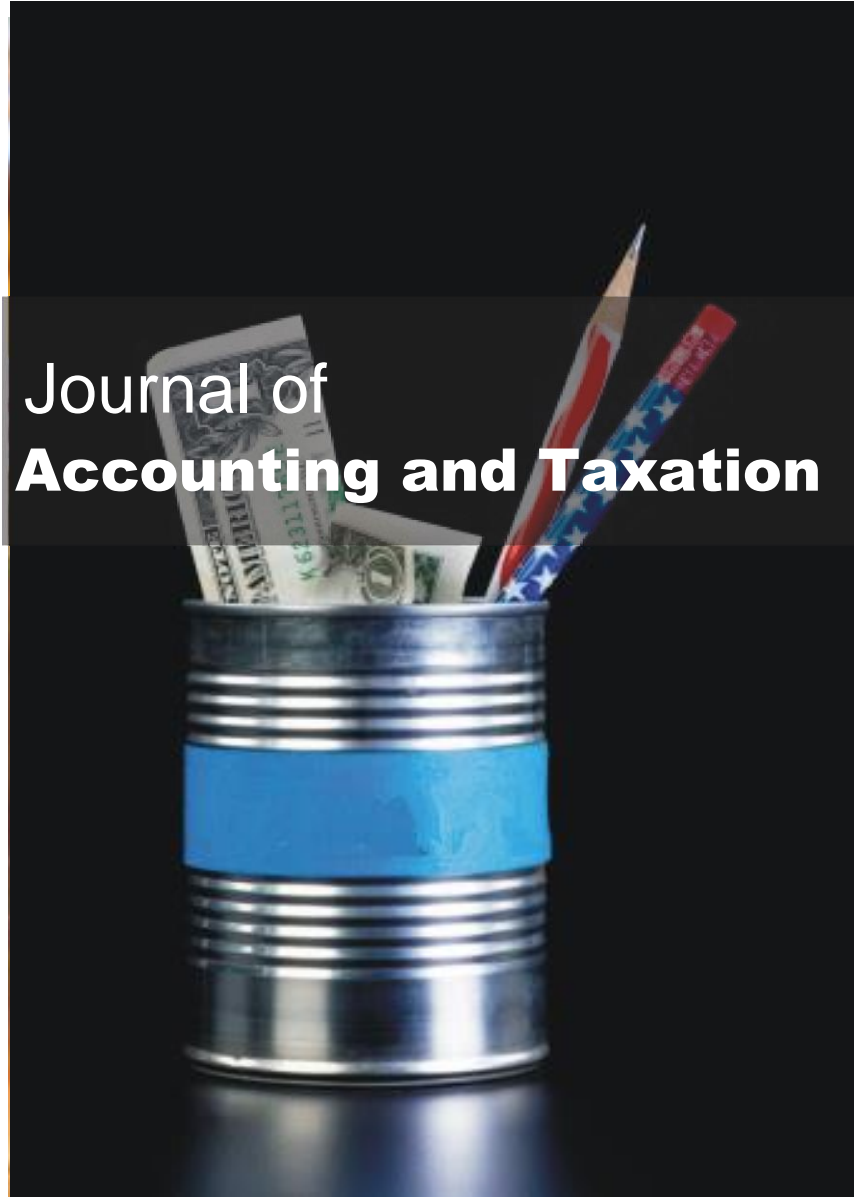


OPEN ACCESS

# Journal of **Accounting and Taxation**



April-June 2023  
ISSN: 2141-6664  
DOI: 10.5897/JAT  
[www.academicjournals.org](http://www.academicjournals.org)

 **ACADEMIC  
JOURNALS**  
expand your knowledge

# About JAT

The Journal of Accounting and Taxation (JAT) is a peer reviewed open access journal. The journal published monthly and covers all areas of Accounting and Taxation.

## **Open Access Policy**

Open Access is a publication model that enables the dissemination of research articles to the global community without restriction through the internet. All articles published under open access can be accessed by anyone with internet connection.

The Journal of Accounting and Taxation is an Open Access journal. Abstracts and full texts of all articles published in this journal are freely accessible to everyone immediately after publication without any form of restriction.

## **Article License**

All articles published by Journal of Accounting and Taxation are licensed under the [Creative Commons Attribution 4.0 International License](#). This permits anyone to copy, redistribute, remix, transmit and adapt the work provided the original work and source is appropriately cited. Citation should include the article DOI. The article license is displayed on the abstract page the following statement:

This article is published under the terms of the [Creative Commons Attribution License 4.0](#) Please refer to <https://creativecommons.org/licenses/by/4.0/legalcode> for details about [Creative Commons Attribution License 4.0](#)

## **Article Copyright**

When an article is published by in the Journal of Accounting and Taxation, the author(s) of the article retain the copyright of article. Author(s) may republish the article as part of a book or other materials. When reusing a published article, author(s) should;

Cite the original source of the publication when reusing the article. i.e. cite that the article was originally published in the Journal of Accounting and Taxation. Include the article DOI

Accept that the article remains published by the Journal of Accounting and Taxation (except in occasion of a retraction of the article)

The article is licensed under the Creative Commons Attribution 4.0 International License.

A copyright statement is stated in the abstract page of each article. The following statement is an example of a copyright statement on an abstract page.

Copyright ©2016 Author(s) retains the copyright of this article.

### **Self-Archiving Policy**

The Journal of Accounting and Taxation is a RoMEO green journal. This permits authors to archive any version of their article they find most suitable, including the published version on their institutional repository and any other suitable website.

Please see <http://www.sherpa.ac.uk/romeo/search.php?issn=1684-5315>

### **Digital Archiving Policy**

The Journal of Accounting and Taxation is committed to the long-term preservation of its content. All articles published by the journal are preserved by Portico. In addition, the journal encourages authors to archive the published version of their articles on their institutional repositories as well as other appropriate websites.

<https://www.portico.org/publishers/ajournals/>

### **Metadata Harvesting**

The Journal of Accounting and Taxation encourages metadata harvesting of all its content. The journal fully supports and implements the OAI version 2.0, which comes in a standard XML format. [See Harvesting Parameter](#)

## Memberships and Standards



Academic Journals strongly supports the Open Access initiative. Abstracts and full texts of all articles published by Academic Journals are freely accessible to everyone immediately after publication.



All articles published by Academic Journals are licensed under the [Creative Commons Attribution 4.0 International License \(CC BY 4.0\)](#). This permits anyone to copy, redistribute, remix, transmit and adapt the work provided the original work and source is appropriately cited.



[Crossref](#) is an association of scholarly publishers that developed Digital Object Identification (DOI) system for the unique identification published materials. Academic Journals is a member of Crossref and uses the DOI system. All articles published by Academic Journals are issued DOI.

[Similarity Check](#) powered by iThenticate is an initiative started by CrossRef to help its members actively engage in efforts to prevent scholarly and professional plagiarism. Academic Journals is a member of Similarity Check.

[CrossRef Cited-by](#) Linking (formerly Forward Linking) is a service that allows you to discover how your publications are being cited and to incorporate that information into your online publication platform. Academic Journals is a member of [CrossRef Cited-by](#).



Academic Journals is a member of the [International Digital Publishing Forum \(IDPF\)](#). The IDPF is the global trade and standards organization dedicated to the development and promotion of electronic publishing and content consumption.



[COUNTER](#) (Counting Online Usage of Networked Electronic Resources) is an international initiative serving librarians, publishers and intermediaries by setting standards that facilitate the recording and reporting of online usage statistics in a consistent, credible and compatible way. Academic Journals is a member of [COUNTER](#)

Archiving In



[Portico](#) is a digital preservation service provided by ITHAKA, a not-for-profit organization with a mission to help the academic community use digital technologies to preserve the scholarly record and to advance research and teaching in sustainable ways.

Academic Journals is committed to the long-term preservation of its content and uses [Portico](#)



Academic Journals provides an [OAI-PMH](#) (Open Archives Initiatives Protocol for Metadata Harvesting) interface for metadata harvesting.

# Contact

Editorial Office: [jat@academicjournals.org](mailto:jat@academicjournals.org)

Help Desk: [helpdesk@academicjournals.org](mailto:helpdesk@academicjournals.org)

Website: <http://www.academicjournals.org/journal/JAT>

Submit manuscript online <http://ms.academicjournals.org>

Academic Journals  
73023 Victoria Island, Lagos, Nigeria  
ICEA Building, 17th Floor, Kenyatta Avenue, Nairobi, Kenya

# Editorial Board Members

**Dr. Jeyapalan Kasipillai**

School of Business  
Monash University  
Sunway,  
Malaysia..

**Dr. Norman Bin Mohd Saleh**

Graduate School of Business  
Universiti Kebangsaan Malaysia  
Selangor,  
Malaysia.

**Dr. Jeyapalan Kasipillai**

School of Business  
Monash University  
Sunway, Malaysia.

**Dr. Salisu Abubakar**

Department of Accounting, Finance &  
Management  
Ahmadu Bello University  
Zaria, Nigeria.

**Dr. Arikan Tarik Saygili**

Izmir Ekonomi Universitesi  
Balcova,  
Turkey.

**Dr. Mohammad Talha**

Department of Accounting & Finance  
College of Business Administration  
Prince Mohammad Bin Fahd University  
Al-Khobar,  
Saudi Arabia.

**Dr. Manoj Subhash Kamat**

Faculty, Shree Damodar College of Commerce &  
Economics  
Goa University  
Comba,  
India.

**Dr. Jenő Beke**

Department of Accounting, Corporate  
Economics and Finance, Business and  
Management,  
Hungary.

**Dr. Adrian Morosan**

Finance and Accounting  
"Lucian Blaga" University of Sibiu  
Romania.

**Dr. Fayaz Ahamed Mohamed Amin**

Department of Business Administration  
Amity University Dubai  
UAE.

**Dr. Alexandre Ripamonti**

Business Administration,  
University of Sao Paulo,  
Brazil.

**Dr. Khalifa Ahsina**

Management Department  
Ibn Tofail University  
Morocco.

**Dr. Eliana Mariela Werbin**

Accounting Department,  
National University of Cordoba,  
Argentina.

**Dr. Qaisar Ali Malik**

Economics and Finance,  
Foundation University Islamabad,  
Pakistan.



# Table of Content

<b>Signaling, auditing fees, and earnings surprise before and after split-share structure reform in China</b> Shaorou Hu <sup>1*</sup> , Chenyu Liu <sup>2</sup> and Ming Liu <sup>2</sup>	<b>22-38</b>
<b>Determinants of business tax compliance: A case study of Togo</b> Koku Eli Soglo <sup>1*</sup> and Isaac Amedanou <sup>2</sup>	<b>39-63,</b>
<b>Influence of computer literacy levels on tax compliance among Harare central business district small and medium enterprises</b> Nhundu Walter <sup>1*</sup> and Matamande Wilson <sup>2</sup>	<b>64-74</b>

*Full Length Research Paper*

# Signaling, auditing fees, and earnings surprise before and after split-share structure reform in China

Shaorou Hu<sup>1\*</sup>, Chenyu Liu<sup>2</sup> and Ming Liu<sup>2</sup>

<sup>1</sup>School of Economics and Management, Shanghai Maritime University, China.

<sup>2</sup>Faculty of Business Administration, University of Macau, China.

