively, 83% of the respondents were interested in the regressive taxation model relative to 12 and 5% who were interested in the proportional and progressive taxation model, respectively. The empirical results of the logit model revealed that tax awareness, probability of being audited and public service provision of roads influenced the poultry farmer's decision to pay for the agricultural tax. Perception of corruption and high tax rates were the primary constraints impeding the payment of the agricultural tax. The results further revealed that the farmers are willing to pay an average maximum amount of Ghc 152.00 (US 26 dollars) agricultural tax per month.

Originality/value – Despite the increasing relevance of agricultural tax, studies on poultry farmer's willingness to pay agricultural tax have been scarce in West Africa, particularly, Ghana. As a consequence, this paper broadens the frontiers of the existing literature on agricultural tax as well as the constraints impeding the poultry farmers to pay agricultural tax.

Keywords Agricultural tax, Poultry farmers, Willingness to pay, Logit model, Ghana

Paper type Research paper

1. Introduction

In recent years, taxation for the informal sector in developing countries has received a lot of attention (Joshi *et al.*, 2014). Globally, taxation is recognised as a tremendous source of revenue mobilisation for all nations. It has proved to be a strategic approach to mobilising funds for social and economic development. The outstanding taxation system for developed countries such as the United States of America, the Netherlands, Canada and the United Kingdom have enabled them to significantly generate adequate revenues per annum (Oladipo *et al.*, 2019). However, this case of the robust taxation system in developed countries seems to be otherwise in Africa. In Nigeria, tax leakages have negatively affected the tax revenue received annually (Oladipo *et al.*, 2019). Moreover, in the year 2003, virtually all the citizenry in Tanzania paid the tax; however, the tax was paid to avoid disturbance and not actually to gain sufficient provision of service from the government (Carroll, 2011), indicating that, the tax system in Africa is unstable. In fact, an unstable tax system is expensive because it compels the government to reduce public spending, which eventually destabilise public spending (Ebeke and Ehrhart, 2012). Besides, instead of the government focussing on donors for revenue, keen interest must be given to its citizens as a source of tax revenue. Doing this would ensure that, the basic needs of the citizens are met.

Similarly in Ghana, approximately 80% of the economically active are in the informal sector, and most of them do not pay tax, leaving the 20% in the formal sector to actually pay tax (Carroll, 2011). Ghana's ability to ensure the welfare of the populace is contingent on its



tenacity of amassing enough resources (Armah-Attoh and Awal, 2013). These resources could be enough if only the government begins to effectively and efficiently tax the informal sector, as they have the potential of augmenting tax revenue and reducing the budget deficit (Ofori, 2009). For instance, in Ghana, the poultry birds are kept mainly for the purpose of commercialisation and could be found in the Ashanti, Bono, Ahafo, Central, Western, Greater Accra and the Upper West Region (Aning, 2006). The wide coverage of the poultry sector could serve as an opportunity for revenue mobilisation for the government. In addition, the poultry sector has the potential of producing 200 million eggs and 14,000 metric tonnes of meat annually (Aning, 2006). However, the activities of some informal sector, especially the poultry industry has an adverse effect on the environment hence it is plausible to tax the industry to aid the amelioration of its negative environmental impact (Ofori, 2009). It is interesting to note that most informal sector workers in rural and peri-urban communities are involved in agribusiness. Although agriculture contributes one-fifth to the GDP of Ghana's economy, it has provided livelihoods to half of the populace (World Bank, 2017). Implying that when the populace (informal sector) benefit from their tax payment, tax compliance amongst the citizenry would augment tremendously (Ameyaw *et al.*, 2016). The tax revenue accounting for Ghana's total revenue increased from 80% to 84% between 2011 to 2012, respectively (Wahabu, 2017). With this increase in the expenditure of government, it is imperative to proliferate the tax base of the economy by the inclusion of the informal sector. Taxing the informal sector (poultry industry) could appear as taxing goods and services via value added tax (VAT) and duties on import and export (Joshi *et al.*, 2014). These firms in the informal sector are not directly registered as taxpayers but as a result of them being taxed on goods and services; they are recognised as indirectly being taxed. In view of the preceding benefit of tax to society, there appears to be no empirical study conducted on poultry farmer's willingness to pay for agricultural tax in Ghana. For instance, Abdul-Razak and Adafula (2013) conducted a study on taxpayer's attitudes towards tax compliance in Tamale, Ghana. Gatsi *et al.* (2013) explored the effect of corporate income tax on the financial performance of firms in Ghana. Further, Agyei and Gyamerah (2014) examined the awareness of tax relief schemes amongst employees in Ghana, whereas Acheampong *et al.* (2016) assessed the tax compliance level of small businesses in Ghana. Therefore, leaving a research gap in the literature which this study sought to address. Against this backdrop, the paper aims to contribute to the sparse body of knowledge on agricultural tax. That is why this paper seeks to examine the factors influencing poultry farmer's willingness to pay (W.T.P) for agricultural tax and also identify and rank the constraints affecting the poultry farmer's decision to pay agricultural tax.

