Willingness to pay for electronic transaction levy: empirical evidence from Ghana

Anthony Amoah
School of Sustainable Development,
University of Environment and Sustainable Development, Somanya, Ghana and
Department of Finance, University of Ghana, Accra, Ghana

Edmund Kwablah
Department of Economics, Central University, Accra, Ghana

Benjamin Amoah
Department of Finance, University of Ghana, Accra, Ghana, and

Kwame Adjei-Mantey
Department of Applied Economics,
University of Environment and Sustainable Development, Somanya, Ghana

Abstract

Purpose – In countries where the electronic levy (e-levy) has been implemented, one question that resonates with the populace is, "how much would you want to pay for e-levy per transaction?" In response, varied perspectives have been shared with no convergence. Against this background, this study seeks to estimate people's willingness to pay (WTP) for electronic transaction levy in Ghana, while analysing the associated determinants.

Design/methodology/approach – This study relies on a survey of 2,810 respondents obtained from February 9 to 16, 2022 in Ghana. A multivariate logit model was estimated with its marginal effects. Further, a robustness check was undertaken using the linear probability model to validate the results.

Findings – With respect to the sample, the authors find evidence that approximately 46% of the respondents are not willing to pay any amount per transaction for the e-levy. Second, about 21% of the respondents are willing to pay Ghs0.5% as e-levy per transaction. Furthermore, about 10% of the respondents are willing to pay 1% per transaction as e-levy. Those who indicated that they would pay rates above 1% (specifically, 1.50%–1.75%) per transaction are less than 5%. For flat rates, approximately 10% of the respondents were willing to pay Ghs5 per month for all transactions above Ghs100. All others who are interested in other flat rates together are less than 5% of the respondents. The key statistically significant determinants of the probability that an individual would be willing to pay for the e-levy are also provided. This study recommends a comprehensive dialogue between the government and all stakeholders to reach a reasonable conclusion on an acceptable e-levy rate and by extension, implementation strategies.

Originality/value – To the best of the researchers' knowledge, this is the first empirical study that estimates individuals' willingness to pay for e-levy on electronic transactions in a developing country.

Keywords Electronic transactions, E-Levy, Willingness-to-pay, Ghana

Paper type Research paper

1. Introduction

Information and communication technology (ICT) and digitalisation have played key roles in the development of both developing and developed economies. ICTs have enhanced economic production, financial services and health service delivery as well as led to improved outcomes in education and poverty reduction (Raheem *et al.*, 2020). More recently, the quest to increase the share of human activities and interactions that rely on ICTs have led many emerging economies on a path of digitalisation. As a result, the use of mobile devices and other ICTs have increased rapidly (Stocchi *et al.*, 2022). This increase has been partly spurred by the proliferation of digital applications (apps) that aid service delivery in many sectors of

economies worldwide (Arora *et al.*, 2017; Sabbagh *et al.*, 2013). One sector that has been a primary beneficiary of the digitisation agenda is the financial sector.

Mobile money has emerged as a key product of the ICTs and digitisation era where financial transactions, payments and receipts of money can be done with the aid of mobile phones and telecommunication services, and Ghana has not been left out. Since its introduction in Ghana in the year 2009, mobile money usage has increased steadily. The number of registered mobile money accounts has increased from less than five million in 2013 to over 38.4m as of end of year 2020 (Bank of Ghana, 2017). This is testament of the astronomical growth of mobile money usage among residents in Ghana. Admittedly, mobile money has not been the only digitally aided means of making financial transactions. Indeed, other online and digital payment platforms exist through which clients can execute similar transactions.

It is trite knowledge that emerging economies such as Ghana have a myriad of challenges with respect to infrastructure, energy and health service delivery among others. However, due to low productivity, a large informal sector with limited data for tax collection purposes and poverty, such economies usually struggle to raise the needed revenue to execute their development agenda (Gupta, 2007). As a result, these countries often have to incur higher expenditures than their revenues can match, leading to budget deficits and increased debts. In recent years, exogenous shocks such as the COVID-19 pandemic with its consequences including disruptions in global supply chains have placed such emerging economies in dire straits. Ghana, for instance, had spent over GH¢ 12bn (US$ 1.5bn) [1] on expenditures to contain the spread of COVID-19 and provide reliefs and buffers to its citizens between 2020 and 2021 (MoFEP, 2022). Apart from the exogenous shocks mentioned, Ghana has had to deal with its own endogenous shocks to her economy. One of such shocks was a financial sector clean up exercise conducted to sanitize the sector and restore investor confidence following the discovery of poor management and governance of some financial institutions – an activity which cost the nation around GH¢ 21.6bn which translates into 5.6% of GDP and led to over 6,000 job losses (MoFEP, 2020). The implication is that extra expenditures had to be incurred by the government to contain these exogenous and endogenous shocks, resulting in the need for more revenue to finance the growing expenditure.

Besides borrowing from the capital market and bilateral/multilateral sources, the government of Ghana decided to impose an electronic transactions tax, herein after referred to as the e-levy, on financial transactions conducted digitally as a means to rake in extra revenue to finance its extra expenditures and close its fiscal deficit gap. The e-levy is imposed on all financial transactions conducted by households and firms with a tax-free window on the first Gh¢ 100.00 (US$ 12.5) value of transactions daily. Thus, transfers from one mobile money account to the other, transfers from a bank account to a mobile money account and vice versa as well as transfers of funds from one bank account to the other are all transactions that attract the tax. An initial tax rate of 1.75% was proposed by the government, which was later reviewed to 1.5% [2] before the implementation of the tax [3].

The announcement of the tax was made in November 2021 during the presentation of the budget for the fiscal year 2022 by the Ministry of Finance to the Parliament of Ghana. The announcement was greeted with mixed reactions from a large section of Ghanaians on the appositeness of the tax and its implications for the digitisation agenda. Indeed, it appeared that the opposition to the new tax may have been widespread enough to warrant a delay of the implementation from the initially proposed date of January 1, 2022, to May 1, 2022. During this four-month window, the government attempted to engage citizens through public fora to explain the rationale for the new tax and urge them to embrace it as a self-help means to finance development as opposed to constant borrowings to finance government expenditures. Prospective taxpayers (potentially every mobile money user and economic agents who transact financial activities digitally), on the other hand, expressed different opinions on whether they were prepared to pay the e-levy, the rate at which they would be

willing to pay the tax or whether they would find ways to avoid the tax altogether - i.e. primarily by avoiding the use of digital platforms to make financial transactions. On the back of the mixed reactions that greeted the announcement and preparations for the implementation of the tax, this study seeks to examine the willingness of economic agents to pay for the e-levy in Ghana. The following questions emerge which this study seeks to answer: Do residents in Ghana want to pay the e-levy? What rate of tax are people willing to pay as e-levy? What factors - behavioural, socioeconomic, community level, institutional - influence people's decision to pay the e-levy and how much they are willing to pay?

Willingness to pay (WTP) has been employed as a technique in many countries for examining the readiness of consumers to pay for a wide variety of goods or services. WTP has been used to study clean energy adoption in India (Chindarkar *et al.*, 2021); adoption of domestic biogas plants in Nepal (Thapa *et al.*, 2021); payment for solar photovoltaic systems in China (Li *et al.*, 2022); improved health services in Saudi Arabia (Al-Hanawi *et al.*, 2020); demand for remanufactured products in China (Chen *et al.*, 2019) and payment for COVID-19 vaccines in Indonesia (Harapan *et al.*, 2020) among others.