Received 23 March, 2023; Accepted 2 June, 2023

**In China, the split-share structure reform (SSR) has many benefits in helping decrease agency costs and normalise the stock markets. This paper explores the specific effects of this policy on firms' signalling behaviour, audit fee charges and the meeting or beating earnings expectation (MBE) strategy through empirical research into the relations of these three subjects, combined with a cross-sectional analysis of their deeper influences. The outcomes of this study demonstrate that after the SSR, firms have more incentive to convey inside information and signal earnings, the audit fee charged for firms is reduced and firms are more willing to meet earnings expectations.**

**Key words:** Split-share structure reform; earnings signalling; audit fees; earnings surprise; management disclosure.

## INTRODUCTION

The split-share structure reform (SSR), requiring all listed companies to convert non-tradable shares into tradable shares, is one of the most important reforms in China stock market, which stipulates the structure and adjustment of non-tradable shares. Historically, most of the companies listed in China's stock market were state-owned and the shares in the market split into two categories: tradable and non-tradable. The split-share structure imposed on the Chinese listed firms for which tradable shares are heavily restricted in the market has been criticized as defective for three reasons: 1) It results in weak corporate governance since firms within a group can easily engage in related-party transactions to conceal any undesirable performance results of firms within the same group; 2) It creates a very volatile domestic market and hinders free trading, resulting difficulties in ascertaining firm worth and management performance; 3)

The controlling shareholders do not indeed concern about and bear the consequence of firm (in)efficiency. To solve the problems, the government implemented a split-share structure reform program in 2005 and 2006, which aimed to convert non-tradable shares into tradable shares to ease the interest conflicts and prevent the expropriate from controlling shareholders. SSR does ease the problems to a certain extent. However, the reform changes the earnings behaviour of firms, especially the controlling shareholders, which will affect firms' series of actions, including signalling earnings, audit fee charges, and earnings surplus.

In general, firms need to survive by balancing value and the self-interest of shareholders. The specific developments and high agency costs in the Chinese market enable majority shareholders to earn profits mainly from non-tradable shares, which will have a

\*Corresponding author. E-mail: [srhu@shmtu.edu.cn](mailto:srhu@shmtu.edu.cn).

detrimental effect on running a business. However, the split-share structure reform (SSR) has changed the status quo by stipulating the structure and adjustment of non-tradable shares and decreasing agency costs.

Thus, it is extremely important that the Chinese stock market reform not only normalise the market as a Western-style free market but also improve corporate governance behaviour. Exploring the changes and the motivations after the SSR is also significant for researchers.

Numerous studies have been developed in areas such as the tunnelling effect between large and small shareholders, IPO behaviour and cash dividend policies. However, researchers have seldom examined the changes in agency costs to identify the developments and possible results after the SSR. According to agency theory, listed firms need to provide more information answering the increasing demands of shareholders. Therefore, the SSR will decrease agency costs efficiency and effectively since it will push firms to publish more information as positive signalling due to the adding requests from financial market. Decreasing agency costs will also reduce the risks of auditing, thus lowering the audit fees charged. Low agency costs have changed how profits are earned and raised public attention in terms of stock market performance, which will motivate firms to engage in the earnings surprise strategy. This paper thus begins by focusing on the agency cost in my research, as this will decrease after the SSR. We explore the earnings management strategy, audit fees charged and earnings surprises to explore the changes in signalling behaviour, audit fees and the meeting or beating earnings expectation (MBE) strategy before and after the SSR and extend the research scope to cross-sectional analysis. The findings in this paper contribute to supplementing related studies, which demonstrates that after the SSR, firms have more incentive to convey inside information and signal earnings, the audit fee charged for firms is reduced and firms are more willing to meet earnings expectations.

The remainder of this paper is organised as follows: Section 2 reviews previous literature on earnings management, audit fees charged and MBE strategies; Section 3 proposes the research hypotheses; Section 4 describes the samples and data and develops the empirical models; Section 5 presents and discuss the principal empirical analysis, robustness tests and cross-sectional tests; and Section 6 concludes the paper.

## LITERATURE REVIEW

### Discretionary accruals, agency theory and earnings management

Earnings management is a major focus of research for many years. International researchers describe earnings

management through four country-level measurements that capture the various dimensions by which managers can exercise their discretion to manage reported earnings (Leuz et al., 2003). By using these four measurements, firms can achieve the results of earnings management activities and avoid announcing real financial reports to the public (Ball et al., 2003).

The high level of personal interest is also an incentive. The power of this is enormous, but the governance and protection of minority shareholders are weak (Liu and Lu, 2004). As mentioned, the control of listed firms is meaningful for controlling shareholders, but to achieve private benefits from control, the controlling shareholders have a strong incentive to manage earnings and may even harm the interests of minority shareholders (Healy and Wahlen, 1999).

An increasing volume of literature has examined the earnings management behaviour of the Chinese stock market. Aharony et al. (2000) identify the earnings manipulation of Chinese listed firms before the initial public offering (IPO). Chen and Yuan (2004) find that the earnings management of listed firms in China meets the return on equity (ROE) rights requirements and suggest that such earnings management behaviour is related to the misallocation of capital resources.

The value of accrual accounting enables stakeholders to understand and hence evaluate the firm's underlying economic realities and periodic performance accurately, through appropriate matching of correctly recognised revenue and its associated expense. Theoretically, through the use of discretionary accruals, which are a component of accrual accounting, managers are able to distribute information relevant to the market and increase the value relevance of earnings (Dechow et al., 1995; Dechow and Dichev, 2002).

However, discretionary accruals are most often handled by managers in a way contrary to the original intent of enhancing value relevance. For example, self-interested managers may selectively define and disclose accounting measures through the use of discretionary accruals to fulfil performance benchmarks such as external debt contract requirements (DeAngelo et al., 1994) and earnings targets in management remuneration packages (Balsam, 1998; Shuto, 2007), thereby using market expectations to enhance firm value (Barth et al., 1999; DeAngelo et al., 1996).

Meanwhile, other studies demonstrate the possibility of using discretionary accrual to signal insider information and increase corporate transparency. For example, Subramanyam (1996) illustrates that the predictability and persistence of earnings can be improved through the use of income smoothing techniques. Krishnan (2003) recognises the ability of accrual accounting to inform stakeholders of the firm's underlying economics through managers sharing private information.

The agency theory framework provides a theoretical basis for examining earnings management within a

country. For example, archival research documents that Western managers' discretionary accrual decisions are associated with incentives such as short-term bonuses, disclosure quality and IPOs (Chung et al., 2005). Chinese managers are also sensitive to earnings management in terms of return on equity (ROE) and discretionary accruals (Kao et al., 2009). They often manipulate discretionary accruals as a method of managing earnings under certain circumstances.

### **Audit fees, litigation risk and corporate governance**

Audit fees is one of crucial issues in reducing agency costs since the audit process is an essential mechanism for monitoring the opportunistic behaviour of managers and there is an increasing volume of related literature. Simunic (1980) models audit fees as a linear combination of the marginal cost of auditing plus expected losses from litigation. While effort increases the cost of performing the audit, it decreases the expected litigation losses. Palmrose (1988) also suggests that litigations arising from audit failures may badly affect the reputations of auditing firms. Willenborg (1999) indicates that IPO audit fees increase the amount of money the IPO raises. The practice of auditing can help companies adopt appropriate accounting policies and reduce the agency costs resulting from a situation of information asymmetry (Francis and Wang, 2008).

The audit fee denotes the standard of audit quality. High-quality auditing may be regarded as requiring higher audit fees (Defond et al., 1999; Ireland and Lennox, 2002; Wang et al., 2009; Wang et al., 2011). Danielsen et al. (2007) conclude that audit lawsuits and the litigation environment may also be factors influencing the charges of auditing fees. Large audit firms, particularly the Big-4 firms, provide these services to maintain their brand names and reputations (DeAngelo, 1981). The legal environment also plays an important role in deciding audit fees. In the Chinese market, the developing litigation of firms and audit law also influence audit fee amounts.

After the SSR, more case lawsuits and legal acts have been imposed on the Chinese market, and thus the law environment and audit quality increase the auditing fees. Shareholders also focus more on financial reports and trades in a free market after the SSR, which may further increase the auditing requirements to ensure effective operations. This, therefore, leads to higher auditing fees after the SSR than before.

### **Expectation management and earnings management**

Brown (1998) finds cases with earnings per share slightly higher than analysts' expectations, in addition to the pattern of actual earnings per share being exactly on target. Burgstahler and Eames (2006) provide evidence that a revised forecast is more frequently used to avoid

the unexpected side effects of negative earnings, suggesting that managers have an effect on analysts' forecast revisions. They conclude that the earnings behaviour of the time series is consistent with the firm's management revenue behaviour in meeting analysts' expectations. Kasznik (1999) and Payne and Robb (2000) also provide consistent evidence of the use of earnings management to meet earnings forecasts.

However, Soffer et al. (2000) indicate that firms are increasingly inclined to warn investors of impending adverse returns, and thus the MBE policy is implemented through expectation management. Whether through earnings manipulation, expectation management or both, the benefits of the MBE strategy are not apparent unless MBE can be used to predict the future of the firm. The net return of MBE is also problematic in terms of managing earnings expectations. Pre-empting anticipated adverse earnings expectations by suppressing them will lead to negative price effects, offsetting the returns gained from positive announcements, thus leaving total returns unchanged over the same period.

In fact, past research (Kasznik and Lev, 1995; Soffer, 2000) suggests that the share prices of firms in which investors were warned of upcoming adverse information disclosures (reducing investors' earnings) fell sharply. And Kasznik and McNichols (2002) find that MBE leads to higher firm valuations and higher projected earnings. Actually, a significant market premium has been found for firms that have achieved or exceeded expectations in the former year. Lopez and Rees (2001) find that when controlling for the margin of unexpected earnings, the return on earnings after the earnings announcement is influenced by whether analysts predict it will be met, thus providing a premium for MBE. Bartov et al. (2002) examine how management accomplish the task of MBE. They also distinguish the use of the two tools of earnings and expectations management to achieve the MBE strategy. Finally, they examine the relationship between the premium for MBE and the presence of expectation and earnings management.

### **Hypotheses development**

Discretionary accrual can have positive or negative effects on earnings management. It can overcome the limitations of current accounting standards and present more useful information, but it may also be artificially constructed to fulfil the self-interest of managers by compromising the value relevance of the accounting data (Leuz et al., 2003). The dominant tendency in guiding managers' policies on discretionary accruals must therefore be identified. The main determinants are the general market context, the agency cost among shareholders and the demand for value relevance from the financial statements, as these factors will be significant in regulating the financial information presented.

The historical context in which SSR has been implemented in the Chinese economy is ideal for demonstrating the particular nature of this double-edged sword. Before the SSR, the controlling shareholders, who are typically the state and its agents holding non-tradable shares, were less sensitive to firm performance than free market participants, because their non-tradable shares were

mainly held to own or control the firms rather than to make a profit. The demand for value relevance of the financial statements is comparatively weaker because the controlling shareholders do not have to engage in decisions such as further buying or selling their non-tradable shares. The asymmetric information between shareholders and managers also leads to high agency costs. Thus, there is a higher tendency for managers to use discretionary accruals to further their interests. However, since the implementation of the SSR, non-tradable shares will become gradually tradable according to a specific timetable, and the demand for value relevance of the financial statements will be stronger. The shareholders, now being participants of the competitive free market, must rely on the financial statements and other financial news when making investment decisions. Under this condition, the increased transparency of symmetric information between shareholders and managers will decrease the agency costs. Thus, managers are no longer free to use discretionary accruals for their self-interest. They must handle discretionary accruals in the financial statements more faithfully; convey more inside information and signal earnings more efficiently. Therefore, the following hypothesis can be formulated.