2. Brief literature review

2.1 Concept of agricultural tax

The presence of agricultural tax would siphon consumption resources in the sector to investment which will consequently facilitate an unbiased redistribution of wealth. Taxing the agricultural sector in developing countries has served as an utmost source of revenue mobilisation (Hill and Blandford, 2007). However, the agricultural sector could be difficult to tax (Soliwoda and Pawłowska-Tyszko, 2014). Regardless of the difficulty in taxing the informal sector Nasim (2012) suggested two strategies of taxing the agricultural sector, either (1) a tax on the cultivated land or (2) a tax on agricultural income. According to Van Schalkwyk *et al.* (1994), land tax is a great source of income as a result of taxing the agricultural sector. Besides, Pawłowska-Tyszko and Soliwoda (2014) identified revenue tax, income tax and property tax as the types of agricultural tax. These authors maintained that revenue tax is achieved when a tax is levied on proceeds from cultivation and ownership of land. The tax imposed is contingent on gross revenue that is all proceeds without the incurred

expenses. Whether the farmer makes a surplus or not from his enterprise, he is still bounded to pay the revenue tax. Property tax is levied base on the size of the agricultural land. Implying that, large farm size is levied large tax and vice versa. As well, the all known income tax is levied depending on the income group of the farmer. Having a robust financial record facilitates the tax amount being levied on the farmer. Therefore, the farmer gains enough capacity to receive the tax burden being imposed. In Ghana, investment is proliferated in poor regions by reducing tax rates as tax incentives for agro-processing and manufacturing enterprises (Nguyen-Thanh and Strupat, 2013). Moreover, companies working in areas marked as free zones are granted ten years of tax holidays, whereas agro-processing enterprises, tree crops and livestock farming are given three, ten and five years of tax exemptions, respectively, in Ghana (Nguyen-Thanh and Strupat, 2013).

2.2 Taxation models

Progressive model: Most studies on progressive tax provides their view on how the model works (Diamond and Saez, 2011; Oishi *et al.*, 2012; Fernández-Albertos and Kuo, 2018). According to Agliardi and Agliardi (2008), the mean tax rate and tax base surge simultaneously. Likewise, the marginal tax rate increases in proportion with the taxable income (Chen and Guo, 2013). These authors further opined that a robust progressive tax system could safeguard any economy against the fluctuations of the business cycle which are caused by the animal spirits of agents. Besides, Bosi and Seegmuller (2010) emphasised the need for the progressive tax to sustain macroeconomic volatility. However, entrepreneurial behaviour is stifled with the presence of progressive tax and could have a positive or zero effect on welfare (Keuschnigg and Bo Nielsen, 2004). In addition, an empirical study conducted by Schmidheiny (2006) in Switzerland reveals that rich households have a high tendency of relocating to areas that are less taxed than poor households. Perhaps the rich households have a higher value for low tax.

Regressive Model: The characteristics of a tax system are based on it being proportional, progressive or regressive (Wang and Piesse, 2010). The tax burden is high or low for high-income earners and low-income earners, respectively, for a progressive tax. However, this is the opposite of a regressive tax. Regressive tax decreases the tax burden on increasing levels of income. For instance, a worker becomes less motivated to work should his salary be taxed, but a regressive income tax would augment his income (Hariton and Piaser, 2007; Feng and Villamil, 2017). Besides, developing countries have considered regressive tax as effective compared to progressive tax because it does not affect the activities of the economy negatively (Kato and Tanaka, 2014). As a result, the tax base is increased and marginal taxes reduced (Feng and Villamil, 2017).

Proportional model: Proportional income tax or flat tax has gained ground in many countries in Europe (Jacobs *et al.*, 2010). Irrespective of your income the government levies a tax percentage on everyone. Whether rich, middle income or poor the tax amount is applicable to all these income categories. According to Barrios *et al.* (2020), several transition economies adopted the proportional income tax system because of its simplicity, reduction in tax evasion and enhanced efficiency of the economy through small distortions of tax. Literature synthesis suggests that Russia's proportional tax system in 2001 reduced tax evasion and subsequently proliferated its fiscal revenues (Gorodnichenko *et al.*, 2009). Also, the effect of the flat tax system has received attention through empirical works from several scholars (Evans and Aligica, 2008). To reinforce this, Kryvoruchko (2015) analysed the effect of a flat tax on employment in Russia, whereas, in Bulgaria, Vasilev (2015) observed the effect of welfare gains by comparing flat tax and progressive tax. However in Ghana, according to the income tax act 2015 (Act 896), all taxable income is progressive.

2.3 Empirical review of the factors influencing the willingness to pay (W.T.P) for tax

A lot of factors could influence payment for tax. A study conducted by [Masum and Hena \(2017\)](#) on factors affecting tax payment amongst companies in Bangladesh, reveals that total leverage, cash flow (income) and audit fees were analysed as factors influencing payment of tax. However, cash flow (income) was the only statistically significant factor that influenced tax payment. Besides, multiple regression and Pearson correlation were used in the analysis of data with a sample size of 280. [Helhel and Ahmed \(2014\)](#) also examined the factors influencing tax compliance (tax payment) and attitude in Yemen. Bias tax system and inflated tax rates were significant factors affecting the low payment of tax. In addition, the inadequate audit of tax, insignificant penalties on tax and regular amnesty on tax had an effect on tax compliance decisions.