In Africa, studies have been done using the WTP approach to study efficient cookstove adoption in Uganda (Beltramo *et al.*, 2015) and demand for telemedicine services in Nigeria (Arize and Onwujekwe, 2017) among others. In Ghana, the WTP approach has been used to study LPG adoption (Adjei-Mantey *et al.*, 2021); restoration of reserved forests (Amoah *et al.*, 2022); reliable piped water systems (Amoah and Moffatt, 2021) and demand for insecticide treated nets (Alfonso *et al.*, 2020) among others. While a few prior studies have investigated the WTP taxes in places such as Britain and Italy (Zhang *et al.*, 2016) and in America (Glaser and Hildreth, 1999), no empirical study has been conducted in Ghana to investigate the WTP for a tax to the best of our knowledge, making this study among the first ones to investigate it. This will make a useful contribution to the global literature on WTP taxes in particular and WTP in general. This study makes a novel contribution to the literature for several reasons. This study represents the first empirical examination of the willingness to pay (WTP) for the e-levy in Ghana and identifies the key determining factors. Furthermore, contrary to several WTP studies that premise households' WTP on a hypothetical scenario, and for which households know they may never actually have to pay the amounts they state as their WTP (Amoah *et al.*, 2019, 2022; Adjei-Mantey *et al.*, 2021; Chindarkar *et al.*, 2021; Ortega *et al.*, 2012), this study was premised on an actual scenario which households were bound to face given the government's resolve to carry through the implementation of the tax. Thus, this study is one of few WTP studies where the amounts (or in this case, the rates of tax) households state might actually reflect what they really want to pay. To this end, this study is useful not only with respect to expanding the knowledge on the subject matter but also to the government of Ghana, as it provides scientific evidence of the willingness to pay for the tax, which can support a review of the tax, should that be considered in the future. Similar to the case of Ghana, this study will also help the governments of other developing countries come up with their tax policies if they want to put taxes on electronic transactions. The period for the data collection (February 2022) was after the announcement of the tax but before the implementation of the tax. Hence, respondents were in an actual "preparation to pay a new tax" stage and would likely be real rather than overstate their responses compared to the typical hypothetical scenario context. The rest of the study is structured as follows: section 2 reviews the related literature; section 3 details the methodology employed to collect and analyse data; section 4 presents the findings and discusses them, and section 5 concludes.

2. Literature review
Empirical literature suggests that the motivation behind an individual's willingness to pay tax is contingent on the examination of their attitude towards paying taxes (see

Schnellenbach, 2006). The dominant theoretical approach underneath this outcome is the concept of tax morale (Torgler, 2005). Tax morale is an inherent drive to pay taxes gauged by the willingness to pay tax out of one's own volition and the belief that paying taxes plays a major role in nation-building (Alm and Torgler, 2006; Torgler and Schneider, 2007).

The literature further indicates that tax morale is a complex concept as it can be influenced by a host of socio-demographic factors such as age, gender, educational attainment, employment status and income (Gupta, 2016; Amponsah and Adu, 2017; Aladejebi, 2018; James *et al.*, 2019). Further, the fiscal exchange theory, social influence theory, political legitimacy theory and comparative treatment theory present non-socio-demographic factors relevant to tax payment (Alm *et al.*, 1999; Chorvat, 2007; Galbiati and Zanella, 2012; Van Huong and Cuong, 2019; Rashid *et al.*, 2022). For the purpose of this study, the theories of fiscal exchange and political legitimacy better underscores the empirical model we adopted, hence its use. Thus, the theories are different; although some may overlap, each has its own factor(s) affecting tax payment.

The fiscal exchange theory postulates that delivering high-quality public goods and services and ensuring that they are easily accessible to the general public will increase tax compliance (Levi, 1988; Moore, 2004). Thus, the extent to which the government uses tax revenue to benefit society determines whether or not people are willing to pay their taxes. Tax payment is driven by the government's responsibility, openness, and honesty about tax revenues, and it improves when the money citizens pay as taxes is used to finance the desired public goods and services are regarded as reasonable, cost-effective and efficient.

Political legitimacy theory argues that a citizen's level of trust in the government and its institutions affects their willingness to pay taxes (Kirchler *et al.*, 2008). When there is mistrust among the populace, tax compliance is predicted to be lower than when there is a strong perception of trust in the government. Thus, the level of trust that the public has in the government's performance as well as their assessment of the numerous public goods and services that are offered by the government is measured in terms of their trust level in the government.

These theories suggest that the taxpayer's behaviour is expected to be positively related to the utility derived from tax payments. These views are predicated on a social, psychological, or relational agreement between the government and the citizens. Consequently, citizens and the government develop a friendly relationship based on reciprocal trust, accountability and transparency. Several empirical studies have been conducted in line with these theories (Mas'ud *et al.*, 2019; Adekoya and Enyi, 2020; Sebele-Mpofu, 2021; Korgaonkar, 2022). For instance, Mas'ud *et al.* (2019) investigated the effect of trust in authorities on tax compliance using a slippery slope framework. By using a sample of 158 countries and ordinary least squares regression analysis, the authors revealed that trust in authorities significantly influences tax compliance. Saruji *et al.* (2019) also studied trust in government and perceptions of tax compliance among adolescents. The study showed a positive and statistically significant impact of trust in government and tax compliance among adolescents. Sebele-Mpofu (2021) examined the willingness to pay taxes in the informal sector in Zimbabwe. Using a sequential exploratory mixed-method research design, the author shows that tax morale was a strong driver of tax evasion and non-tax compliance in the informal sector. Adekoya and Enyi (2020) investigated the control of corruption, trust in government and voluntary tax compliance in Nigeria. The authors revealed that control of corruption positively influenced voluntary tax compliance.

In Tanzania, Kinyondo and Byaro (2019) investigated the effect of trust in government on willingness to pay tax to provide public goods and services. By using the logit model and the Chi square test, the authors found that trust in government is key in promoting willingness to pay for taxes to finance public goods and services. The results revealed that only 43.5% of the citizens showed their satisfaction of government's provision of public goods and services, implying that a greater percentage of the population were not satisfied and therefore

unwilling to pay tax to enhance the provision of public goods and services. Using a multilevel regression model on Afrobarometer survey data, Bwalya (2020) explored the degree to which individual and country level factors affect the willingness to pay more taxes to finance health care in Southern African Development Community (SADC) member states. The author showed that trust in the government is key in driving willingness to pay. In a recent study, Korgaonkar (2022) investigated the elements influencing tax morale in India. The authors found that tax morale is positively impacted by their trust in the government, parliament and public services.