*H1: A firm displays a higher tendency to signal earnings through discretionary accruals after the SSR than before.*

On the one hand, audit fees are expected to decrease after SSR due to the increased demand for value relevance and the lower agency costs, which also influence the charging of audit fees. Controlling shareholders will align their interests more with those of minority shareholders, as both will focus on earnings in the firm's return. Unlike the former owners, whose interest in holding was mainly to have control, this approach is aimed at maximising returns and therefore is closer to the approach of the manager, whose main interest is also in returns. When this reduced agency cost is viewed from the auditing perspective, the inherent audit will be reduced. In turn, the chargeable audit fees are expected to be reduced, as these fees represent the work that an auditor must do to reduce their risk to an acceptable level (Choi and Wong, 2007; Venkataraman et al., 2008). Consistent with the finding that there is a significant positive association between agency problems and audit fees (Simunic and Stein, 1996), once the inherent risk from the agency problem is reduced, the risk borne by the auditors is alleviated, and thus the audit fee is lowered.

On the other hand, audit fees can increase after SSR because managers may pay more attention to maximizing accounting profits and stock prices due to SSR. The outside investors also know this changed incentive of managers and want to be sure that the reported accounting profits represent the true business fundamentals faithfully because investors are now more actively trading these firms' stocks. Therefore, managers may have incentives to increase the audit quality to meet this shareholders' demand. As a result, audit fees may increase after SSR. Therefore, the relationship between SSR and audit fees is ultimately an empirical question. Accordingly, the following is hypothesized:

*H2<sub>0</sub>: There is a significant difference between audit fees charged to the firm before and after SSR implementation.*

However, the implementation of the SSR also makes the firm more ready to improve firm value, as the flotation of shares causes the market to be more competitive. The major shareholders are no longer holding shares solely for the purpose of controlling or owning the firm, but also to make profits from their investments. Achieving a higher firm value is thus becomes more desirable through a variety of methods such as the fulfilment of external earnings expectations.

Extensive research finds associations between the fulfilment of earnings expectations and the market valuation of firms. According to Barth et al. (1999) and DeAngelo et al. (1996), positive firm

valuation implication is associated with the meeting of external targets. This association is further confirmed by Bartov et al. (2002), who find evidence of a valuation premium in meeting analysts' current earnings expectations in sample data between 1983 and 1997, irrespective of whether meeting earnings expectations is genuine or deliberately orchestrated. Meeting these expectations will effectively increase the market confidence in the firm and improve the firm's stock price, thus enhancing the firm value. Chinese listed firms should thus have greater incentives to increase firm value by meeting earnings expectations. The equity transfer and pricing policy of controlling shareholders also changed after the SSR, as their focus gradually shifted from net assets to share prices. In the securities market, companies will get a negative reaction if they do not meet the analysts' expectations of a surplus, which will result in a massive loss for the companies. Thus, it is important for a firm to consider analysts' earnings forecasts and ensure they meet or exceed analyst expectations. After the reform, companies are more motivated to achieve the profit forecasts of analysts. We therefore propose the following hypothesis.

*H3: A firm is more likely to meet earnings expectations after the SSR than before.*

## Research design

The first step in testing H1 is to identify the discretionary accruals (DA) (that is, the abnormal accruals) from the normal accruals. Specifically, we need to decompose total accruals into the expected, normal portion and abnormal portion and then use an abnormal portion of total accruals as the proxy for the discretionary accruals. By following the models of Kothari et al. (2005), to control for possible effects of performance (ROA of the current and prior periods), we use the following modified Jones model.

$$TA_{it} = \beta_0 + \beta_1(1/AT_{it-1}) + \beta_2(\Delta REV_{it} - \Delta AR_{it}) + \beta_3PPE_{it} + \beta_4ROA_{it} + \varepsilon_{it} \#(1)$$

$$NDA_{it} = \beta_0 + \beta_1(1/AT_{it-1}) + \beta_2(\Delta REV_{it} - \Delta AR_{it}) + \beta_3PPE_{it} + \beta_4ROA_{it-1} \#(2)$$

Where:  $TA_{it}$  = the difference between income before extraordinary items and operating cash flows for period  $t$  for the firm  $i$ ;  $NDA_{it}$  = nondiscretionary total accruals,  $AT_{t-1}$  = the total opening assets,  $\Delta REV_t$  = the change in sales revenue from period  $t-1$  to  $t$ ,  $\Delta AR_{it}$  = the change in accounts receivable from period  $t-1$  to  $t$ ,  $PPE_t$  = the opening property, plant, and equipment,  $ROA_t$  = return of asset for the period  $t$ , defined as income before extraordinary items at period  $t$  divided by opening total asset at period  $t$ .

The variables  $TA$ ,  $\Delta REV$ ,  $\Delta AR$  and  $PPE$  are scaled by  $AT_{t-1}$ . In these two models, the predicted values in the model (2) according to the estimated coefficients obtained from the linear regressions in the model (1) will be counted as normal accruals, and the subtracting  $NDA$  from the  $TA$  will be considered  $DA$ . For the purpose of obtaining the coefficients, the regression for each combination of the reporting period and 2-digit SIC (Standard Industrial Classification) code will be based on at least 10 observations obtained from the CSMAR (China Stock Market and Accounting Research) database.

After selecting the discretionary accruals, which are estimated using semi-annual and third quarters' financial statement data, with the modified Jones model, they are used to identify observations with earnings signalling. For a given observation, when the performance of the period is forecasted to be lower (higher) than that of the last period, earnings are said to have been signalled if negative (positive) discretionary accruals are detected in the semi-annual or third-quarter reports (STQ). In identifying observations with earnings signalling, we do not consider the first-quarter reporting, because it is doubtful whether managers can acquire sufficient data and observations to enable them to reasonably

forecast the financial performance of the whole period at the time when the first-quarter report is being prepared. Following prior

$$ES = \alpha_0 + \alpha_1 SSR + \alpha_2 CEOCHR + \alpha_3 INDDIR + \alpha_4 CROLIS + \alpha_5 LnASSET + \alpha_6 ROA + \alpha_7 LEV + \alpha_8 MB + \alpha_9 BIG4 + \alpha_{10} AF + \alpha_i YEARDUM + \alpha_k INDDUM + \varepsilon \quad \#(3)$$

Where: **ES** = 1 if a firm uses discretionary accruals in its STQ to foretell the trend of yearly earnings correctly; 0 otherwise. That means ES equals to 1 if not only the earnings per share in the current year is higher/lower than the previous year, but also the discretionary accruals within STQ are positive/negative; 0 otherwise, **SSR** = 1 if the period falls after the stock split reform; 0 otherwise. That means SSR equals to 1 if the split-share structure reform is implemented by firm; 0 otherwise. The data is collected from CSMAR database, **CEOCHR** = 1 if the CEO and the chairman of the board of directors are held by the same individual; and 0 otherwise, **INDDIR** = the percentage of independent directors on the board, **CROLIS** = 1 if a firm is cross listed, **LnASSET** = natural logarithm of total assets, **ROA** = return of asset, defined as income before extraordinary items at period t divided by opening total asset at period t, **LEV** = leverage, measured as total liabilities divided by total assets, **MB** = market to book ratio, defined as the market value of the equity divided by its corresponding book value, **BIG4** = 1 if the firm's auditor is one of the Big4 auditing firms; 0 otherwise, **AF** = number of analysts following /covering the firm at the beginning of the year, **INDDUM** = industry dummies, based on CSMAR industry classification.

To control for other factors that may affect earnings signalling, we

$$LnFEE = \alpha_0 + \alpha_1 SSR + \alpha_2 BODM + \alpha_3 CEOCHR + \alpha_4 AC + \alpha_5 AUD_{SW} + \alpha_6 LnASSET + \alpha_7 BUSSEG + \alpha_8 GEOSEG + \alpha_9 AR/I + \alpha_{10} BIG4 + \alpha_{11} AUD_{EXP} + \alpha_{12} CUR + \alpha_{13} LEV + \alpha_{14} ROE + \alpha_{15} AUD_{OPI} + \alpha_i YEARDUM + \alpha_k INDDUM + \mu \quad \#(4)$$

Where: **LnFEE**= natural log of audit fees, **SSR**=1 if the period falls after the stock split reform; 0 otherwise. That means SSR equals to 1 if the split-share structure reform is implemented by firm; 0 otherwise. The data is collected from CSMAR database, **BODM**= the number of board meetings in a year, indicating the activeness of BOD in overseeing management performance, **CEOCHR**=1 if the positions of CEO and BOD chairman falls within the same individual; 0 otherwise, **AC**=1 if any audit committee(s) are found to exist in the firm; 0 otherwise, **AUD\_SW**=1 if there is a change in auditor in the current period; 0 otherwise, **LnASSET**= natural log of total assets, **BUSSEG**= number of business segments of the firm, **GEOSEG**= number of geographical segments, **AR/I**= the sum of inventories and accounts receivables divided by total assets, **BIG4**=1 if the auditor is a Big4 one; 0 otherwise, **AUD\_EXP**=1 if the auditor is an industry expert; 0 otherwise, **CUR**= current ratio, defined as current assets divided by current liabilities, **LEV**= leverage ratio, equal to total liabilities divided by total assets, **ROE**= profitability, equal to net income before extraordinary items divided by owners' equity, **AUD\_OPI**=1 if the firm was issued a modified audit opinion in the prior year; 0 otherwise, **INDDUM**= industry dummies, based on CSMAR industry classification.

To test H3, we follow Bartov et al. (2002) and use the model (5) establishing the association between the occurrence of meeting or beating earnings expectation and the advent of SSR:

$$MBE = \alpha_0 + \alpha_1 SSR + \alpha_2 HOR + \alpha_3 ANLY + \alpha_4 FSTD + \alpha_5 ASSET + \alpha_6 \Delta EPS + \alpha_7 LEV + \alpha_i YEARDUM + \alpha_k INDDUM + \varepsilon \quad \#(5)$$

Where: **MBE**=1 if the forecast error is non-negative; 0 otherwise. That means MBE equals to 1 if the difference between the most

studies (that is, DeAngelo et al., 1996), the model (3) will be used to support or refute H1:

include the following control variables. CEO-Chairman duality (CEOCHR) is included, as earnings informativeness has been found to be negatively correlated with the same individual being CEO and board chairman (Chang and Sun, 2009). The percentage of independent directors on the board (INDDIR) is included because a higher earnings informativeness has been found to be associated with a higher percentage of independent directors on the board (Firth et al., 2007). The occurrence of cross-listing (CROLIS) is included as Cabán-García (2009) finds that the quality of earnings is positively correlated with the regulatory rigidity of the stock exchange. The variables firm size (LnASSET), profitability (ROA), market to book ratio (MB), audit quality (Big-N) and number of analysts following (AF) are also used as control variables, as we expect firms that are sizeable with considerable market value and profitability, are followed by higher quality auditors, are monitored by more analysts and are more likely to signal a greater amount of private information to external users.