[Ali et al. \(2013\)](#) analysed the factors influencing the attitude for tax compliance in Africa. Round five of the Afrobarometer survey was used as a source of data for the study, coupled with the use of logit regression in analysing the data. Age, gender, education, wealth (income), the difficulty of evading tax, public service provision, trust, corruption and tax awareness were analysed as the factors affecting tax compliance attitudes in Kenya, Tanzania, Uganda and South Africa. However, the difficulty of evading tax was instrumental in increasing the probability of tax compliance (tax payment) in South Africa and Kenya. Moreover, in all four countries, public service provision was found to be significant. Besides, in South Africa and Tanzania, tax awareness was significant in increasing the tendency to tax compliance (tax payment). Similarly in Southern Ethiopia, [Deyganto \(2018\)](#) researched the factors influencing tax compliance (tax payment). Logistic regression was employed in the study with a sample size of 323. Absence of knowledge on tax, simple tax system, penalty awareness, the tendency of being audited and tax rate perception was statistically significant factors that influence tax payment. Nonetheless, income, occupation and peer influence were statistically insignificant.

[Tilahun \(2019\)](#) did a review of the factors influencing tax compliance. Findings of the review revealed that fairness of the tax system, tax rate, penalty and the tendency of being detected and audited were the most used factors employed in the related literature. Amongst construction firms, [King'Oina \(2016\)](#) studied the factors affecting the payment for VAT in Kenya. Tax knowledge (awareness), less cost of tax compliance, penalty and fines imposition and perception of the taxpayer were significant factors that affected the payment of tax.

[Daude et al. \(2012\)](#) examined the determinants of tax morale in Latin America. The authors acknowledged socio-economic factors such as gender, religion, age, education and employment level as significant factors influencing tax morale. Besides, institutional factors like government trust, democracy satisfaction and public service satisfaction have a key effect on tax morale. Using a thematic analysis approach, [Saad \(2014\)](#) solicited the views of taxpayers on knowledge of tax (awareness), tax complexity and tax compliance in New Zealand. Employing a sample size of 30, tax complexity and tax awareness increased the propensity of taxpayers not complying with tax.

In furtherance, [Jayawardane and Low \(2016\)](#) studied the attitude of taxpayers and tax compliance in Sri Lanka. A five-point Likert questionnaire was used in eliciting a response from 200 taxpayers. The findings of the study indicate that a complex tax system, an inadequate audit of tax, high tax rates, the poor tendency of detection and biased tax system influenced the taxpayer's compliance decision. In Indonesia, determinants of tax compliance amongst small and medium-sized companies were observed by [Inasius \(2019\)](#). Multiple regression was used in analysing data from 328 respondents. Tax knowledge, referral groups, the tendency of being audited and the perception of fairness and equity were statistically significant in influencing tax compliance (tax payment).

[Taing and Chang \(2020\)](#) researched on the factors influencing compliance to tax in Cambodia. Employing exploratory factor analysis and ordered logistic regression, data from 402 respondents were analysed. Fairness of tax, tax complexity and tax morale were

statistically significant in influencing tax compliance. Nonetheless, government trust, tax awareness, power of authority and information on tax had no statistical significance on tax compliance (tax payment). Moreover, using the ordered logistic regression model, [Youde and Lim \(2019\)](#) conducted a study on the factors affecting medium taxpayer's compliance in Cambodia. The study findings revealed penalty, tax awareness, trust in tax authority, tax law enforcement and accounting agency as significant factors influencing medium taxpayer's compliance.

2.4 Empirical review of the constraints affecting poultry farmer's decision to pay tax

Tax avoidance, evasion and default could engender enormous distress in the implementation of the tax. In the context of Nigeria, [John and Enoch \(2013\)](#) appraised the factors affecting tax evasion and avoidance. Poor service rendered in exchange for a tax, corruption, low transparency, accountability of public institutions and perception of fairness to the tax system were significant constraints affecting tax evasion and avoidance. [Gurama \(2015\)](#) examined the determinants of tax evasion in Malaysia. Using multiple regression, educational status, income level and tax system were statistically significant factors that influenced tax evasion. However, corruption and tax rate were insignificant factors on tax evasion. The study recommends the adjustment of tax laws.

Moreover, [Ali \(2018\)](#) explored the determinants of tax evasion in Somalia. A sample size of 240 was used in the study. The tax system was significant on tax evasion, but was negatively related. Nonetheless, corruption, tax rate, educational status and income level had positive significance with tax evasion. A study by [Mancharoen \(2015\)](#) on tax evasion in Southern Thailand revealed that corruption was a significant positive constraint on tax evasion, whereas income level, tax rate, educational level and penalty were insignificant factors on tax evasion.

[Endashaw \(2019\)](#) had analysed the factors affecting tax evasion in Ethiopia. The tendency of being detected, income level, tax rate, the complexity of the tax system and duty of the government were statistically significant factors on tax evasion. Besides, a sample size of 260 was used in the study. A study conducted by [Wärneryd and Walerud \(1982\)](#) explains tax evasion opportunity, younger age and lenient measure towards tax crimes as statistically significant constraints to tax evasion. Besides, the study employed a multivariate approach to analysing the data from 426 Swedish respondents.

[Sonia and Suparmun \(2019\)](#) explored the determinants of tax avoidance in Indonesia. The study employed a sample size of 183. Findings from the multiple regression analysis indicate that return on asset and institutional ownership were significant factors influencing tax avoidance. However, the growth of sales, size of the firm, inventory intensity ratio, independent commissioner, capital intensity ratio and leverage were insignificant factors influencing tax avoidance.