Existing studies have identified a number of socio-demographic factors such as age, gender, education, marital status, income and employment as key determinants of willingness to pay tax (Gupta, 2016; Amponsah and Adu, 2017; Aladejebi, 2018; James et al., 2019). With regard to age for instance, James et al. (2019) revealed that older people are more willing to pay tax because they are more law abiding, dislike risk and are sensitive to punishment associated with non-tax payment. It is also likely that older persons might have acquired wealth overtime and are less financially constrained and thus more willing to pay tax. Again, older people may appreciate the judicious use of their taxes to national development relative to the younger cohorts. Lago-Peñas and Lago-Peñas (2010), Amponsah and Adu (2017), Zhao et al. (2021) and Beeri et al. (2022) have also found a positive relationship between age and tax compliance. Using a sample of 321 respondents, Gupta (2016) investigated the willingness to pay carbon tax employing probit and tobit approach and a CVM. Surprisingly, the author showed that age has a negative and significant effect on willingness to pay indicating that young people are willing to pay extra because they might be more aware of the dangers associated with air pollution and therefore more conscious of the environment.

Gender and marital studies have also been found in many empirical studies to affect the willingness to pay tax (Alm and Torgler, 2004; Amponsah and Adu, 2017; Aladejebi, 2018; Agyeiwaa et al., 2019; Chatterjee and Barbhuiya, 2021; Zhao et al., 2021). In general, results are mixed regarding gender and tax compliance (McGee and Benk, 2011; Chatterjee and Barbhuiya, 2021; Zhao et al., 2021). With regard to marital status, Seidu and Asante (2011) found that married self-employed individuals are more willing to pay taxes compared to unmarried self-employed individuals.

A plethora of empirical studies have also examined the effect of income on willingness to pay tax (Kirchler et al., 2010; McGee, 2012; Gupta, 2016; Zhao et al., 2021; Beeri et al., 2022). The results from these studies indicate that higher income earners are more willing to pay tax compared to those with lower incomes. The reason for these outcomes is not far-fetched as tax may form an insignificant proportion of income for those with higher incomes; therefore, they will be willing to pay as it would not affect their disposable income to a greater degree. For low-income earners, however, their unwillingness to pay tax may stem from the fact that it takes a chunk of their disposable income, making it difficult for them to satisfy their basic needs. Gupta (2016) also examined the willingness to pay to attenuate carbon dioxide emission from the road passenger transport sector. The study revealed that income exerts a positive and a significant effect on willingness to pay for carbon tax. Studies by Porcano (1988), McGee (2012), Zhao et al. (2021) and Beeri et al. (2022) have also revealed a positive and a significant relationship between income and tax compliance.

Knowledge is a major ingredient in shaping attitude and plays a critical part in decision making (Brucks, 1985; Alba and Hutchinson, 1987). Thus, the degree of knowledge of the tax process is key to defining the attitude of the taxpayer and consequently the willingness to pay tax. Knowledge has been divided into two parts: objective and subjective knowledge (e.g. Brucks, 1985; Flynn and Goldsmith, 1999). Objective knowledge denotes the extent to which an individual knows, and subjective knowledge refers to how much an individual thinks they know about something. Thus, subjective knowledge displays opinion, awareness and perception about a product, an object, or an issue, whereas objective knowledge denotes

accurate knowledge of a subject. Scores of studies have examined the effect of knowledge on the willingness to pay or tax compliance behavior (Armah-Attoh and Awal, 2013; Akinboade, 2015; Septyana and Suprasto, 2019; Amin *et al.*, 2022).

Septyana and Suprasto (2019) investigated the effect of tax knowledge on tax compliance while controlling for tax amnesty. By using a convenience sampling technique and a moderated regression analysis, the authors revealed that the knowledge of the taxpayer exerts a positive and a significant effect on tax compliance. Armah-Attoh and Awal (2013), Agyeiwaa *et al.* (2019) and Nguyen (2022) also revealed that knowledge drives tax compliance behaviour. Having knowledge of the tax process and tax regulations could help individuals honour their tax obligations without a glitch. However, inadequate knowledge of the tax process and tax regulations can adversely affect willingness to pay (Pandey, 2017).

From the review of the literature, several studies (Aladejebi, 2018; James *et al.*, 2019; Amin *et al.*, 2022) have examined the willingness to pay taxes in general. It is evident from the empirical literature that the focus of the most previous studies had been on aggregate trust and aggregate knowledge on willingness to pay tax. The present study disaggregates knowledge into objective and subjective knowledge and incorporates demographic factors in a single multivariate framework to examine willingness to pay for the e-levy in Ghana.

3. Methodology

3.1 Data

The introduction of e-levy in Ghana is a nationwide exercise, and as such, all regions as prescribed in the 2021 Population and Housing Census by the Ghana Statistical Service (2021) are used. Given that individual electronic transaction users are the unit of analysis, primary data was obtained with the aid of Google online forms as the main instrument for the data collection. The main survey started from February 9 to February 16, 2022. The main survey was preceded by a day's pilot survey. To timely inform the discourse on the introduction of the e-levy, the snowball sampling technique came in handy and was ideal for the purpose instead of other random probability sampling methods. As noted by Johnson (2014), the snowball sampling technique, which is a non-probability approach, is a cost-effective and efficient method for obtaining data from hard-to-reach respondents, particularly when collecting data from a wide range of geographic locations. Additionally, this method is particularly effective for exploratory studies as it allows for the quick examination of initial phenomena and population. Due to its ability to aid in quickly gathering data on topical issues, this method is often recommended for embryonic studies of this nature to inform future designs and policy discourse. Similar to Amoah and Addoah (2020), by way of application, the researchers shared the survey instrument on their social media platforms with instructions to complete and also share with their social media networks. Through this approach, all the sixteen geographical regions were observed to have been represented and exactly 2,810 respondents were obtained as the sample size. In line with the application of the sample size statistical formula provided by Yamane (1967), this sample size appears statistically representative of the adult population in Ghana. The reason for selecting 2,810 adult population for the study is based on respondents' willingness to voluntarily participate in the survey between the start and end dates of the survey. Further, our sample size yields a nationwide percentage sample of 0.0094% which is comparable to South Korea's 0.0019% (Kim and Yoo, 2020) and Germany's 0.0068% (Frondel *et al.*, 2019). Admittedly, the snowball approach is not without its weaknesses; however, through the descriptive responses, it is evident that largely, the demographics of the respondents are geographically well-spread, giving credence to the generality of our data. Indeed, data generality is expected to cure possible cohort effects in snowballing. Nonetheless, because of the non-probability nature of the sampling technique, we are cautious of generalisation of the findings.

For simplicity of presentation, the survey instrument comprised two main sections. Section A comprises knowledge related questions on e-levy, trust related questions, implementation related questions and other relevant e-levy related questions. Section B focused on socio-economic characteristics of the respondents. The instrument provided an opportunity for the respondent to voluntarily participate in the survey or decline participation. Respondents after giving their consent were still at liberty to either withdraw from the survey or skip a question where necessary. Generally, harmless questions that only probe into the perspectives of respondents are considered ethically valid as it does not pose a threat to humans and non-humans alike. To avoid duplication of entries, respondents were limited to only one entry.

Responses were automatically collated in Microsoft Excel and analysed with STATA 15. With about a 95% response rate, Table A1 (see Appendix) shows that about 54% are willing to pay a rate of at least 0.5% per transaction or a flat fee of Ghs5-10 per month for all transactions or transactions above Ghs100 as e-levy or other. The average age from the data is approximately 36 years. Only 5% of the respondents trust all the three arms of government together, about 68% are identified as married, 57% are males, and 32 and 71% had objective and subjective knowledge of e-levy, respectively. Using the minimum wage as the basis, except the no income, we obtained Ghs406 as the lowest income, and Ghs 6,999 and above as the highest.