To test H2, the following model was used to develop a previous audit fee model (Lennox, 2005; Cahan et al., 2008), with the modifications of incorporating corporate governance variables as control variables:

recent consensus forecast and actual earnings per share (actual EPS - forecast EPS) is non-negative; 0 otherwise, **SSR** =1 if the period falls after the stock split reform; 0 otherwise. That means SSR equals to 1 if the split-share structure reform is implemented by firm; 0 otherwise. The data is collected from CSMAR database, **HOR** = forecast horizon, equals to the number of months between the most recent consensus earnings forecast of a particular period and the earnings announcement of that particular period within one year, **ANLY**= number of analysts following the firm, **FSTD**= standard deviation of earnings forecasts made by analysts following the firm, **LnASSET**= natural log of total closing assets, **ΔEPS**=1 if earnings per share in the current year is greater than that of the last year, **LEV**= total outstanding debt divided by total closing assets, **INDDUM**= industry dummies, based on CSMAR industry classification.

In the regression equation, the occurrence of meeting or beating earnings expectations is the dependent variable, which is quantified by the forecast error. Control variables commonly used in forecast accuracy research are also included to control for factors unrelated to SSR. Studies (e.g., O'Brien, 1988) have shown that the forecast error is positively correlated with the time between the earnings forecast and earnings announcement. Therefore, HOR (the period between the most recent consensus earnings forecast and the earnings announcement) is included as a control variable.

We also include the number of analysts following a firm (ANLY), the dispersion of the forecasts (FSTD) and firm size (ASSET) to control for the cross-sectional variations in the information environment, as the number of analysts monitoring the firm and firm size have been found to be positively associated with forecast accuracy, while the dispersion of the forecasts has been shown to have a negative impact on forecast accuracy (Brown, 1997).

Researchers find that firms with continuous growths in earnings are more likely to engage in meeting or beating the earnings forecasts, so we include a dummy variable ( $\Delta$ EPS) for firms whose current earnings per share are greater than those of the previous period as a control variable. The leverage ratio (debt-to-asset ratio, LEV) is also included as a control variable; as it has been found that a highly geared firm is more likely to meet analysts' expectations to avoid close monitoring by creditors. Finally, to control for potential industry-specific effects, we also include industry dummies (INDDUM) as per the CSMAR classification, as represented in the sample.

In collecting the samples to be used to test hypotheses 1, 2 and 3, we use information of listed firms in China between 2002 and 2015, using the following sample selecting process. (1) We exclude firms without the complete data required to measure the variables and firms in the financial industry. (2) To alleviate the effect of outliers, we winsorized the top and bottom 1% of the distribution for all the continuous variables including the dependent variables. All related data for the listed firms are taken from the CSMAR database and the final sample size for each regression is listed in each table.

We cover this period for the following reasons. (1) Quarterly financial statements became more publicly assessable from 2002. (2) The period is sufficiently long enough before and after the SSR, thus providing numerous observations to confirm the hypotheses. (3) 2002 is the earliest year to include the data relevant to hypotheses 1, 2 and 3 from the CSMAR database. We aim to balance the sample period and thus make it as convincing as possible.

Other models for extracting discretionary accruals, such as the performance matched discretionary accruals model, enhance the validity of the results. Different measurements were also used for earnings signalling before claiming that an observation carries valid earnings signalling quality. For example, we include the additional condition that the magnitude of the changes in the discretionary accruals deduced from STQ reporting must be greater than that of the annual discretionary accruals. We thus have greater confidence in claiming that managers do have the intention to signal annual earnings in those observations. The implementation of the SSR was a long, gradual and continuous process. Therefore, it is unlikely that the previously restricted shares became tradable immediately, or that the controlling shareholders became suddenly sensitive to firm performance and earnings signalling. In response to this concern, we replace a simple cut-off of the SSR with yearly dummies as part of the robustness tests.

## EMPIRICAL RESULTS AND DISCUSSION

### Descriptive statistics

Table 1 gives the descriptive results of the dependent variable, independent variables and control variables for hypotheses 1, 2 and 3, which are shown in panels A, B and C, respectively. Each panel provides the summary statistics for variables in the full period and in each period before and after the split-share structure reform.

In panel A, for the whole period outcome of hypothesis 1, the mean of earnings signalling (ES) is 0.308, and its standard deviation is 0.462. It can be seen that almost 30% of firms demonstrate the tendency to conduct earnings signalling since ES equals 1 if a firm uses discretionary accruals in its STQ to foretell the trend of yearly earnings correctly and 0 otherwise. After the split-share structure reform, the proportion of signalling

increases, which may confirm the proposed influence of the split-share structure reform. The mean of SSR is 0.519, and its standard deviation is 0.500. Over the whole period, the mean of the duality of CEO and chairman (CEOCHR) is 0.212, and its standard deviation is 0.409. It can be seen that nearly 20% of firms are in the situation where the CEO and chairman are the same person since CEOCHR equals 1 if the positions of CEO and BOD chairman falls within the same individual and 0 otherwise. After the SSR, CEOCHR decreases from 0.303 to 0.145, suggesting that the share reform reduces the duality. Over the whole period, the mean of the independent directors' portion (INDDIR) is 0.359, and its standard deviation is 0.057. It can be seen that most firms reach the basic requirement of the proportion of independent directors in China with 33.3%, and after the SSR this proportion increases slightly. The mean of cross-listed firms (CROLIS) is 0.0769, and its standard deviation is 0.266. The mean of hiring Big-4 audit firms (BIG4) is 0.059, and its standard deviation is 0.236. This shows a low hiring rate for Big-4 audit firms in China, which may be due to legal issues or financial limitations. After the SSR, BIG4 increases by 20%<sup>1</sup>, but it is still relatively low.

In panel B, for the whole period outcome of hypothesis 2, the mean of auditing fee (LnFEE) is 13.26, and its standard deviation is 0.578, which represents the charge level of firms in terms of auditing fees. After the SSR, the LnFEE increases from 13.16 to 13.35, which confirms the influence of the SSR? It shows the auditing fee charged is more than that before the SSR. In the whole period, the means of board meeting times (BODM) is 8.891, and its standard deviation is 3.350. It is found that firms hold board meetings nearly nine times a year. After the SSR, BODM increases from 8.535 to 9.233. This infers that the share reform improves the supervision of the board, as firms may then care more about the business and financial reports. The CEOCHR shows a similar variation tendency and decreases after the SSR from 0.314 to 0.143. In the whole period, the mean of the audit committee (AC) is 0.824, and its standard deviation is 0.381. It can be seen that about 82% of total firms have an audit committee, and after the SSR the proportion increases slightly to 89.5%. Over the whole period, the mean of switch on auditors (AUD\_SW) is 0.661, and its standard deviation is 0.473, which shows that about 66% of the firms changed auditors in a given year. The portion decreases slightly after the SSR from 0.687 to 0.641. For the whole period, the mean of expert auditors (AUD\_EXP) is 0.516 and its standard deviation is 0.500, and the announcement of modified opinion by auditors (AUD\_OPI) is 0.063 and its standard deviation is 0.244. About 6% of the firms thus have modified auditing reports. The proportion decreases after the SSR from 0.071 to 0.056, which confirms the healthy effect of SSR. BIG4 also shows a similar variation tendency as in hypothesis 1, as

<sup>1</sup>The calculation is listed as follow:  $(0.064-0.054)/0.054 \times 100\% = 20\%$

Table 1. Descriptive statistics.

<b>Panel A hypothesis 1</b>						
<b>Variable</b>	<b>Mean</b>	<b>Std.Dev.</b>	<b>Min</b>	<b>Max</b>	<b>SSR=0 Mean</b>	<b>SSR=1 Mean</b>
ES	0.308	0.462	0	1	0.302	0.313
SSR	0.519	0.500	0	1		
CEOCHR	0.212	0.409	0	1	0.303	0.145
INDDIR	0.359	0.057	0.182	0.556	0.353	0.365
CROLIS	0.077	0.266	0	1	0.061	0.091
LnASSET	21.71	1.284	12.31	27.70	21.39	22.00
ROA	0.035	0.054	-0.275	0.206	0.037	0.032
LEV	0.473	0.211	0.051	1.330	0.413	0.527
MB	3.721	3.194	-1.865	28.83	3.769	3.678
BIG4	0.059	0.236	0	1	0.054	0.064
AF	8.622	9.115	1	41	8.275	8.858

<b>Panel B hypothesis 2</b>						
<b>Variable</b>	<b>Mean</b>	<b>Std.Dev.</b>	<b>Min</b>	<b>Max</b>	<b>SSR=0 Mean</b>	<b>SSR=1 Mean</b>
LnFEE	13.26	0.578	11.92	15.35	13.16	13.35
SSR	0.511	0.500	0	1		
BODM	8.891	3.350	3	22	8.535	9.233
CEOCHR	0.218	0.413	0	1	0.314	0.143
AC	0.824	0.381	0	1	0.749	0.895
AUD <sub>SW</sub>	0.661	0.473	0	1	0.687	0.641
LnASSET	21.68	1.194	18.93	25.59	21.32	22.02
BUSSEG	3.200	2.265	1	13	2.940	3.448
GEOSEG	3.605	2.446	1	13	3.837	3.384
ARI	0.269	0.166	0.005	0.770	0.276	0.262
BIG4	0.061	0.239	0	1	0.056	0.064
AUD <sub>EXP</sub>	0.516	0.500	0	1	0.512	0.519
CUR	2.131	2.236	0.19	18.09	2.691	1.601
LEV	0.463	0.214	0.047	1.359	0.400	0.523
ROE	0.063	0.121	-0.955	0.563	0.064	0.063
AUD <sub>OPI</sub>	0.063	0.244	0	1	0.071	0.056

<b>Panel C hypothesis 3</b>						
<b>Variable</b>	<b>Mean</b>	<b>Std.Dev.</b>	<b>Min</b>	<b>Max</b>	<b>SSR=0 Mean</b>	<b>SSR=1 Mean</b>
MBE	0.212	0.409	0	1	0.147	0.269
SSR	0.533	0.499	0	1		
HOR	14.30	5.763	1	31	14.62	14.04
ANLY	8.998	9.101	1	65	8.877	9.104
FSTD	0.261	0.276	0	6.914	0.291	0.235
LnASSET	22.04	1.281	13.76	28.51	21.66	22.37
ΔEPS	0.477	0.500	0	1	0.392	0.552
LEV	0.448	0.269	0.007	16.55	0.365	0.522

Source: The data used are from the CSMAR Database for the 2002-2015 periods.

it increases from 0.056 to 0.064, but it is still somewhat increased compared with the whole sample. The descriptive statistics are consistent with Ni et al. (2017) and Feng and Liang (2010).

In panel C, for the whole period outcome of hypothesis

3, the mean of MBE is 0.212, and its standard deviation is 0.409. This indicates that nearly 21% of the firms exhibit MBE behaviour. MBE increases sharply after the SSR, from 0.147 to 0.269. This near-double increase shows the effect of split-share structure, which is



consistent with my hypothesis. The mean of forecast horizon (HOR) is 14.30 and its standard deviation is 5.763. The mean of the number of analysts following the firm (ANLY) is 8.998 and its standard deviation is 9.101, which means that a general firm would have nine analysts. In the whole period, the mean of the standard deviation of earnings forecast (FSTD) is 0.261 and its standard deviation is 0.276. The FSTD decreases from 0.291 to 0.235 after the SSR, which suggests that the forecasts are less dispersed than before the SSR.