3. Materials and methods

3.1 Contingent valuation method (C.V.M)

There are several approaches for eliciting W.T.P using CVM. These include the dichotomous choice, payment cards, open-ended and bidding game ([Chien et al., 2005](#)). Besides, the study employed the open-ended elicitation procedure because it considers the maximum bid an individual would want to pay for a good ([Venkatachalam, 2004](#)). Despite the ability of open-ended technique providing a great deal of nonresponse, [Venkatachalam \(2004\)](#) reported that the open-ended technique is simple to respond, prevents starting bias and does not need the presence of the interviewer.

3.2 Sampling procedure and sample size

Employing the multistage sampling technique, the Bono region was purposively selected because the region was predominated with poultry farmers relative to the 15 administrative

regions of Ghana. Moreover, Kofiasua, Atesikrom and Kyeremasu were selected purposively in the Dormaa Municipality. Using simple random sampling, a list of farmers was obtained, and the table of random numbers was used as a guide to select 35, 40 and 25 poultry farmers from Kofiasua, Atesikrom and Kyeremasu, respectively, to aid give the farmers an equal probability of being included in the study. In the study area, an estimated number of 430 poultry farmers were registered with the veterinary department during the interview. Employing Yamane's (1967) sample size determination approach at 10% margin of error, approximately 81 poultry farmers were representative of the total population. However, the sample size of 100 was used in the study. Accordingly, the central limit theory states that a sample size greater than or equal to 30 is accurate enough for a standard normal deviation, indicating that the sample size is appropriate for statistical analysis. Besides, both descriptive and correlational research designs were employed in this study. A structured questionnaire was used for collecting primary data, whereas secondary data was sourced from the company's records and association's reports.

3.3 Method of data analysis

Objective (1) was analysed using the logistic regression model, whereas objective (2) was analysed using Kendall's coefficient of concordance. Besides, the Pearson's correlation coefficient, Spearman rank correlation, Garrett's ranking technique and Friedman's two-way analysis of variance could also be used for ranking of variables. According to Mensah *et al.* (2017), the Pearson's correlation coefficient is used for interval data; however, if the normal distribution of variables used is acknowledged in ranks, thus, be it ordinal or interval Kendall's coefficient of concordance or Spearman rank correlation could be employed. Moreover, Friedman's test is based on the ranked items. whereas Kendall's test is based on the rankers themselves. On the other hand, Garrett's ranking technique uses the mean score of the rankers and organises them in a descending or ascending order. The shortcoming of Garrett's ranking technique is that it entails a lot of steps and fails to account for the level of agreement amongst the rankers. As a consequence, Kendall's coefficient of concordance is used in this study because it accounts for the level of agreement amongst the rankers (respondents), which Garrett's and Friedman's test fails to account (Mensah *et al.*, 2017). In addition, the interpretation of Kendall's test is simple relative to the Spearman rank correlation (Mensah *et al.*, 2017).

Following Deyganto (2018), the binary logistic regression model was used in the study. The logit model is specified as:

In this study, assume that the willingness of a poultry farmer to pay agricultural tax or not willing to pay agricultural tax depends on an unobservable utility index I_i^* , which depends on regressors such as tax awareness, high tax rates, income level and unfair tax system. We express this index as:

$$I_i^* = BX + u_i \quad (1)$$

where $i = \text{ith}$ poultry farmer, $u = \text{Stochastic error}$, $B = \text{Vector of coefficients}$ and $X = \text{Vector of regressors}$.

However, the unobservable index is related to the actual willingness to pay for agricultural tax or not willing to pay for agricultural tax by reasonably assuming that:

$Y_i = 1$ (a poultry farmer is willing to pay agricultural tax) if $I_i^* \geq 0$

$Y_i = 0$ (a poultry farmer is not willing to pay agricultural tax) if $I_i^* \leq 0$

That is, if a poultry farmers' utility index I exceed the level I^* , he or she will be willing to pay agricultural tax but if it is less than I^* , that poultry farmer will not be willing to pay agricultural tax.

Operationalising the decision, we assume the probability of making a decision, say the decision of being willing to pay agricultural tax (That is: $Y = 1$):

$$\begin{aligned} \Pr(Y_i = 1) &= \Pr(I^* \geq 0) \\ &= \Pr[(BX + u_i) \geq 0] \\ &= \Pr(u_i \geq -BX) \end{aligned} \tag{2}$$

Now this probability depends on the (probability) distribution of Y_i , which in turn depends on the probability distribution of the error term, u_i . If this probability distribution is symmetric around its (zero) mean, then Eqn (2) can be written as:

$$\Pr(u_i \geq -BX) = \Pr(u_i \leq BX)$$

Therefore,

$$P_i = \Pr(Y_i = 1) = \Pr(u_i \leq BX) \tag{3}$$

Clearly, P_i depends on the particular probability distribution of u_i .