3.2 Econometric modelling

A standard multivariate logit model is used as our econometric estimator because of the binary nature of the dependent variable. For robustness, the linear probability model (LPM) is also estimated. Results from both estimators are presented in Table 6. To commence, we follow Gujarati (1995), Amoah and Addoah (2020) and Amoah et al. (2020) and specify a linear equation as:

$$P_i = E(Y = 1|X_i) = \alpha_1 + \alpha_2 X_i \tag{1}$$

where $Y = 1$ measures the expected probability that a respondent who patronises electronic services will pay for the e-levy, X is a vector of behavioural, cognitive and demographic covariates. Next, equation (1) is solved following Amoah et al. (2020) to obtain equation (2):

$$L_i = ln\left(\frac{P_i}{1 - P_i}\right) = \alpha_i = \alpha_1 + \alpha_2 X_i \tag{2}$$

To obtain the probabilities directly for easy interpretation of our results, the associated marginal effect is presented as:

$$\frac{\delta \alpha(y|x)}{\delta(x)} = \left[\frac{\delta F(\alpha x)}{\delta(\alpha x}\right] \alpha \tag{3}$$

Empirically, the estimable model is,

$$WTP_i = \alpha_0 + \alpha_1 Income_i + \alpha_2 MS_i + \alpha_3 Male_i + \alpha_4 Age_i + \alpha_5 Sub_i + \alpha_6 Obj_i + \alpha_7 Trust_i + \mu_i \tag{4}$$

where the dependent variable, WTP, measures the probability that a respondent would pay e-levy. In addition, the independent variables used in this study are selected based on the tax morale theory, existing empirical studies and data availability. First, *income* is theoretically correct in specifying a demand function. So, income is measured in Ghana cedis and captured in ranges. Relative to the lower income earners, we expect higher income earners to be willing to pay the e-levy. Second, marital status (*MS*) is captured as a binary variable where 1

represents the married and 0 unmarried. Due to expected share in responsibilities, relatively, we expect the married to be willing to pay the e-levy. In contrast, financial pressure on married couples may be higher and can also affect their WTP, hence an ambiguous result is expected. Third, *Male* is a binary variable where 1 represents male and 0 otherwise. Given the setting of the study with male dominance economically, relatively, one may expect males to be willing to pay the e-levy. Fourth, *Age* is measured in years and is introduced to gauge experience of a respondent with regard to tax payment. A priori, we expect an ambiguous relationship with WTP for e-levy. Fifth, *knowledge*, be it subjective (*Sub:* own knowledge) or objective (*Obj*: same knowledge as proponents), is captured as a binary variable although with varied intensities. We expect knowledgeable (well-informed about taxes and the state of the economy) respondents to express higher willingness to pay the e-levy. Trust measures the level of trust in all the three arms of government. It is represented as a binary variable. Those who trust in the government are expected to endow them with their levies. We find no evidence of severe multicollinearity among the right-hand-side variables.

4. Results
The descriptive analysis in Table 1 presents a break down on the four e-levy amount preferences. The preferences are zero payment, percentage per transaction payment, flat rate per month payment and other form of payment. The percentage of respondents preferring a zero payment makes up 45.98% which happens to be the highest percentage of respondents for any cluster of responses in the e-levy amount options. The next 0.5% e-levy payment per transaction is preferred by 21.05% of respondents while 1.04% of respondents support a 1% e-levy per transaction. Furthermore, a total of 4.64% of respondents prefer a rate of between 1.5% and 1.75%. For those who prefer a flat fee, there is evidence that 9.96% support a flat fee of Ghs5 per month for all transactions above Ghs100 while 2.99% prefer a flat fee of Ghs10 per month for all transactions above Ghs100 per month. Those who prefer a flat fee of Ghs10 per month for all transactions make up 0.48% with 1.29% of respondents selecting a flat fee of Ghs5 per month for all transactions. A total of 3.21% of respondents prefer other forms of e-levy amounts.

Table 2 shows the distribution of the categories of respondents who are associated with zero e-levy payment and the non-zero e-levy payment options. About 46% of respondents are not interested in paying any amount as e-levy while 54% are interested in paying varied amounts as e-levy. This means that the majority of Ghanaians are not necessarily against the payment of e-levy *per se*; however, the evidence so far suggests that their protest may be more about the rate of the levy.

WTP estimates for E-levy	Freq	Percent	Cum
0 (Zero)	1,247	45.98	45.98
0.5% per transaction	571	21.05	67.04
1% per transaction	282	10.4	77.43
1.50% per transaction	86	3.17	80.6
1.70% per transaction	6	0.22	80.83
1.75% per transaction	34	1.25	82.08
A flat rate/fee above Ghs10 per month for all transactions	13	0.48	82.56
A flat rate/fee above Ghs5 per month for all transactions	35	1.29	83.85
A flat rate/fee above Ghs10 per month for all transactions above Ghs100	81	2.99	86.84
A flat rate/fee of Ghs5 per month for all transactions above Ghs100	270	9.96	96.79
Other	87	3.21	100
Total	*2,712*	*100*	

Source(s): Authors own creation

Table 1.
Descriptive analysis of WTP estimates for E-levy

Further, to appreciate the number of respondents who are interested in the e-levy payment either as percentages or flat fees, we again categorize respondents' preferences in the form of percentages and flat fee per transaction. With reference to Table 3, for percentages per transaction (*0% included*), approximately 84% indicated their preference for such option as opposed to about 15% for flat fee payment per transaction. Similarly, the non-zero percentages constitute 71% while the flat fee constitutes 29%. Overwhelmingly, respondents prefer to pay a percentage per transaction as e-levy, instead of a flat fee per transaction.

From Table 4, we show that for regions in Ghana with high incidence of poverty, their zero payment constitutes 43.42% while non-zero payment represents 56.58%. Comparatively, for regions with low incidence of poverty, there is a 62.5% preference for zero payment and 37.5% non-zero payment option. There exists a statistically significant difference in the willingness to pay for e-levy in high and low-incidence of poverty districts in Ghana. From this, we conclude that e-levy appeals to regions with relatively high-incidence of poverty more than the regions with relatively low-incidence of poverty. Although this appears counter-intuitive, nonetheless, it is plausible on grounds that the relatively rich regions tend to undertake more transactions yielding a higher absolute transaction cost because the e-levy is a consumption tax, hence their unwilling behaviour. Furthermore, the relatively poor regions are mostly the recipients of remittances be it local or foreign, which in this case are e-levy exempt. In cases where the poor becomes the sender, they enjoy the poor-threshold exemption of the first Ghs100 (equivalent of about US$8), hence their willingness to pay.

The results in Table 5 show that there is a no political party domination effect on the willingness-to-pay for the e-levy; this is so because the evidence from opposition party dominated areas seems similar to the evidence gathered from the incumbent ruling party dominated areas. Clearly, the evidence points to the fact that non-zero payment is the preferred option irrespective of the dominant political party in the region. Stated differently, non-zero payment cuts across the political divide of the country. This suggests that statistically, political differences play no role in the willingness-to-pay decisions. That is, respondents in political party dominated regions converge in their willingness-to-pay for e-levy.