The descriptive statistics provided a preliminary analysis of each variable, and we can also see their changes before and after SSR. However, the influence of SSR should be further studied and they are introduced in following sections.

### Correlation and regression results

To provide convincing results, we use both Pearson and Spearman correlation tests and Table 2 presents the correlation matrices for the full sample data of listed firms in China from 2002 to 2015 for hypotheses 1, 2 and 3, which are shown in panels A, B and C, respectively. Each panel provides the Pearson correlation in the lower triangular matrix and the Spearman correlation in the upper triangular matrix. To avoid biased results caused by outliers, all of the variables are Winsorized at the 1% and 99% levels and \*, \*\* and \*\*\* represent significance at the 10, 5 and 1% levels, respectively.

In panel A, the correlation of SSR in hypothesis 1 is significantly related to ES, which indicates that the relationship between earnings signalling, and split-share reform is worth exploring overall. The results indicate that considering the influence of SSR, ES shows a positive significant variation tendency, and its coefficient is 0.012 for both correlation coefficients.

In panel B, it can be seen that when the SSR is included, nearly all of the variables are significantly related to LnFEE except for ARI, which is the sum of inventories and accounts receivable divided by total assets. The coefficient of SSR in hypothesis 2 is 0.172 for the Pearson coefficient and 0.163 for the Spearman coefficient, which means that the variation tendency of auditing fees and the SSR is the same; the audit fees increase after the SSR. The board meeting times (BODM), the existence of an audit committee (AC), firms that hired Big-4 auditing firms (BIG4) and the existence of expert auditors (AUD\_EXP) show the same positive correlation with LnFEE; the Pearson coefficients are 0.206, 0.166, 0.307 and 0.297 and the Spearman coefficients 0.205, 0.175, 0.231 and 0.291, respectively. The duality of CEO and chairman (CEOCHR), the switch of auditors (AUD\_SW) and the given modified auditing opinions (AUD\_OPI) show a negative correlation with LnFEE; the Pearson coefficients are -0.058, -0.059 and -0.088 and the Spearman coefficients are -0.054 -0.060

and -0.088, respectively.

In panel C, all of the variables are highly significantly related to meeting or beating earnings expectations (MBE). First, the Pearson coefficient of SSR in hypothesis 3 is 0.149, and the Spearman coefficient is 0.148, which are both highly positively related to MBE. After the SSR, firms are more likely to meet or beat earnings expectations, which is consistent with hypothesis 3. Negative correlations are then found between forecast horizon (HOR) or standard deviation of forecast earnings (FSTD) and MBE. The correlations are -0.146 and -0.203, respectively (Spearman correlations are -0.147 and -0.286). The number of analysts following the firm (ANLY) has a positive relationship with MBE, and its Pearson correlation is 0.028.

The authors have checked the regression assumptions for each model and Table 3 reports the regression results of hypotheses 1, 2 and 3, which are shown in panels A, B and C, respectively.

In panel A, SSR is highly positively related to ES at the 5% level, its coefficient is 0.027 and the p-value is 0.029. This indicates that SSR has a positive relation with ES, as firms conduct more signalling for future earnings after the SSR than before. The regression results are consistent with hypothesis 1; a firm displays a higher tendency to signal earnings through discretionary accruals after the SSR. CEOCHR is not significantly related to ES and its coefficient is 0.002 positive. The sign of the coefficient shows the positive effect of earnings signalling, although the p-value (0.866) does not support the correlation. A significant negative relationship is then found between the independent directors' portion (INDDIR) and earnings signalling (ES) (the coefficient of INDDIR is -0.221, significant at 5%), mainly due to the overseeing of independent directors. Habbash et al. (2014) suggest that independent directors play an important role in constraining earnings management, regardless of the characteristics of earnings management. In this study, earnings signalling are a healthy type of management that firms conduct to convey transparent information to the shareholders and the public. However, this management behaviour is still constrained by the overseeing of independent directors, which leads to the negative significance of the regression. CROLIS is not significantly correlated with ES, and its coefficient is 0.015 negative. The sign of the coefficient shows the negative effect of earnings signalling, although the p-value (0.521) does not support the correlation. A significant positive relationship is then found between the firms that hired Big-4 audit firms (BIG4) and earnings signalling (ES) (the coefficient of BIG4 is 0.081, significant at 1%), mainly due to the synergistic effect of Big-4 auditing firms, which encourages the release of more transparent information to the public and decreases the opportunity for fraud behaviour. Big-4 audit firms will thus increase the tendency to signal earnings through discretionary accruals.

Table 2. Pearson and Spearman correlation matrix.

Panel A hypothesis 1								
	ES	SSR	CEOCHR	INDDIR	CROLIS	LnASSET	ROA	LEV
ES	1	0.012*	-0.008	-0.024***	-0.009	-0.033***	0.041***	0.002
SSR	0.012*	1	-0.190***	0.087***	0.057***	0.266***	-0.085***	0.275***
CEOCHR	-0.008	-0.191***	1	0.095***	-0.055***	-0.149***	0.063***	-0.144***
INDDIR	-0.019***	0.103***	0.103***	1	0.017**	0.070***	0.018***	-0.017
CROLIS	-0.009	0.057***	-0.055***	0.016**	1	0.184***	0.001	0.081***
LnASSET	-0.033***	0.235***	-0.143***	0.089***	0.227***	1	0.039***	0.352***
ROA	0.059***	-0.049***	0.046***	0.035***	-0.001	0.084***	1	-0.404***
LEV	0.002	0.271***	-0.141***	-0.025***	0.082***	0.316***	-0.383***	1
MB	0.019***	-0.014*	0.092***	0.049***	-0.016**	-0.283***	0.073***	-0.022***
BIG4	0.002	0.021***	-0.063***	0.015**	0.410***	0.316***	0.066***	0.043***
AF	0.001	0.031***	0.043***	0.090***	0.106***	0.384***	0.330***	-0.061***
	MB	BIG4	AF					
ES	0.025***	0.002	-0.004					
SSR	-0.030***	0.020***	0.032***					
CEOCHR	0.122***	-0.063***	0.062***					
INDDIR	0.046***	0.009	0.087***					
CROLIS	-0.051***	0.410***	0.076***					
LnASSET	-0.320***	0.256***	0.336***					
ROA	0.205***	0.072***	0.377***					
LEV	-0.105***	0.045***	-0.073***					
MB	1	-0.099***	0.130***					
BIG4	-0.076***	1	0.123***					
AF	0.115***	0.142***	1					
Panel B hypothesis 2								
	LnFEE	SSR	BODM	CEOCHR	AC	AUD SW	LnASSET	BUSSEG
LnFEE	1	0.163***	0.205***	-0.054***	0.175***	-0.060***	0.633***	0.065***
SSR	0.172***	1	0.097***	-0.205***	0.192***	-0.048***	0.298***	0.137***
BODM	0.206***	0.104***	1	0.000	0.137***	-0.017**	0.208***	0.058***
CEOCHR	-0.058***	-0.206***	-0.006	1	0.019***	-0.007	-0.156***	-0.093***
AC	0.166***	0.192***	0.130***	0.020***	1	-0.048***	0.126***	-0.107***
AUD SW	-0.059***	-0.048***	-0.013*	-0.007	-0.049***	1	-0.042***	0.004
LnASSET	0.660***	0.291***	0.227***	-0.152***	0.127***	-0.045***	1	0.130***
BUSSEG	0.078***	0.112***	0.069***	-0.081***	-0.100***	-0.003	0.131***	1
GEOSEG	0.033***	-0.093***	0.026***	0.029***	0.007	-0.004	-0.003	0.012*
ARI	-0.005	-0.042***	0.060***	0.033***	-0.028***	0.014**	-0.038***	0.009
BIG4	0.307***	0.017***	0.019***	-0.070***	-0.008	-0.023***	0.279***	0.120***
AUD EXP	0.297***	0.007	0.065***	0.035***	0.119***	-0.039***	0.175***	-0.076***
CUR	-0.143***	-0.244***	-0.079***	0.150***	0.062***	0.006	-0.246***	-0.169***
LEV	0.177***	0.286***	0.151***	-0.145***	-0.029***	-0.008	0.341***	0.169***
ROE	0.083***	-0.003	0.005	0.021***	0.074***	-0.006	0.120***	-0.004
AUD OPI	-0.088***	-0.031***	-0.013**	0.021***	-0.070***	0.009	-0.167***	-0.007
	GEOSEG	ARI	BIG4	AUD EXP	CUR	LEV	ROE	AUD OPI
LnFEE	0.041***	-0.017**	0.231***	0.291***	-0.117***	0.181***	0.104***	-0.088***
SSR	-0.096***	-0.070***	0.016***	0.007	-0.260***	0.292***	-0.004	-0.030***
BODM	0.036***	0.031***	0.013**	0.070***	-0.055***	0.140***	0.016**	-0.010
CEOCHR	0.028***	0.044***	-0.069***	0.034***	0.159***	-0.148***	0.016**	0.020***

Table 2. Contd.

AC	0.001	-0.033***	-0.008	0.119***	0.072***	-0.026***	0.086***	-0.070***
AUD SW	-0.002	0.019***	-0.023***	-0.039***	0.008	-0.007	-0.009	0.009
LnASSET	-0.008	-0.070***	0.232***	0.158***	-0.255***	0.364***	0.149***	-0.164***
BUSSEG	0.032***	-0.006	0.107***	-0.084***	-0.197***	0.193***	-0.012*	-0.009
GEOSEG	1	0.111***	-0.042***	-0.021***	0.101***	-0.028***	0.033***	-0.039***
ARI	0.078***	1	-0.074***	-0.011*	0.181***	0.199***	-0.002	0.005
BIG4	-0.042***	-0.063***	1	0.245***	-0.086***	0.050***	0.096***	-0.035***
AUD EXP	-0.023***	-0.006	0.246***	1	0.066***	-0.041***	0.071***	-0.041***
CUR	0.084***	-0.069***	-0.076***	0.047***	1	-0.740***	0.134***	-0.106***
LEV	-0.044***	0.236***	0.047***	-0.043***	-0.642***	1	-0.066***	0.102***
ROE	0.023***	0.012*	0.067***	0.060***	0.082***	-0.133***	1	-0.080***
AUD OPI	-0.032***	0.011*	-0.035***	-0.041***	-0.048***	0.136***	-0.110***	1

Panel C hypothesis 3								
	MBE	SSR	HOR	ANLY	FSTD	LnASSET	dEPS	LEV
MBE	1	0.148***	-0.147***	-0.007	-0.286***	0.129***	0.389***	0.101***
SSR	0.149***	1	-0.046***	-0.009	-0.136***	0.322***	0.160***	0.369***
HOR	-0.146***	-0.051***	1	-0.060***	0.090***	0.006	-0.140***	-0.004
ANLY	0.028***	0.012	-0.040***	1	0.231***	0.299***	0.004	-0.073***
FSTD	-0.203***	-0.101***	0.057***	0.191***	1	0.090***	-0.195***	-0.037***
LnASSET	0.134***	0.279***	-0.003	0.339***	0.091***	1	0.085***	0.517***
dEPS	0.389***	0.160***	-0.138***	0.021**	-0.140***	0.075***	1	0.105***
LEV	0.072***	0.291***	-0.004	-0.046***	-0.035***	0.329***	0.082***	1

Source: The data used are from the CSMAR Database for the 2002-2015 periods.