The logit model assumes that the probability distribution of u_i follows the logistic probability distribution, which in this case, is specified as:

$$P_i = \frac{1}{1 + e^{-Z_i}} \tag{4}$$

where P_i = probability to pay agricultural tax (That is: $Y_i = 1$) and

$$Z_i = BX + u_i \tag{5}$$

The probability that $Y = 0$, (i.e. the poultry farmer is not willing to pay agricultural tax), is given by

$$1 - P_i = \frac{1}{1 + e^{Z_i}} \tag{6}$$

The probability that the poultry farmer is willing to pay agricultural tax against the probability that the poultry farmer is not willing to pay agricultural tax is expressed as:

$$\frac{P_i}{1 - P_i} = \frac{1 + e^{Z_i}}{1 + e^{-Z_i}} = e^{Z_i} \tag{7}$$

where, $\frac{P_i}{1 - P_i}$ = Odds ratio in favour of being willing to pay agricultural tax: the ratio of the probability that the poultry farmer is willing to pay agricultural tax to the probability that the poultry farmer is not willing to pay agricultural tax.

Taking the (natural) log of Eqn (8), the logit model is specified as:

$$L_i = \ln\left(\frac{P_i}{1 - P_i}\right) = Z_i = BX + u_i \tag{8}$$

where L_i = Logit (log of the odds ratio), $\frac{P_i}{1 - P_i}$ = The ratio of the probability that a poultry farmer pays agricultural tax to the probability that a poultry farmer does not pay agricultural tax.

B = Coefficients, X = Explanatory variables u_i = Error term

The empirical model for the study is specified as:

$$\ln \left(\frac{P_i}{1 - P_i} \right) = \beta_0 + \beta_1 \text{Tax } W + \beta_2 \text{High } T + \beta_3 \text{Income } L + \beta_4 \text{Unfair } T + \beta_5 \text{Simple } T \\ + \beta_6 \text{Prob } A + \beta_7 \text{Paware} + \beta_8 \text{Tax } M + \beta_9 \text{Peer } I + \beta_{10} \text{Public } SP \\ + \beta_{11} \text{Trust } G + \beta_{12} \text{Edu} + u_i \quad (9)$$

Specification of Kendall's Coefficient of Concordance:

$$W = \frac{12 \left[\sum T^2 - \frac{\sum \tau^2}{n} \right]}{nm^2(n^2 - 1)} \quad (10)$$

where

T = Total weight score W = Kendall's coefficient of concordance

n = Number of constraints being ranked m = Number of respondents

H_0 . There is no agreement amongst the ranked constraints.

H_a . There is agreement amongst the ranked constraints.

where H_0 : Null hypothesis and H_a : Alternative hypothesis

The F -distribution was used to test the significance of the coefficient of concordance.

The F -ratio is specified below:

$$F - \text{ratio} = \frac{[(m - 1)Wc]}{(1 - Wc)}$$

where Wc = Calculated Kendall's coefficient of concordance.

3.4 Study area

Dormaa Municipality lies within latitudes 7° north and 7° 30' north and longitudes 3° west and 3° 30' west (Ghana Statistical Service, 2014). It is found in the western part of the Ahafo Region of Ghana. Besides, it is 80 kilometres west of the regional capital, Sunyani with a total land area of 1,210.28 square kilometres (Ghana Statistical Service, 2014) (see Table 1, Figure 1).

From Table 2, 88 of the respondents were males, while 12 were females, indicating that the poultry industry is gendered in favour of men who are involved in productive roles that attract rewards, while females, apart from being household head, would be involved in domestic or reproductive roles which do not attract rewards. The majority (45) of the respondents was between the age bracket of 30–39 and above 39 years, whereas the minority (10) fell within the age range of 18–29 years, meaning that they are economically active per Ghana statistical service classification (Ghana Statistical Service, 2014). As a consequence, they can work for long to mobilise enough revenue to sustain the poultry industry. Nonetheless, 43 of the respondents had gain secondary/vocational education, 35 had obtained basic education, 18 had finished tertiary and 4 had no formal education. Education connotes managerial capacity and can also be used as a proxy for financial literacy hence, it is easy for them to appreciate the tax system, or be educated on tax. From Table 2, respondents who were educated (94.3%, 81.4% and 94.4%) were willing to pay agricultural tax unlike the uneducated (25%). Besides, most (66) of the respondents had income range above Ghc

Variable	Variable description	Measurement	Expected sign
WTPat	<i>Dependent variable:</i> are you willing to pay agricultural tax	Dummy variable (1 = Yes 0 = No)	N/A
TaxW	Tax awareness	Dummy variable (1 = Yes 0 = No)	+
HighT	High tax rates	Dummy variable (1 = Yes 0 = No)	-
IncomeL	Income level	Continuous variable (In Gh Cedis)	+/-
UnfairT	Unfair tax system	Dummy variable (1 = Yes 0 = No)	-
SimpleT	Simple tax system	Dummy variable (1 = Yes 0 = No)	+
ProbA	Probability of being audited	Dummy variable (1 = Yes 0 = No)	+
Paware	Penalty awareness	Dummy variable (1 = Yes 0 = No)	+
TaxM	Tax morale	Dummy variable (1 = Yes 0 = No)	+
PeerI	Peer influence	Dummy variable (1 = Yes 0 = No)	+
PublicSP	Public service provision	Dummy variable (1 = Yes 0 = No)	+
TrustG	Trust in government	Dummy variable (1 = Yes 0 = No)	+
Edu	Education	Continuous variable (In years)	+