The logistic regression results in Table 6 presents the determinants of the willingness-to-pay for the e-levy with respect to the sample in Ghana. From the marginal effects (see column

Zero and non-zero E-levy payments	Frequency	Percent	Cum
Zero Payment	1,247	45.98	45.98
Otherwise (Non-Zero Payment)	1,465	54.02	100
Total	*2,712*	*100*	
Note(s): Table 2 excludes the "other" category			
Source(s): Authors own creation			

Table 2.
WTP categorisation by
payment and non-
payment

Flat and percentages	Frequency	Percent	Cum
Percentages (*0% included*)	2,226	84.8	84.8
Flat Rates/Fees	399	15.2	100
Total	*2,625*	*100*	
Percentages (*0% excluded*)	979	71.0	71.0
Flat Rates/Fees	399	29.0	100
Total	*1,378*	*100*	
Note(s): Table 3 includes the "other" category			
Source(s): Authors own creation			

Table 3.
WTP categorisation by
percentages and
flat rates

6), being married is associated with a 5.04% decrease in the probability of willingness-to-pay for the e-levy. Although this is robust across our estimated models, it however contradicts Seidu and Asante (2011). Furthermore, being a male reduces the probability of willingness-to-pay for the e-levy by 9.50%. This evidence on males is in contrast with McGee and Benk (2011). In Ghana, the male counterparts appear to be the more economically active gender with many financial responsibilities. Any policy decision that would burden males financially such as e-levy is less likely to interest them. In the case of age, a one-year increase in age is associated with an instantaneous decrease in willingness-to-pay for the e-levy by 0.30% which is at variance with the evidence in Gupta (2016). Thus, as people who have witnessed the unproductive use of taxes over the years, they are less likely to commit in paying taxes. Again, unlike subjective knowledge which appears statistically insignificant with a counter intuitive negative sign, objective knowledge exhibits the expected positive sign in addition to its statistical relevance. Indeed, respondents who demonstrated objective knowledge are associated with 3.22% increase in the probability of willingness-to-pay for the e-levy. That is, objective knowledge of the respondent that matches with the policy intention is critical in rolling out the policy. This finding on objective knowledge corroborates the works of Armah-Attoh and Awal (2013) and Septyana and Suprasto (2019). In addition, the intention to use or not to use mobile money is represented in our model as behavioural change. With this variable, we show evidence that respondents who are prone to behavioural changes are associated with approximately 90% willingness-to-pay probability for the e-levy. Moreover, in line with Habibov et al. (2018) and Kinyondo and Byaro (2019), our result shows that respondents who trust in the arms of government are associated with about 26% increase in the probability of willingness-to-pay for the e-levy.

For the income categories, we find that relative to the zero income earners (i.e. unemployed in the last 7 days of the survey), those who earn up to the minimum wage of Ghs406 per month and Ghs 6,999 and above (*highest income earners*) have an increased probability of being willing to pay the e-levy by about 11% and approximately 9%, respectively. This evidence is consistent with demand theory and corroborates with findings of other empirical works such as Kirchler et al. (2010), McGee (2012) and Gupta (2016).

Poverty incidence	Zero payment (%)	Otherwise (non-zero payment, %)
High Incidence of Poverty	43.42	56.58
Low Incidence of Poverty	62.50	37.50
T-Test		−7.0486***
Combined Observations		2,610
Degrees of Freedom		2,608
Note(s): *** Pr(|T| > |t|) = 0.0000		
Source(s): Authors own creation		

Table 4.
WTP by regional incidence of poverty

Poverty incidence	Zero payment (%)	Otherwise (non-zero payment, %)
Incumbent Political Party Dominated Regions	45.71	54.29
Opposition Political Party Dominated Regions	46.52	53.48
T-Test		−0.3776[a]
Combined Observations		2,610
Degrees of Freedom		2,608
Note(s): [a]Pr(|T| < |t|) = 0.1 (Not Statistically Significant)		
Source(s): Authors own creation		

Table 5.
WTP by political affiliation

Columns Variables	(1) LPM	(2) Logit	(3) Margins dy/dx	(4) LPM	(5) Logit	(6) Margins dy/dx
Marital Status (Married)	-0.0572***	-0.2858***	-0.0568***	-0.0505**	-0.2542**	-0.0504**
	(0.021)	(0.103)	(0.020)	(0.021)	(0.103)	(0.020)
Gender (Male)	-0.1098***	-0.5161***	-0.1026***	-0.1023***	-0.4796***	-0.0950***
	(0.021)	(0.102)	(0.020)	(0.021)	(0.103)	(0.020)
Age in Years	-0.0027***	-0.0141***	0.0028***	-0.0029***	-0.0151***	-0.0030***
	(0.032)	(0.005)	(0.001)	(0.001)	(0.005)	(0.001)
Subjective Knowledge	-0.0389	-0.2001	-0.0398	-0.0410	-0.2110	-0.0418
	(0.032)	(0.096)	(0.031)	(0.032)	(0.157)	(0.031)
Objective Knowledge	0.0357*	0.1702*	0.0338*	0.0340*	0.1627*	0.0322*
	(0.019)	(0.096)	(0.019)	(0.019)	(0.096)	(0.019)
Behavioural Change	0.5370***	4.5335***	0.9008***	0.5354***	4.5327***	0.8981***
	(0.025)	(0.415)	(0.078)	(0.025)	(0.415)	(0.078)
Trust Index	0.1173***	1.3430***	0.2669***	0.1146***	1.3121***	0.2600***
	(0.042)	(0.355)	(0.070)	(0.042)	(0.355)	(0.070)
Income Grouping income_1(Ghs 406 and below)	0.1028**	0.5468**	0.1087**	0.1022**	0.5579**	0.1105**
	(0.050)	(0.260)	(0.051)	(0.050)	(0.260)	(0.051)
income_2 (Ghs 407–1599)	0.0881*	0.4691*	0.0932*	0.0818*	0.4397*	0.0871*
	(0.048)	(0.248)	(0.049)	(0.048)	(0.248)	(0.049)
income_3 (Ghs 1600–3000)	0.1219***	0.6483***	0.1288***	0.1186***	0.6342***	0.1257***
	(0.041)	(0.211)	(0.042)	(0.041)	(0.211)	(0.042)
income_4 (Ghs 3999–6000)	0.0826**	0.4340**	0.0862**	0.0877**	0.4633**	0.0918**
	(0.038)	(0.193)	(0.038)	(0.038)	(0.194)	(0.038)
income_5 (Ghs 6999 and above)	0.0772**	0.4134**	0.0821**	0.0822**	0.4428**	0.0877**
	(0.038)	(0.192)	(0.038)	(0.038)	(0.192)	(0.038)
Region Fixed Effect	No	No	No	Yes	Yes	Yes
Constant	0.5840***	0.4399*		0.6033***	0.5333*	
	(0.054)	(0.273)		(0.055)	(0.276)	
BIC	3369.019	3097.722		3369.948	3099.2	
AIC	3292.529	3021.232		3287.575	3016.827	
Observations	2,654	2,654		2,654	2,654	2,654
F-test/LR chi	53.08***	671.50***		49.64***	677.91	
R-squared/Pseudo R2	0.194	0.1831		0.196	0.1849	

Note(s): Dependent Variable: Willingness-to-Pay (Dummy), Standard errors in parentheses, ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$
Source(s): Authors own creation

Table 6.
Regression results

5. Conclusion and policy implications

From the findings presented in this paper, aside those who prefer zero e-levy, a tax rate of 0.5% is the most popular that dominates the non-zero e-levy tax rate among the sample respondents in Ghana. This should give the government a glimmer of hope that the e-levy appeals to a wide section of electronic fund users. The rich, unlike the poor, showed less interest in the e-levy. Furthermore, the willingness to pay or not to pay the e-levy has very little to do with political interest. In line with the literature on tax morale which is influenced by a host of socio-demographic factors and other theories like fiscal exchange theory, the social influence theory, the political legitimacy theory and the comparative treatment theory, non-socio-demographic factors all play unique roles in determining the willingness to pay for the e-levy by the respondents. Finally, the socio-demographic and non-socio-demographic factors with theoretical underpinning that explains the willingness-to-pay for the e-levy by the respondents are marital status, gender, age, objective knowledge, behavioural change, trust and income levels.