Panel B shows that SSR is highly positively related to LnFEE at the 1% level, its coefficient is 0.034 and the p-value is very small at near to zero. This indicates that SSR has the same variation tendency as LnFEE, which means that firms tend to be charged more audit fees after the SSR than before. It proves that the firms' and investors' needs of high-quality auditing are increased after SSR. And the managers have more incentives to increase the audit quality to meet this demand.

BODM is highly positively related to LnFEE at the 5% level, its coefficient is 0.004 and its p-value is 0.000. This indicates that board meeting times increase the audit fees charged by improving the overseeing of the board and the audit quality. CEOCHR is not significantly correlated with LnFEE and its coefficient is 0.002 negative. The sign of the coefficient shows the negative effect of auditing fees charged, consistent with the Pearson correlation, although the p-value (0.785) does not support the correlation. A significant positive relationship is then found between the existence of an accounting committee (AC) and auditing fees charged (LnFEE) (the coefficient of AC is 0.038, significant at the 1% level). The synergistic committee oversight increases the legal reaction and litigation within firms, and thus causes an increase in the auditing fees charged. AUD\_SW is significantly correlated with LnFEE and its coefficient is 0.009 negative, significant at the 5% level.

The sign of the coefficient shows the negative effect of auditing fees charged, consistent with the Pearson correlation. A significant positive relationship between firms that hired Big-4 audit firms (BIG4) and audit fees charged (LnFEE) (the coefficient of BIG4 is 0.311, significant at the 1% level) is then found. The reputation and audit quality of Big-4 audit firms represents a higher standard and quality level, and stricter requirements than those of other audit firms, which in turn requires the firms to pay higher fees. AUD\_EXP is also highly positively related to LnFEE. The coefficient of AUD\_EXP is 0.122, and its p-value is very small at near zero. Considering the similar influences from the expert auditor and Big-4 audit firms, both will increase the audit quality and the firms must pay more for the higher standard of audit reports. Therefore, an audit expert would also increase the auditing fees charged. A significant positive relationship between the given modified auditing opinions (AUD\_OPI) and audit fees charged (LnFEE) (the coefficient of AUD\_OPI is 0.036, significant at the 1% level) is then found. The given audit opinion reveals the problems or potential warnings for the firm, which warrants higher consultancy payments for the increased level of work involved.

Panel C shows that the SSR is highly positively related to MBE at the 1% level, its coefficient is 0.049 and the p-value is very small at near zero. This indicates that the

**Table 3.** Regression result.

Panel A hypothesis 1		Panel B hypothesis 2		Panel C hypothesis 3	
Variable	ES	Variable	LnFEE	Variable	MBE
SSR	0.027** (0.029)	SSR	0.034***(0.000)	SSR	0.049***(0.000)
CEOCHR	0.002(0.866)	BODM	0.004***(0.000)	HOR	-0.000***(0.000)
INDDIR	-0.221**(0.032)	CEOCHR	0.002(0.785)	ANLY	0.002***(0.000)
CROLIS	-0.015(0.521)	AC	0.038***(0.000)	FSTD	-0.180***(0.000)
LnASSET	-0.033***(0.000)	AUD_SW	-0.009**(0.027)	LnASSET	0.044***(0.000)
ROA	0.465***(0.001)	LnASSET	0.365***(0.000)	ΔEPS	0.248***(0.000)
LEV	0.098***(0.008)	BUSSEG	-0.003*(0.064)	LEV	-0.100***(0.000)
MB	0.002(0.497)	GEOSEG	-0.004**(0.025)	Constant	-0.375***(0.001)
BIG4	0.081***(0.001)	ARI	0.083***(0.001)	Sample size	9548
AF	0.001(0.323)	BIG4	0.311***(0.000)	R-squared	0.251
Constant	1.025***(0.000)	AUD_EXP	0.122***(0.000)		
Sample size	9814	CUR	-0.012***(0.000)		
R-squared	0.030	LEV	-0.181***(0.000)		
		ROE	-0.210***(0.000)		
		AUD_OPI	0.036***(0.007)		
		Constant	5.389***(0.000)		
		Sample size	9760		
		R-squared	0.517		

To avoid biased results caused by outliers, all of the variables are Winsorized at the 1 and 99% levels. \*, \*\* and \*\*\* represents significance at the 10, 5 and 1% levels respectively. P-values are shown in parentheses.

Source: The data used are from the CSMAR Database for the 2002-2015 periods.

SSR has the same variation tendency as MBE, which means that firms are more likely to meet or beat the earnings expectations made by analysts after the SSR than before. The regression result is consistent with hypothesis 3, as a firm is more likely to fulfil earnings expectations after the SSR. A significant negative relationship between forecast horizon (HOR) and the probability of meeting or beating earnings expectations (MBE) (the coefficient of HOR is -0.000, significant at the 1% level) is then found. This result is consistent with the Pearson correlation. According to previous studies, the forecast error is positively correlated with the time between the earnings forecast and earnings announcement. In this study, I use MBE as the dependent variable instead of the forecast error (FE); as such, the relationship between HOR and MBE is significant and negative, which infers that firms are likely to fulfil earnings expectations when the timespan is short. The forecast accuracy increases with the small timespan, as firms have the ability to manage the earnings. ANLY is highly positively related with the MBE and its correlation is 0.002. This indicates that the higher the number of analysts monitoring a firm, the more likely the firm is to meet or beat earnings expectations. This follows the synergistic function of HOR, as a large number of analysts will increase the forecast accuracy and thus the ability to meet or beat earnings expectations. A significant negative relationship between the dispersion of the

forecasts (FSTD) and MBE (the coefficient of FSTD is -0.180, significant at the 1% level) is then found. This shows the similar synergistic function in forecast accuracy with the smaller dispersion of forecast errors, as a more accurate forecast increases the likelihood of meeting or beating earnings expectations.

### Robustness test

For each hypothesis mentioned, a robustness test was conducted to verify its reliability. In the history of Chinese economic development, the financial crisis of 2008 had a huge influence on firms' behaviour and survival circumstances. To avoid the effects of the financial crisis, we drop the 2008 data to eliminate the unpredictable risks and rerun the regression model to establish differences from the previous results. The regression results are shown in Table 4, and columns 1, 2 and 3 correspond to hypotheses 1, 2 and 3, respectively.

In column 1, the coefficient of SSR is highly positively related to the dependent variable (ES) at the 1% level, its coefficient is 0.026 and the p-value is 0.040; in column 2, the coefficient of SSR is highly positively related with the dependent variable (LnFEE) at the 1% level, its coefficient is 0.082 and the p-value is 0.000; and in column 3, the coefficient of SSR is highly positively related with the dependent variable (MBE) at the 1% level, its coefficient

**Table 4.** Robustness test on financial crisis in 2008.

Variable	Model 1	Model 2	Model 3
SSR	0.026**(0.040)	0.082***(0.000)	0.053***(0.000)
CEOCHR	0.005(0.718)	-0.013(0.114)	
INDDIR	-0.256**(0.019)		
CROLIS	-0.004(0.875)		
BIG4	0.069***(0.002)	0.256***(0.000)	
BODM		0.002***(0.007)	
AC		0.024***(0.001)	
HOR			-0.001***(0.000)
ANLY			0.002***(0.000)
FSTD			-0.228***(0.000)
ΔEPS			0.256***(0.000)
LnASSET	-0.033***(0.000)	0.375***(0.000)	0.036***(0.000)
LEV	0.109***(0.005)	-0.151***(0.000)	-0.063***(0.001)
AUD_SW		-0.007(0.136)	
BUSSEG		-0.003(0.149)	
GEOSEG		-0.008***(0.000)	
ARI		0.069**(0.015)	
AUD_EXP		0.099***(0.000)	
CUR		-0.013***(0.000)	
AUD_OPI		0.044***(0.002)	
ROA	0.528***(0.000)		
ROE		-0.205***(0.000)	
MB	0.001(0.534)		
AF	0.001(0.268)		
Constant	1.022***(0.000)	5.130***(0.000)	-0.455***(0.000)
Sample size	9021	8973	8722
R-squared	0.024	0.525	0.221

To avoid biased results caused by outliers, all of the variables are winsorized at the 1 and 99% levels. \*, \*\* and \*\*\* represents significance at the 10, 5 and 1% levels respectively. P-values are shown in parentheses.

Source: The data used are from the CSMAR Database for the 2002-2015 periods.

is 0.053 and the p-value is 0.000. All of the results are consistent with the previous regression outcomes, so it can be inferred that the effect of the financial crisis would not change the results or conclusions of the hypotheses. Thus, robustness is confirmed.

### Cross-sectional test

Under the cross-sectional analysis, the sample was split into two groups based on five criteria to test the influence and outcome based on each criterion. We also use Fisher's permutation test and the Chow test to explore whether the difference of coefficients is significant. The five criteria are:

1. SOE (State Owned Enterprises) vs. non-SOE;
2. Firms with a percentage of restricted shares as total shares of more than median vs. firms with the percentage

of restricted shares as total shares of less than the median;

3. Firms with SSR completed before the median completion date vs. firms with SSR completed after the median completion date;

4. Firms with the percentage of management shares as total shares of above the median vs. firms with the percentage of management shares as total shares of below the median: and

5. Big-4 audit firms vs. Non-Big-4 audit firms.

Table 5 reports the cross-sectional analysis of hypotheses 1, 2 and 3 in panels A, B and C, respectively. The difference in coefficients of SSR and its p-values between the two groups are reported as ΔCoef/P-var.

Before the SSR, both SOE and non-SOE firms face the issues of tradable and non-tradable shares. In panel A, within the group of SOE and non-SOE firms, the coefficient of SSR in non-SOE firms is highly positively