Table 1.
Description of explanatory variables used in the logit model

3,000.00, 27 had income between Ghc 2,000.00–3,000.00 and 7 fell within the income range of Ghc 1,000.00–1,900.00. Further, 72 of the respondents were married, whereas 23 were single, indicating that the majority (72) who were married enjoyed responsibility allowance as a tax incentive (Oduro, 2009) (This is because under income tax act 2015 (ACT 896) a tax relief of Ghc 1200.00 per year in the case of an individual with a dependent spouse or at least two dependent children is granted to married couples). Only one spouse is entitled and the relief will only be granted on the production of a marriage certificate or a certified copy of the registration of the marriage to support the claim. As a consequence, 82 were family heads leaving the remaining 18 not to be family heads. Hence, they can make a decision on tax payment. Ninety (90) of the respondents had their main economic activity to be poultry farming, indicating that they can be a candidate for agricultural tax on other commodities or livestock, followed by fish farming with a total of five respondents. Fifty (50) of the respondents had bird size ranging from 2000 to 5000, whereas 28 and 22 of the respondents had bird size above 5000 and 1000–1900, respectively. The survey indicates that the majority (55) of the respondents had more than 10 years of experience, which reveals that their period for tax holidays have been exhausted, while 26 had between 6 and 10 years of experience and 19 between 1 and 5 years of experience. Following the classification by the National Board for Small Scale Industries (NBSSI), the number of employees has been used as the proxy for farm size (Where less than five employees accounts as a micro-farm and between 6–29 employees accounts as a small farm). As a consequence, the farm size for most (53) of the respondents was small, while 38 had their farm size to be micro. Although poultry agribusiness is the main economic activity in the study area, most of them have small farm sizes.

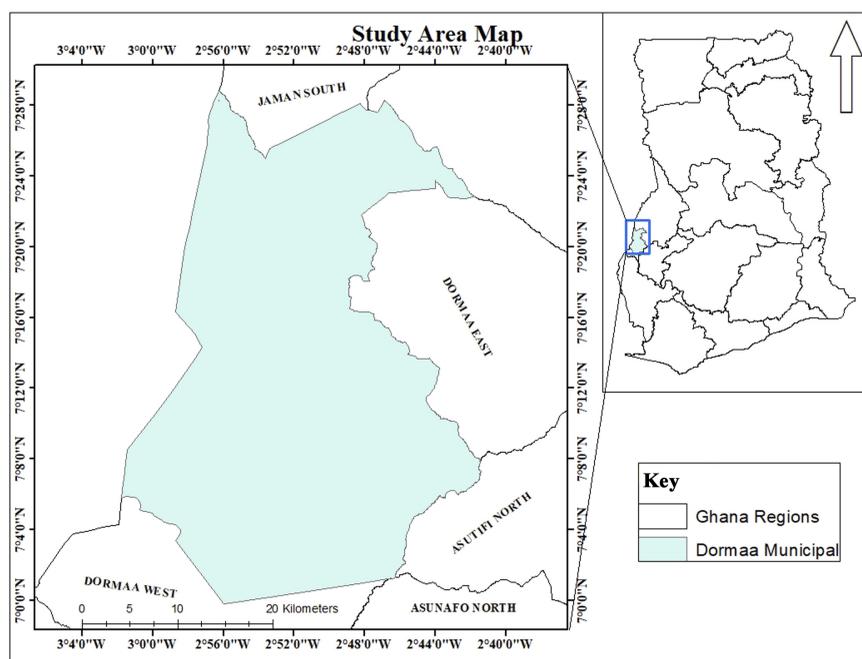


Figure 1.
Map of Dormaa
Municipality

A total of 100 respondents were surveyed for the study, out of this sample 83% were willing to pay agricultural tax whereas 17% were unwilling to pay an agricultural tax per month. Out of the sampled respondents, 33% of them were willing to pay an amount of Ghc 100.00 per month while 21% were willing to offer an amount of Ghc 50.00 per month. In addition, 17% of the respondents were willing to pay Ghc 300.00 whereas 12% of them had agreed to pay a maximum amount of Ghc 200.00 per month. Another 10% of the respondents were willing to pay Ghc 20.00 as the maximum amount for the agricultural tax while 6 and 1% were ready to pay Ghc 500.00 and Ghc 150.00 as the maximum amount for the agricultural tax per month respectively. The results in [Table 3](#) indicate that the majority (33%) of the respondents were willing to pay Ghc 100.00 as the maximum amount for agricultural tax per month however the mean maximum amount for the total sample is Ghc 152.00. Implying that averagely the farmers are willing to pay a maximum amount of Ghc 152.00 per month. It is instructive to note that, the majority (55) of the respondents were willing to pay in cash tax on eggs or broilers, whereas 34 indicated their willingness for tax on income. However, 7 of the respondents accepted tax on profit while 4 accepted tax on service. Out of the 100 respondents, 55 and 45 indicated they will pay the tax directly and indirectly respectively. In consequence, most of the respondents (71) were willing to pay 5% of their income tax while 21 were willing to pay 10% of their income tax leaving the remaining 8 respondents who accepted to pay an income tax percentage of 15%. It is worth noting that 83% of the respondents were interested in the regressive taxation model relative to 12 and 5% who were interested in the proportional and progressive taxation model respectively. Meaning that most (83%) of the respondents were interested in the tax rate decreasing as their income levels rise. Besides, the reason to pay tax was chiefly contingent on national development (79) and the growth of the poultry industry (21).