By extension of the study's implication, the e-levy in whatever form as a developing economy tax mobilization channel promises many lessons to economic managers, especially those in developing economies. Abolishing the e-levy is not the way to go for developing countries that seek to mobilize revenue for national development. What the economic managers of Ghana and other governments that seek to utilize the e-levy as a revenue handle must do is to do the hard thinking regarding what optimal tax rate to charge that would not taper the cashless and digital economy drive and potentially revert economies to the traditional cash-based economy. Furthermore, governments must undertake massive public educational campaigns about the e-levy and be transparent in the usage of funds mobilized from the e-levy tax handle. A consideration of an e-levy rate above 0.5% is not recommended by this study; however, a rate above 1% is strictly detested. In the worst-case scenario, we prescribe a rate of 0.5–1% as about 32% of the respondents subscribe to it.

Overall, this study has gone through scientific rigour and presented some relevant findings with policy implications. However, we acknowledge some limitations with the work. First, the sampling technique did not strictly follow a probability process, so the findings should be interpreted with respect to the sample. Second, e-levy concerns on financial inclusion, rural and urban heterogeneous analysis, avoidance, attitude and behavioural changes, coping strategies, etc., are recommended for future studies.

Notes

1. An exchange rate of US$1: GH¢8 as of July 2022.

2. The rate of tax has subsequently been revised downwards to 1% effective January 2023.

3. https://gra.gov.gh/wp-content/uploads/2022/04/Electronic-Transfer-Levy-Act-2022-Act-1075.pdf

References

Adekoya, A. and Enyi, E.P. (2020), "Control of corruption, trust in government, and voluntary tax compliance in South-West, Nigeria", *Management Studies*, Vol. 8 No. 1, pp. 84-97.

Adjei-Mantey, K., Takeuchi, K. and Quartey, P. (2021), "Impact of LPG promotion program in Ghana: the role of distance to refill", *Energy Policy*, Vol. 158, 112578.

Agyeiwaa, H., Amankwaah, E., Abina, S., Agyei, K.N. and Antwi, K. (2019), "An empirical assessment of tax knowledge, socio-economic characteristics and their effects on tax compliance behaviour in Sunyani Municipality, Ghana", *Journal of Emerging Trends in Economics and Management Sciences*, Vol. 10 No. 4, pp. 148-153.

Akinboade, O.A. (2015), "Correlates of tax compliance of small and medium size businesses in Cameroon", *Managing Global Transitions*, Vol. 13 No. 4, pp. 389-413.

Al-Hanawi, M.K., Alsharqi, O. and Vaidya, K. (2020), "Willingness to pay for improved public health care services in Saudi Arabia: a contingent valuation study among heads of Saudi households", *Health Economics, Policy and Law*, Vol. 15 No. 1, pp. 72-93.

Aladejebi, O. (2018), "Measuring tax compliance among small and medium enterprises in Nigeria", *International Journal of Accounting and Taxation*, Vol. 6 No. 2, pp. 29-40.

Alba, J.W. and Hutchinson, J.W. (1987), "Dimensions of consumer expertise", *Journal of Consumer Research*, Vol. 13 No. 4, pp. 411-454.

Alfonso, Y.N., Lynch, M., Mensah, E., Piccinini, D. and Bishai, D. (2020), "Willingness to pay for long-lasting insecticide-treated bed nets: a discrete choice experiment with real payment in Ghana", *Malaria Journal*, Vol. 19 No. 1, pp. 1-13.

Alm, J. and Torgler, B. (2004), "Estimating the determinants of tax morale", *Proceedings Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association*, National Tax Association, Vol. 97, pp. 269-274.

Alm, J. and Torgler, B. (2006), "Culture differences and tax morale in the United States and in Europe", *Journal of Economic Psychology*, Vol. 27 No. 2, pp. 224-246.

Alm, J., McClelland, G.H. and Schulze, W.D. (1999), "Changing the social norm of tax compliance by voting", *Kyklos*, Vol. 52 No. 2, pp. 141-171.

Amin, S.N., Buhari, P.Z.A., Yaacob, A.S. and Iddy, Z. (2022), "Exploring the influence of tax knowledge in increasing tax compliance by introducing tax education at tertiary level institutions", *Open Journal of Accounting*, Vol. 11 No. 2, pp. 57-70.

Amoah, A. and Addoah, T. (2020), "Does environmental knowledge drive pro-environmental behaviour in developing countries? Evidence from households in Ghana", *Environment, Development and Sustainability*, Vol. 23, pp. 2719-2738, doi: 10.1007/s10668-020-00698-x.

Amoah, A. and Moffatt, P.G. (2021), "Willingness to pay for reliable piped water services: evidence from urban Ghana", *Environmental Economics and Policy Studies*, Vol. 23, pp. 805-829.

Amoah, A., Ferrini, S. and Schaafsma, M. (2019), "Electricity outages in Ghana: are contingent valuation estimates valid?", *Energy Policy*, Vol. 135, 110996.

Amoah, A., Korle, K. and Asiama, R.K. (2020), "Mobile money as a financial inclusion instrument: what are the determinants?", *International Journal of Social Economics*, Vol. 47 No. 10, pp. 1283-1297, doi: 10.1108/IJSE-05-2020-0271.

Amoah, A., Jumah, A. and Korle, K. (2022), "Exploring willingness-to-pay for the restoration and maintenance of reserved forests in the Greater Accra Region of Ghana", *Forest Ecosystems*, Vol. 9, 100041.

Amponsah, S. and Adu, K.O. (2017), "Socio-demographics of tax stamp compliance in upper Denkyira east municipal and upper Denkyira west district in Ghana", *International Journal of Law and Management*, Vol. 59 No. 6, pp. 1315-1330.

Arize, I. and Onwujekwe, O. (2017), "Acceptability and willingness to pay for telemedicine services in Enugu state, southeast Nigeria", *Digital Health*, Vol. 3, doi: 10.1177/2055207617715524.

Armah-Attoh, D. and Awal, M. (2013), "Tax administration in Ghana: perceived institutional challenges", *Afrobarometer Briefing Paper*, Vol. 124 No. 1, pp. 1-9.

Arora, S., Hofstede, F.T. and Mahajan, V. (2017), "The implications of offering free versions for the performance of paid mobile apps", *Journal of Marketing*, Vol. 81, pp. 62-78.