**Table 5.** Cross-sectional analysis - Regression result under five groups.

Panel A hypothesis 1										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variable	Non-SOE firm	SOE firm	Percentage of restricted shares to total shares less than median	Percentage of restricted shares to total shares more than median	Before the median completion date	After the median completion date	Below median of management shares portion	Above median of management shares portion	Non-Big4	Big4
SSR	0.038**(0.039)	0.011(0.537)	-0.010(0.791)	-0.001(0.966)	-0.027(0.380)	0.036(0.252)	0.022(0.249)	0.035**(0.035)	0.033***(0.009)	-0.024(0.591)
ΔCoef/P-var	0.027*	0.060	-0.009	0.460	-0.063*	0.070	-0.013*	0.090	0.057	0.240
CEOCHR	0.002(0.872)	0.015 (0.531)	-0.006(0.820)	0.027(0.342)	-0.026(0.319)	0.050*(0.086)	0.023(0.331)	-0.010(0.588)	0.005(0.719)	-0.027(0.685)
INDDIR	-0.118(0.459)	-0.330** (0.019)	-0.573*** (0.004)	-0.089(0.584)	-0.113(0.494)	-0.427** (0.030)	-0.197(0.180)	-0.270*(0.066)	-0.244** (0.026)	-0.068(0.836)
CROLIS	-0.045(0.346)	-0.019 (0.471)	-0.062(0.219)	-0.005(0.860)	-0.032(0.327)	0.014(0.711)	-0.024(0.427)	-0.003(0.942)	-0.044(0.115)	0.042(0.312)
LnASSET	-0.041*** (0.001)	-0.033*** (0.000)	-0.035** (0.014)	-0.026** (0.023)	-0.031*** (0.002)	-0.0500*** (0.000)	-0.021** (0.024)	-0.050*** (0.000)	-0.034*** (0.000)	-0.041* (0.051)
ROA	0.404*(0.057)	0.527*** (0.003)	1.076*** (0.000)	0.139(0.490)	0.442** (0.034)	0.654*** (0.005)	0.682*** (0.000)	0.240(0.225)	0.469*** (0.001)	0.383(0.466)
LEV	0.074 (0.185)	0.119** (0.018)	0.092 (0.186)	0.078 (0.208)	0.144** (0.018)	0.036 (0.602)	0.090* (0.086)	0.110** (0.041)	0.095** (0.013)	0.126(0.410)
MB	-0.002(0.496)	0.004(0.132)	-0.000(0.903)	0.008** (0.016)	0.0032(0.386)	0.003(0.365)	0.004(0.193)	-0.001(0.733)	0.002(0.495)	-0.002(0.844)
BIG4	0.049(0.273)	0.096*** (0.001)	0.009(0.870)	0.077** (0.011)	0.054* (0.082)	0.094** (0.049)	0.091*** (0.003)	0.058(0.109)	-	-
AF	0.001(0.452)	0.001(0.384)	-0.001(0.409)	0.002* (0.057)	0.001(0.538)	0.002(0.106)	-0.000 (0.880)	0.002* (0.071)	0.001(0.206)	-0.000(0.858)
Constant	1.157*** (0.000)	1.047*** (0.000)	1.234*** (0.000)	0.819*** (0.001)	0.969*** (0.000)	1.449*** (0.000)	0.739*** (0.000)	1.404*** (0.000)	1.037*** (0.000)	1.255*** (0.006)
Sample size	6410	3404	4901	4913	4898	4916	4906	4908	9234	580
R-squared	0.024	0.046	0.052	0.040	0.026	0.073	0.016	0.023	0.023	0.032
Panel B hypothesis 2										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Variable	Non-SOE firm	SOE firm	Percentage of restricted shares as total shares less than median	Percentage of restricted shares as total shares more than median	Before median of SSR completion date	After median of SSR completion date	Below median of management shares portion	Above median of management shares portion	Non-Big4	Big4
SSR	0.085*** (0.000)	0.087*** (0.000)	0.046*** (0.000)	0.127*** (0.000)	0.091*** (0.000)	0.092*** (0.000)	0.080*** (0.000)	0.083*** (0.000)	0.065*** (0.000)	0.360*** (0.000)
ΔCoef/P-var	-0.002	0.440	-0.081***	0.000	-0.001	0.390	-0.003	0.380	-0.295***	0.000
BODM	0.003(0.150)	0.002(0.217)	0.003** (0.030)	0.001(0.417)	0.001(0.486)	0.002(0.130)	0.000(0.800)	0.002(0.106)	0.002** (0.032)	0.006(0.252)
CEOCHR	0.036** (0.049)	-0.043*** (0.001)	-0.010(0.444)	-0.017(0.332)	0.016(0.295)	-0.032** (0.024)	-0.016(0.246)	-0.017* (0.090)	-0.009(0.243)	0.049(0.324)
AC	0.026(0.118)	0.030*** (0.003)	0.022* (0.066)	0.036*** (0.005)	0.023* (0.069)	0.023* (0.058)	0.024** (0.032)	0.004(0.636)	0.018*** (0.010)	0.053(0.176)
AUD_SW	-0.010(0.373)	-0.007(0.311)	-0.016** (0.037)	0.004(0.609)	0.005(0.552)	-0.015* (0.057)	-0.016** (0.018)	-0.004(0.479)	-0.006(0.141)	0.008(0.696)
LnASSET	0.379*** (0.000)	0.360*** (0.000)	0.368*** (0.000)	0.361*** (0.000)	0.422*** (0.000)	0.317*** (0.000)	0.340*** (0.000)	0.420*** (0.000)	0.376*** (0.000)	0.370*** (0.000)
BUSSEG	-0.003(0.380)	-0.004(0.121)	-0.006** (0.050)	-0.000(0.892)	-0.001(0.660)	-0.001(0.744)	-0.005* (0.078)	0.003(0.181)	-0.001(0.566)	-0.006(0.336)
GEOSEG	-0.012*** (0.007)	-0.004(0.176)	-0.007** (0.031)	-0.004(0.285)	-0.004(0.282)	-0.003(0.480)	-0.004(0.254)	-0.009*** (0.001)	-0.009*** (0.000)	0.020(0.154)
ARI	0.010(0.858)	0.088** (0.023)	0.067(0.106)	0.020(0.690)	0.059(0.268)	0.020(0.625)	0.043(0.294)	0.055(0.166)	0.072*** (0.009)	-0.070(0.725)

Table 5. Contd.

BIG4	0.453***(0.000)	0.227***(0.000)	0.215***(0.000)	0.296***(0.000)	0.344***(0.000)	0.206***(0.000)	0.299***(0.000)	0.262***(0.000)	-	-
AUD_EXP	0.105***(0.000)	0.102***(0.000)	0.106***(0.000)	0.098***(0.000)	0.111***(0.000)	0.091***(0.000)	0.105***(0.000)	0.075***(0.000)	0.105***(0.000)	-
CUR	-0.004(0.512)	-0.019***(0.000)	-0.015***(0.002)	-0.010*(0.053)	-0.012**(0.019)	-0.015***(0.002)	-0.011***(0.003)	-0.010***(0.000)	-0.013***(0.000)	-0.012(0.543)
LEV	-0.161***(0.004)	-0.171***(0.000)	-0.213***(0.000)	-0.097***(0.032)	-0.197***(0.000)	-0.156***(0.000)	-0.144***(0.000)	-0.139***(0.000)	-0.176***(0.000)	0.011(0.945)
ROE	-0.183***(0.000)	-0.239***(0.000)	-0.248***(0.000)	-0.201***(0.000)	-0.235***(0.000)	-0.187***(0.000)	-0.207***(0.000)	-0.143***(0.000)	-0.216***(0.000)	-0.174(0.257)
AUD_OPI	0.055***(0.031)	0.026(0.203)	-0.012(0.574)	0.081***(0.000)	0.072***(0.006)	0.000(0.982)	-0.001(0.969)	0.077***(0.000)	0.033***(0.017)	0.177(0.340)
Constant	5.025***(0.000)	5.348***(0.000)	5.279***(0.000)	5.251***(0.000)	3.971***(0.000)	6.320***(0.000)	5.824***(0.000)	4.200***(0.000)	5.119***(0.000)	5.278***(0.000)
Sample size	6534	3226	4880	4880	4872	4988	4868	4892	9165	595
R-squared	0.552	0.512	0.563	0.484	0.566	0.492	0.464	0.519	0.513	0.507
<b>Panel C hypothesis 3</b>										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<b>Variable</b>	<b>Non-SOE firm</b>	<b>SOE firm</b>	<b>Percentage of restricted shares as total shares less than median</b>	<b>Percentage of restricted shares as total shares more than median</b>	<b>Before median of SSR completion date</b>	<b>After median of SSR completion date</b>	<b>Below median of management shares portion</b>	<b>Above median of management shares portion</b>	<b>Non-Big4</b>	<b>Big4</b>
SSR	0.089***(0.000)	-0.006(0.596)	-0.097***(0.001)	-0.122***(0.000)	0.098***(0.000)	-0.171***(0.000)	0.009(0.000)	0.069***(0.000)	0.057***(0.000)	-0.026(0.370)
ΔCoef/P-var	0.095***	0.000	0.025	0.262	0.269**	0.022	-0.060***	0.000	0.083**	0.030
HOR	-0.001***(0.000)	-0.001***(0.000)	-0.001***(0.000)	-0.001***(0.000)	-0.001***(0.000)	-0.001***(0.000)	-0.001***(0.000)	-0.001***(0.000)	-0.001***(0.000)	-0.001***(0.002)
ANLY	0.002***(0.001)	0.003***(0.000)	0.002*(0.066)	0.003***(0.000)	0.002***(0.002)	0.004***(0.000)	0.003***(0.000)	0.002***(0.000)	0.001***(0.000)	0.003***(0.009)
FSTD	-0.165***(0.000)	-0.244***(0.000)	-0.114***(0.000)	-0.246***(0.000)	-0.200***(0.000)	-0.188***(0.000)	-0.251***(0.000)	-0.193***(0.000)	-0.207***(0.000)	-0.307***(0.000)
LnASSET	0.014***(0.004)	0.038***(0.000)	0.003(0.674)	0.041***(0.000)	0.031***(0.000)	0.026***(0.002)	0.036***(0.000)	0.030***(0.000)	0.028***(0.000)	0.010(0.466)
ΔEPS	0.186***(0.000)	0.334***(0.000)	0.293***(0.000)	0.364***(0.000)	0.342***(0.000)	0.327***(0.000)	0.323***(0.000)	0.218***(0.000)	0.252***(0.000)	0.454***(0.000)
LEV	-0.038*(0.076)	-0.099***(0.003)	0.030(0.402)	-0.217***(0.000)	-0.141***(0.000)	-0.074*(0.097)	-0.090***(0.007)	-0.047***(0.033)	-0.043***(0.017)	0.040(0.691)
Constant	0.023(0.836)	-0.506***(0.000)	0.591***(0.001)	-0.484***(0.006)	-0.168(0.274)	0.099(0.613)	-0.545***(0.000)	-0.297***(0.004)	-0.304***(0.001)	0.239(0.483)
Sample size	6159	3389	4764	4784	4770	4778	4774	4774	8975	573
R-squared	0.185	0.229	0.219	0.265	0.247	0.249	0.231	0.218	0.207	0.352

To avoid biased results caused by outliers, all of the variables are winsorized at the 1 and 99% levels. \*, \*\* and \*\*\* represents significance at the 10, 5 and 1% levels respectively. P-values are shown in parentheses. Source: The data used are from the CSMAR Database for the 2002-2015 periods.

significantly correlated with the dependent variable at the 5% level, but the coefficient of SSR in SOE firms is not significantly correlated.

Considering the p-value of coefficient difference in criterion 1 (0.060), it appears that the coefficient difference between the two subgroups is significant at the 10% level. This demonstrates the

more prominent effect of non-SOE firms. The higher motivation to earn profits for non-SOE firms will raise the likelihood of signalling information to the public. In the SSR completion date group, the coefficients are not significant with the dependent variable. However, the p-value of coefficient difference in criterion 3 (0.070) is significant at the

10% level. Statistically, this shows the significance of SSR coefficient differences. Within the management shares group, the coefficient of SSR in the above median portion is highly positively significantly correlated with the dependent variable at the 5% level, but in the low median portion it is not significantly correlated. The p-value of

coefficient difference in criterion 4 (0.090) suggests that the coefficient difference between the two subgroups is significant at the 10% level. This shows the more prominent effect of the above median of management shares portion. As the agency costs will decrease when the proportion of management shares is larger, the empirical results indicate that the lower agency costs will increase the tendency to signal information to improve the firms' performances.