The results in [Table 4](#) show that the decision to pay for agricultural tax amongst the poultry farmers is influenced by tax awareness. As expected, tax awareness was in

Variable	Number of respondents	Willingness to pay agricultural tax		Unwillingness to pay agricultural tax	
		Freq	(%)	Freq	(%)
<i>Gender</i>					
Male	88	76	86.4	12	13.6
Female	12	7	58.3	5	41.7
<i>Age</i>					
18–29	10	8	80.0	2	20.0
30–39	45	40	88.9	5	11.1
Above 39	45	35	77.8	10	22.2
<i>Formal education</i>					
None	4	1	25.0	3	75.0
Basic	35	33	94.3	3	5.7
Secondary/vocational	43	35	81.4	8	18.6
Tertiary	18	17	94.4	1	5.6
<i>Income range per month</i>					
Ghc 1000.00–1900.00	7	5	71.4	2	28.6
Ghc 2000.00–3000.00	27	23	85.2	4	14.8
Above Ghc3000.00	66	65	98.5	1	1.5
<i>Marital status</i>					
Single	23	15	65.2	8	34.8
Married	72	63	87.5	9	12.5
Divorced	3	2	66.7	1	33.3
Widowed	2	1	50.0	1	50.0
<i>Family head</i>					
Yes	82	75	91.5	7	8.5
No	18	8	44.4	10	55.6
<i>Economic activity</i>					
Poultry farming	90	78	86.7	12	13.3
Teaching	2	1	50.0	1	50.0
Fish farming	5	4	80.0	1	20.0
Other (Pastor)	3	1	33.3	2	66.7
<i>Bird size</i>					
1000–1900	22	18	81.8	4	18.2
2000–5000	50	45	90.0	5	10.0
Above 5000	28	21	75.0	7	25.0
<i>Experience</i>					
1–5yrs	19	12	63.2	7	36.8
6–10yrs	26	23	88.5	3	11.5
Above 10yrs	55	53	96.4	2	3.6
<i>Farm size</i>					
Micro	38	36	94.7	2	5.3
Small	53	30	56.6	20	43.4
Medium	8	5	62.5	3	37.5
Large	1	1	100		

Table 2.
Demographic
characteristics of
farmers

Variable	Frequency	Percentage	Farmer's willingness to pay agricultural tax
Willingness to pay agricultural tax	83	83	301
Unwillingness to pay agricultural tax	17	17	
<i>Total</i>	100	100	
<i>Maximum amount (Ghc)</i>			
20.00	10	10	
50.00	21	21	
100.00	33	33	
150.00	1	1	
200.00	12	12	
300.00	17	17	
500.00	6	6	
<i>Total</i>	100	100	
<i>Type of tax</i>			
Tax on eggs or broilers	55	55	
Tax on income	34	34	
Tax on profit	7	7	
Tax on service	4	4	
<i>Total</i>	100	100	
<i>Payment mode</i>			
Direct	55	55	
Indirect	45	45	
<i>Total</i>	100	100	
<i>Income tax percentage</i>			
5	71	71	
10	21	21	
15	8	8	
<i>Total</i>	100	100	
<i>Taxation model</i>			
Progressive	5	5	
Regressive	83	83	
Proportional	12	12	
<i>Total</i>	100	100	
<i>Reason to pay tax</i>			
National development	79	79	Table 3. Maximum amount willing to pay for agricultural tax per month
Growth of the poultry industry	21	21	
<i>Total</i>	100	100	
Note(s): NB: 1 US Dollar = Ghc 5.78 during period of data collection			

correspondence with the expected positive sign. Besides, tax awareness was positive and statistically significant at a 5% significance level. As a consequence, if tax awareness increases, the probability to pay for agricultural tax is likely to increase by 74%. Because the more an individual becomes aware of any certainty or uncertainty the tendency of adjusting to the certainty or uncertainty is high. The result is similar to the study of [Ali et al. \(2013\)](#), [King'Oina \(2016\)](#), and [Youde and Lim \(2019\)](#) who revealed a positive relationship between payment of tax and tax awareness.

Moreover, the probability of being audited was negative and statistically significant at a significance level of 5% but was at variance with the expected positive sign. Perhaps, the

Table 4.

Logit model estimates of the factors influencing the poultry farmer's willingness to pay for agricultural tax

	Coefficient	Logit regression	
		Standard error	Marginal effect
Tax awareness	3.1706**	(1.0194)	0.7361
High tax rates	0.5142	(0.6395)	0.1194
Income level	0.0000	(0.0000)	5.7106
Unfair tax system	-0.6468	(0.5822)	-0.1501
Simple tax system	0.1736	(0.5279)	0.0403
Probability of being audited	-1.2686**	(0.6068)	-0.2945
Penalty awareness	-1.0996	(0.9560)	-0.2553
Tax morale	-0.0742	(0.5458)	-0.0172
Peer influence	0.8909	(0.6234)	0.2068
Public service provision of roads	1.7462**	(0.6323)	0.4054
Trust in government	0.7516	(0.5284)	0.1745
Education	0.0586	(0.0922)	0.0136
Prob > Chi ²	0.0028		
Pseudo R ²	0.2240		
Log-likelihood logit	-51.8963		
LR Chi ² (12)	29.96		

Note(s): **5% Significance level

farmers did not like the idea of being audited as they have enough money to pay for their due tax. As a consequence, should the probability of being audited decrease the probability to pay for agricultural tax is likely to increase by 0.2945. Therefore, the result corroborates the following studies [Tilahun \(2019\)](#), and [Inasius \(2019\)](#) who revealed that the tendency of being audited was statistically significant in influencing tax payment.