Bank of Ghana (2017), "Impact of mobile money on the payment system in Ghana: an econometric analysis", available at: Impact-of-Mobile-Money-on-the-Payment-Systems-in-Ghana.pdf(bog.gov.gh) (accessed 4 August 2022).

Beeri, I., Zaidan, A. and Zeedan, R. (2022), "Willingness to pay taxes through mutual trust: the effect of fairness, governability, tax-enforcement and outsourcing on local tax collection rates", *Governance*, Vol. 35 No. 4, pp. 1229-1252.

Beltramo, T., Blalock, G., Levine, D.I. and Simons, A.M. (2015), "The effect of marketing messages and payment over time on willingness to pay for fuel-efficient cookstoves", *Journal of Economic Behavior and Organization*, Vol. 118, pp. 333-345.

Brucks, M. (1985), "The effects of product class knowledge on information search behavior", *Journal of Consumer Research*, Vol. 12 No. 1, pp. 1-16.

Bwalya, J.C. (2020), "Are people in the SADC region willing to pay more tax to fund public healthcare?", *Development Southern Africa*, Vol. 37 No. 4, pp. 601-616.

Chatterjee, D. and Barbhuiya, M.R. (2021), "Bottled water usage and willingness to pay among Indian tourists: visual nudges and the theory of planned behavior", *Scandinavian Journal of Hospitality and Tourism*, Vol. 21 No. 5, pp. 531-549.

Chen, Y., Wang, J. and Yu, Y. (2019), "A study on consumers' willingness to pay for remanufactured products: a study based on hierarchical regression method", *Frontiers in Psychology*, Vol. 10, p. 2044.

Chindarkar, N., Jain, A. and Mani, S. (2021), "Examining the willingness-to-pay for exclusive use of LPG for cooking among rural households in India", *Energy Policy*, Vol. 150, 112107.

Chorvat, T. (2007), "Tax compliance and the neuroeconomics of intertemporal substitution", *National Tax Journal*, Vol. 60 No. 3, pp. 577-588.

Flynn, L.R. and Goldsmith, R.E. (1999), "A short, reliable measure of subjective knowledge", *Journal of Business Research*, Vol. 46 No. 1, pp. 57-66.

Frondel, M., Sommer, S. and Tomberg, L. (2019), "WTA-WTP disparity: the role of perceived realism of the valuation setting", Ruhr Economic Papers 832, RWI - Leibniz-Institut f.r Wirtschaftsforschung, Ruhr-University Bochum, TU Dortmund University, University of Duisburg-Essen.

Galbiati, R. and Zanella, G. (2012), "The tax evasion social multiplier: evidence from Italy", *Journal of Public Economics*, Vol. 96 Nos 5-6, pp. 485-494.

Ghana Statistical service (GSS) (2021), "2021 population and housing Census", available at: www. census2021.statsghana.gov.gh (accessed 22 September 2021).

Glaser, M.A. and Hildreth, W.B. (1999), "Service delivery satisfaction and willingness to pay taxes: citizen recognition of local government performance", *Public Productivity and Management Review*, Vol. 23 No. 1, pp. 48-67.

Gujarati, D.N. (1995), *Basic Econometrics*, 4th ed., United State Military Academy, New York.

Gupta, A.S. (2007), "Determinants of tax revenue efforts in developing countries", IMF Working Paper WP/07/184, available at: https://www.imf.org/-/media/Websites/IMF/imported-full-text-pdf/external/pubs/ft/wp/2007/_wp07184.ashx (accessed 17 January 2023).

Gupta, M. (2016), "Willingness to pay for carbon tax: a study of Indian road passenger transport", *Transport Policy*, Vol. 45, pp. 46-54.

Habibov, N., Cheung, A. and Auchynnikava, A. (2018), "Does institutional trust increase willingness to pay more taxes to support the welfare state?", *Sociological Spectrum*, Vol. 38 No. 1, pp. 51-68.

Harapan, H., Wagner, A.L., Yufika, A., Winardi, W., Anwar, S., Gan, A.K., Setiawan, A.M., Rajamoorthy, Y., Sofyan, H., Vo, T.Q., Hadisoemarto, P.F., Müller, R., Groneberg, D.A. and Mudatsir, M. (2020), "Willingness-to-pay for a COVID-19 vaccine and its associated determinants in Indonesia", *Human Vaccines and Immunotherapeutics*, Vol. 16 No. 12, pp. 3074-3080, doi: 10.1080/21645515.2020.1819741.

James, S., McGee, R.W., Benk, S. and Budak, T. (2019), "How seriously do taxpayers regard tax evasion? A survey of opinion in England", *Journal of Money Laundering Control*, Vol. 22 No. 3, pp. 563-575.

Johnson, T.P. (2014), "Snowball sampling: introduction", *Wiley StatsRef: Statistics Reference Online*, Wiley Online Library, University of Illinois, Chicago, IL, doi: 10.1002/9781118445112.stat05720.

Kim, J.H. and Yoo, S.H. (2020), "South Koreans' perspective on assisting the power supply to North Korea: evidence from a contingent valuation", *Energy Policy*, Vol. 139, 111336.

Kinyondo, A. and Byaro, M. (2019), "Does citizen's trust in government increase willingness to pay taxes in Tanzania? A case study of Mtwara, Lindi and dar es Salaam regions", *African Journal of Economic Review*, Vol. 7 No. 1, pp. 176-187.

Kirchler, E., Hoelzl, E. and Wahl, I. (2008), "Enforced versus voluntary tax compliance: the 'slippery slope' framework", *Journal of Economic Psychology*, Vol. 29 No. 2, pp. 210-225.

Kirchler, E., Muehlbacher, S., Kastlunger, B. and Wahl, I. (2010), "Why pay taxes? A review of tax compliance decisions", in *Developing Alternative Frameworks for Explaining Tax Compliance*, Vol. 59.

Korgaonkar, C.N. (2022), "The determinants of tax morale in India", NIPFP Working Paper Series, No. 22/381, available at: https://nipfp.org.in/media/medialibrary/2022/04/WP_381_2022.pdf

Lago-Peñas, I. and Lago-Peñas, S. (2010), "The determinants of tax morale in comparative perspective: evidence from European countries", *European Journal of Political Economy*, Vol. 26 No. 4, pp. 441-453.

Levi, M. (1988), *Of Rule and Revenue*, Univ of California Press, California.

Li, X., Xu, X., Liu, D., Han, M. and Li, S. (2022), "Consumers' willingness to pay for the solar photovoltaic system in the post-subsidy era: a comparative analysis under an urban-rural divide", *Energies*, Vol. 15 No. 23, p. 9022.

Mas' ud, A., Abd Manaf, N.A. and Saad, N. (2019), "Trust and power as predictors of tax compliance: global evidence", *Economics and Sociology*, Vol. 12 No. 2, pp. 192-204.

McGee, R.W. (2012), "Christian views on the ethics of tax evasion", in *The Ethics of Tax Evasion*, Springer, New York, NY, pp. 201-210.

McGee, R.W. and Benk, S. (2011), "The ethics of tax evasion: a study of Turkish opinion", *Journal of Balkan and Near Eastern Studies*, Vol. 13 No. 2, pp. 249-262.