The public service provision of roads is statistically significant at a 5% level of significance and the sign of the coefficient follows the expected sign. Perhaps, the farmers are more sensitive to national development and the growth of the poultry industry. As a result, if public service provision increase by one unit the probability to pay for agricultural tax would increase by 0.4054. This finding is similar to the study conducted by [Daude et al. \(2012\)](#) who indicated that public service satisfaction has a key effect on tax payment.

From [Table 5](#) corruption was the first constraint ranked, indicating that corruption greatly impeded the payment of agricultural tax. The issue of corruption was reported by [John and Enoch \(2013\)](#) in their tax avoidance and evasion study in Nigeria. The second constraint was the high tax rate with a mean rank of 3.90. Moreover, the complex tax system and the absence of knowledge were the third (3rd) and fourth (4th) constraints derailing the success of paying agricultural tax. [Endashaw \(2019\)](#) also identified a complex tax system as a contributing factor to tax evasion in Ethiopia. Considering the lenient measures and the poor service rendered with a respective mean rank of 5.57 and 6.10 indicates that they have negatively affected the payment of agricultural tax, however, not to a great extent. [Wärnerud and Walerud \(1982\)](#) revealed lenient measures as a significant constraint to the payment of tax. The perception of the tax system had also been ranked as the seventh (7th) constraint that slows agricultural tax payment. Although, this is a challenge (perception of the tax system) faced, the magnitude of impact on the payment of the agricultural tax is not tremendously pervasive vis-à-vis the 1st (corruption) and 2nd (high tax rate) ranked constraints. In addition, the absence of tax enforcement and insufficient transparencies were the 8th and 9th constraints ranked with a mean rank of 6.38 and 6.80, respectively, whereas democracy satisfaction was the constraints ranked as 10th. Hence, the magnitude of the effect of democracy satisfaction in impeding the payment of agricultural tax is minimal. Kendall's *W* of 0.308 implies that 31% of the farmers were in agreement with the ranked constraints.

Constraints	Mean rank	Rank	Farmer's willingness to pay agricultural tax
Corruption	1.35	1	
High tax rate	3.90	2	
Complex tax system	4.50	3	
Absence of knowledge	4.79	4	
Lenient measures	5.57	5	
Poor service rendered	6.10	6	
Perception of the tax system	6.34	7	
Absence of tax enforcement	6.38	8	
Insufficient transparency	6.80	9	
Democracy satisfaction	8.31	10	
<i>N</i>	100		
Kendall's <i>W</i>	0.308		
Chi-square (X^2)	277.519		
Degree of freedom (df)	9		
Asymptotic significance	0.000		

Table 5.
Constraints impeding
poultry farmers to pay
agricultural tax

Therefore, the null hypothesis that there is no agreement in the ranked constraints is rejected in favour of the alternative that the ranked constraints are in agreement.

4. Conclusion and policy recommendation

The study examined the willingness of poultry farmers to pay for agricultural tax in the Bono region, Ghana. The farmers were willing to pay an average maximum amount of Ghc 152.00 agricultural tax per month. It is instructive to note that, although according to the income tax act 2015 (Act 896) Ghana's taxable income is progressive, the results indicates that 83% of the respondents were interested in the regressive taxation model relative to 12 and 5% who were interested in the proportional and progressive taxation model, respectively. Besides, empirical results emanating from the study revealed that the factors that could influence the poultry farmer's decision to pay the agricultural tax were three (3). In particular, tax awareness (positive effect); the probability of being audited (negative effect) and public service provision of roads (positive effect) were the three factors. Nonetheless, high tax rates; income level; unfair tax system; simple tax system; penalty awareness, tax morale, peer influence; trust in government and education were statistically insignificant factors in influencing the decision of the poultry farmers to pay for the agricultural tax. The main constraint impeding the poultry farmers to pay for the agricultural tax was the perception of corruption and high tax rate, while the least constraint was democracy satisfaction. Policy measures aimed at proliferating farmers decision to pay for agricultural tax could include the reduction of the tax rate, increasing tax incentives for the married to encourage them to pay agricultural tax, as they have predominated the study area, making the public tax system transparent to reduce the perception of corruption and sufficiently ensuring the enforcement of the agricultural tax. Furthermore, the majority (43%) of the poultry farmers has a secondary/vocational level of education hence it is of utmost importance for the Ghana Revenue Authority (GRA) to organise seminars and forums to aid educate the poultry farmers on the awareness of agricultural tax in the poultry sub-sector. One possible implication from this research is that, GRA could provide a regressive taxation model to the poultry farmers to facilitate the willingness to pay for the agricultural tax as the majority (83%) was interested in the regressive taxation model. Further research could be conducted on the impact of the agricultural tax in the poultry sub-sector.

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