MoFEP, Ministry of Finance and Economic Planning (2020), "Mid-year review of the budget statement and economic policy of the government of Ghana and supplementary estimate for the 2020 financial year", available at: 2020-Mid-Year-Review-Speech.pdf(mofep.gov.gh) (accessed 6 August 2022).

MoFEP, Ministry of Finance and Economic Planning (2022), "Statement to parliament on COVID 19 expenditure 2020/2021", available at: https://www.google.com/search?q=HM+Statement+to+Parliament+on+Covid+19+Expenditure+2020+to+2021+Rev+22.6+Crt+(3).Pdf (accessed 6 August 2022).

Moore, M. (2004), "Taxation and the political agenda, North and South", *In Forum for Development Studies*, Vol. 13 No. 1, pp. 7-32.

Nguyen, T.H. (2022), "The impact of non-economic factors on voluntary tax compliance behavior: a case study of small and medium enterprises in Vietnam", *Economies*, Vol. 10 No. 8, p. 179.

Ortega, D., Lucas, R. and Pablo, S. (2012), "Reciprocity and willingness to pay taxes: evidence from a survey experiment in Latin America", CAF Working Papers No. 2012/01, available at: https://www.google.com/search?q=T%C3%A9rminos+de+Referencia+(caf.com) (accessed 17 January 2023).

Pandey, R. (2017), "Is the Commissioner immune from the tort of negligence?", *Taxation in Australia*, Vol. 51 No. 9, pp. 494-497.

Porcano, T.M. (1988), "Correlates of tax evasion", *Journal of Economic Psychology*, Vol. 9 No. 1, pp. 47-67.

Raheem, I.D., Tiwari, A.K. and Balsalobre-Lorente, D. (2020), "The role of ICT and financial development in CO_2 emissions and economic growth", *Environmental Science and Pollution Research*, Vol. 27, pp. 1912-1922.

Rashid, M.H.U., Uddin, N., Haque, M.S. and Hossain, S.Z. (2022), "Good governance and tax evasion: mediating effect of socioeconomic conditions", *Asia-Pacific Journal of Regional Science*, Vol. 6 No. 2, pp. 759-776.

Sabbagh, K., Friedrich, R., El-Darwiche, B., Singh, M. and Koster, A. (2013), "Digitization for economic growth and job creation: regional and industry perspectives", The Global Information

Technology Report 2013, available at: https://www.google.com/search?q=GITR_Chapter1.2_2013.pdf+%28weforum.org (accessed 16 January 2023).

Saruji, S.C., Mohdali, R. and Mohamed, N.N.N. (2019), "Trust in government and perceptions of tax compliance among adolescents", *Journal of Advanced Research Design*, Vol. 61 No. 1, pp. 19-29.

Schnellenbach, J. (2006), "Tax morale and the taming of Leviathan", *Constitutional Political Economy*, Vol. 17 No. 2, pp. 117-132.

Sebele-Mpofu, F.Y. (2021), "The informal sector, the 'implicit' social contract, the willingness to pay taxes and tax compliance in Zimbabwe", *Accounting, Economics, and Law: A Convivium*, ahead-of-print, doi: 10.1515/ael-2020-0084.

Seidu, A.B. and Asante, S. (2011), "Tax compliance among self-employed in Ghana: do demographic characteristics matter?", *International Business and Management*, Vol. 3 No. 1, pp. 86-91.

Septyana, K.P. and Suprasto, H.B. (2019), "Effect of taxation knowledge, fiscus service, and tax sanctions on tax obligation compliance with tax amnesty as moderated variables", *International Research Journal of Management, IT and Social Sciences*, Vol. 6 No. 6, pp. 111-117.

Stocchi, L., Pourazad, N., Michaelidou, N., Tanusondjaja, A. and Harrigan, P. (2022), "Marketing research on mobile apps: past, present and future", *Journal of the Academy of Marketing Science*, Vol. 50, pp. 195-225.

Thapa, S., Morrison, M. and Parton, K.A. (2021), "Willingness to pay for domestic biogas plants and distributing carbon revenues to influence their purchase: a case study in Nepal", *Energy Policy*, Vol. 158, 112521.

Torgler, B. (2005), "Tax morale and direct democracy", *European Journal of Political Economy*, Vol. 21 No. 2, pp. 525-531.

Torgler, B. and Schneider, F. (2007), "What shapes attitudes toward paying taxes? Evidence from multicultural European countries", *Social Science Quarterly*, Vol. 88 No. 2, pp. 443-470.

Van Huong, V. and Cuong, L.K. (2019), "Does government support promote SME tax payments? New evidence from Vietnam", *Finance Research Letters*, Vol. 31, doi: 10.1016/j.frl.2018.11.017.

Yamane, T. (1967), *Statistics, An Introductory Analysis*, 2nd ed., Harper and Row, New York.

Zhang, N., Andrighetto, G., Ottone, S., Ponzano, F. and Steinmo, S. (2016), "'Willing to pay?' Tax compliance in Britain and Italy: an experimental analysis", *PLoS One*, Vol. 11 No. 2, e0150277, doi: 10.1371/journal.pone.0150277.

Zhao, M., Zhang, X., Wang, C., Zhao, Y. and Wu, G. (2021), "Research on residents' willingness to pay for promoting the green development of resource-based cities: a case study in Chifeng", *Sustainability*, Vol. 13 No. 5, p. 2833.

Further reading

Alm, J., Martinez-Vazque, J. and Torgler, B. (2006), "Russian attitudes toward paying taxes–before, during, and after the transition", *International Journal of Social Economics*, Vol. 33 No. 12, pp. 832-857.

Bott, K.M., Cappelen, A.W., Sørensen, E.Ø. and Tungodden, B. (2020), "You've got mail: a randomized field experiment on tax evasion", *Management Science*, Vol. 66 No. 7, pp. 2801-2819.

Dwenger, N., Kleven, H., Rasul, I. and Rincke, J. (2016), "Extrinsic and intrinsic motivations for tax compliance: evidence from a field experiment in Germany", *American Economic Journal: Economic Policy*, Vol. 8 No. 3, pp. 203-232.

Kirchler, E. and Wahl, I. (2010), "Tax compliance inventory TAX-I: designing an inventory for surveys of tax compliance", *Journal of Economic Psychology*, Vol. 31 No. 3, pp. 331-346.

Slemrod, J. (2007), "Cheating ourselves: the economics of tax evasion", *Journal of Economic Perspectives*, Vol. 21 No. 1, pp. 25-48.

Appendix

Variable	N	Mean	CV	p25	p50	p75
WTP Dummy	2678.00	0.53	0.93	0	1	1
Marital Status Dummy	2810.00	0.68	0.69	0	1	1
Gender Dummy	2789.00	0.75	0.57	1	1	1
Subjective Knowledge Dummy	2810.00	0.91	0.32	1	1	1
Objective Knowledge Dummy	2805.00	0.66	0.71	0	1	1
Behavioural Changes Dummy	2810.00	0.18	2.13	0	0	0
Age (Years)	2810.00	35.87	0.28	30	34	41
Income	2810.00	2.85	0.519	2	3	4
Trust Index Dummy	2810.00	0.05	4.15	0	0	0
Source(s): Authors own creation						

Table A1.
Descriptive statistics of
regression variables

Corresponding author
Anthony Amoah can be contacted at: aamoah@uesd.edu.gh