In panel B, in the group of the percentage of restricted shares to total shares, both coefficients are highly positively related to the dependent variable at the 1% level, which confirms that both levels of restricted shares affect the audit fee. This is consistent with the previous regression result. The p-value of coefficient difference in criterion 2 (0.000) suggests that the coefficient difference of SSR is statistically significant at the 1% level. The coefficient of over median restricted shares (0.127) is larger than that of under median restricted shares (0.046), which shows the more prominent effect of the larger restricted shares portion. In general, the larger restricted shares portion suggests lower transparency inside the firms. Interested parties and report users need higher quality audit reports under this circumstance to disclose the firms' financial information to them, which will improve their confidence and increase the firm value. Within the group of Big-4 and non-Big-4 audit firms, both coefficients of SSR are highly positively significantly correlated with the dependent variable at the 1% level. The p-value of coefficient difference in criterion 5 (0.000) suggests that the coefficient difference between the two subgroups is significant at the 5% level. This shows the more prominent effect of Big-4 firms. Firms are concerned more about accounting information users and focus on increasing value in the more transparent market after the SSR by hiring Big-4 audit firms. Thus, the high-quality services provided by Big-4 audit firms will cost more.

In panel C, within the group of SOE and non-SOE firms, the coefficient of SSR in non-SOE firms is highly positively significantly correlated with the dependent variable at the 1% level, but the coefficient of SSR in SOE firms is not significantly correlated. The p-value of coefficient difference in criterion 1 (0.000) suggests that the coefficient difference of SSR is statistically significant at the 1% level. This shows the more prominent effect of non-SOE firms. Non-SOE firms have a higher motivation to make profits, so they need to achieve the analysts' forecasts to prove the value of the firms and attract investors. Within the group of SSR completion date, the coefficient of below median completion date is highly positively correlated with the dependent variable, but the coefficient of over median completion date is highly negatively correlated with the dependent variable at the 1% level, which shows that for the over median group, firms do not tend to meet or beat the forecast earnings. This is not consistent with the previous regression result. The negative reactions under the SSR mainly cause this, inferring that the reform will negate the

firms' existing earning system. Within the group of management shares portion, the coefficient of SSR in the above median of management shares portion is highly positively significantly correlated with the dependent variable at the 1% level, but the coefficient of SSR in the below median of management shares portion is not significantly correlated. The p-value of coefficient difference in criterion 4 (0.000) suggests that the coefficient difference of SSR is significant at the 1% level. This demonstrates the more prominent effect of the above median of management shares portion. The lower agency costs will increase the motivation to earn and enhance the value of the firms, and thus lead to a higher tendency to meet or beat forecast earnings. Furthermore, within the group of Big-4 and non-Big-4 audit firms, the coefficient of SSR in non-Big-4 audit firms is highly positively significantly correlated with the dependent variable at the 1% level, but the coefficient of SSR in Big-4 audit firms is not significantly correlated. The p-value of coefficient difference in criterion 5 (0.030) suggests that the coefficient difference between the two subgroups is significant at the 5% level. This shows the more prominent effect of non-Big-4 firms. Considering the influences of auditing quality, it can be supposed from the previous conclusion that high quality auditing decreases the motivation and opportunity to meet or beat forecast earnings. High quality auditing firms such as the Big-4 firms will suffer more losses in terms of both finances and reputation if auditing fails in this process. In general, the firms hiring non-Big-4 audit firms will reduce competitiveness and the trust of the public, so they have a higher tendency to implement the MBE strategy to improve and earn profits.

Throughout Table 5, the p-values of coefficient differences in the subsamples of percentage of restricted shares to total shares in panels A and C, the subsamples of SOE and non-SOE firms, the subsamples of SSR completion dated, the subsamples of management shares portion in panel B and the subsamples of Big-4 and non-Big-4 audit firms in panel A are not significant, which infers that these indexes do not have significance in the statistics.

## Conclusions

To align its practice with international standards and to enhance global competitiveness, China has increasingly opened up its stock market. Since the SSR, the stock market has been developed and geared towards a Western-oriented model combined with the traditional economic form. The focus was on the three main factors of signalling, audit fees and meeting and beating earnings expectations by testing with three models. The results of the empirical tests are as follows.

First, firms display a higher tendency to signal earnings through discretionary accruals after the SSR than before. Other factors also influence signalling behaviour. For



example, the overseeing by independent directors can constrain the signalling, as can the surveillance of Big-4 audit firms. Second, the audit fees charged to the firms increase after the SSR. Unlike the suppositions made in agency theory, the legal effect and the high requirements of audit quality combined with the reputation concern and risk avoidance of audit firms plays a dominant role in the Chinese market, creating an opposite influence on that suggested by agency theory. Also, the increased managerial incentives to maximise stock prices through the higher accounting profits may create outside shareholders' demand for more objectively verified accounting reports, thereby increasing audit quality and audit fees. Additionally, the setting of audit committee, board meeting times, the surveillance of Big-4 audit firms and other factors affect the audit fees. Third, firms are more likely to meet or beat earnings expectations after the SSR than before. In addition, factors such as forecast horizon, total number of analysts followed, and dispersion of forecasts can also influence meeting the earnings expectation from the perspective of expectation accuracy.

### Research implications

The findings can serve as a reminder for both firms and shareholders, and may reveal firms' behaviour, investment opportunities and operations since the implementation of the SSR in 2005. The study provides insights for financial report users such as researchers, investors and analysts, enabling them to better understand why they should adopt accrual accounting to improve the informative value of reported earnings, by combining both internal governance methods and external audit surveillance. In addition, the necessity of high-quality auditing under a competitive market is inferred, and evidence is provided on meeting earnings expectations, giving broad guidance to investors in the open market.

### Limitations and future research

The study focuses on the revolution in the Chinese market in 2005 and 2006. However, the empirical research is limited by the unbalanced panel data from the database. Furthermore, in the research section, we do not select as many control variables as we could to verify the hypothesis, due to the cost and time limits. Thus, although other institutional factors inevitably affect the Chinese stock market, the utmost effort was made to consider related factors. In future research, we hope to examine related factors and provide a more comprehensive understanding of this topic.

### CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

### REFERENCES

- Aharony J, Lee CWJ, Wong TJ (2000). Financial packaging of IPO firms in China. *Journal of Accounting Research* 38(1):103-126.
- Ball R, Robin A, Wu JS (2003). Incentives versus standards: properties of accounting income in four East Asian countries. *Journal of Accounting and Economics* 36(1-3):235-270.
- Balsam S (1998). Discretionary accounting choices and CEO compensation. *Contemporary Accounting Research* 15(3):229-252.
- Barth ME, Elliott JA, Finn MW (1999). Market rewards associated with patterns of increasing earnings. *Journal of Accounting Research* 37(2):387-413.
- Bartov E, Givoly D, Hayn C (2002). The rewards to meeting or beating earnings expectations. *Journal of Accounting and Economics* 33(2):173-204.
- Brown LD (1997). Analyst forecasting errors: additional evidence. *Financial Analysts Journal* 53(6):81-88.
- Brown LD (1998). Managerial behaviour and the bias in analysts' earnings forecasts. Available at SSRN 113508.
- Burgstahler D, Eames M (2006). Management of earnings and analysts' forecasts to achieve zero and small positive earnings surprises. *Journal of Business Finance and Accounting* 33(5-6):633-652.
- Cabán-García MT (2009). The impact of securities regulation on the earnings properties of European cross-listed firms. *The International Journal of Accounting* 44(3):279-304.
- Cahan SF, Godfrey JM, Hamilton J, Jeter DC (2008). Auditor specialization, auditor dominance, and audit fees: the role of investment opportunities. *The Accounting Review* 83(6):1393-1423.
- Chang JC, Sun HL (2009). Crossed-listed foreign firms' earnings informativeness, earnings management and disclosures of corporate governance information under SOX. *The International Journal of Accounting* 44(1):1-32.
- Chen KCV, Yuan H (2004). Earnings management and capital resource allocation: evidence from China's accounting-based regulation of rights issues. *The Accounting Review* 79(3):645-665.
- Choi JH, Wong TJ (2007). Auditors' governance functions and legal environments: an international investigation. *Contemporary Accounting Research* 24(1):13-46.
- Chung R, Firth M, Kim JB (2005). Earnings management, surplus free cash flow, and external monitoring. *Journal of Business Research* 58(6):766-776.
- CSMAR Database (2002-2015). <https://cn.gtadata.com/>
- Danielsen BR, Van Ness RA, Warr RS (2007). Auditor fees, market microstructure, and firm transparency. *Journal of Business Finance and Accounting* 34(1-2):202-221.
- DeAngelo H, DeAngelo L, Skinner DJ (1994). Accounting choice in troubled companies. *Journal of Accounting and Economics* 17(1-2):113-143.
- DeAngelo H, DeAngelo L, Skinner DJ (1996). Reversal of fortune dividend signalling and the disappearance of sustained earnings growth. *Journal of Financial Economics* 40(3):341-371.
- DeAngelo LE (1981). Auditor size and audit quality. *Journal of Accounting and Economics* 3(3):183-199.
- Dechow PM, Dichev ID (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77(s-1):35-59.
- Dechow PM, Sloan RG, Sweeney AP (1995). Detecting earnings management. *The Accounting Review* 70 (2):193-225.
- DeFond ML, Wong TJ, Li S (1999). The impact of improved auditor independence on audit market concentration in China. *Journal of Accounting and Economics* 28(3):269-305.
- Feng YC, Liang LX (2010). Legal risks, audit fees and non-standard audit opinions of listed companies: empirical evidence from Chinese listed companies. *Auditing Research* 153(3):75-81.
- Firth M, Fung PMY, Rui OM (2007). How ownership and corporate governance influence chief executive pay in China's listed firms. *Journal of Business Research* 60(7):776-785.
- Francis JR, Wang D (2008). The joint effect of investor protection and Big 4 audits on earnings quality around the world. *Contemporary Accounting Research* 25(1):157-191.
- Habbash M, Xiao L, Salama A, Dixon R (2014). Are independent directors and supervisory directors effective in constraining earnings

- management?. *Journal of Finance, Accounting and Management* 5(1):125-160.
- Healy PM, Wahlen JM (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons* 13(4):365-383.
- Ireland JC, Lennox CS (2002). The large audit firm fee premium: a case of selectivity bias? *Journal of Accounting, Auditing and Finance* 17(1):73-91.
- Kao JL, Wu D, Yang Z (2009). Regulations, earnings management, and post-IPO performance: the Chinese evidence. *Journal of Banking and Finance* 33(1):63-76.
- Kasznik R (1999). On the association between voluntary disclosure and earnings management. *Journal of Accounting Research* 37(1):57-81.
- Kasznik R, Lev B (1995). To warn or not to warn: management disclosures in the face of an earnings surprise. *The Accounting Review* 70(1):113-134.
- Kasznik R, McNichols MF (2002). Does meeting earnings expectations matter? evidence from analyst forecast revisions and share prices. *Journal of Accounting Research* 40(3):727-759.
- Kothari SP, Leone AJ, Wasley CE (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39(1):163-197.
- Krishnan GV (2003). Audit quality and the pricing of discretionary accruals. *Auditing: A Journal of Practice and Theory* 22(1):109-126.
- Lennox C (2005). Audit quality and executive officers' affiliations with CPA firms. *Journal of Accounting and Economics* 39(2):201-231.
- Leuz C, Nanda D, Wysocki PD (2003). Earnings management and investor protection: an international comparison. *Journal of Financial Economics* 69(3):505-527.
- Liu Q, Lu JZ (2003). Earnings management to tunnel: evidence from China's listed companies. Available at SSRN 349880.
- Lopez TJ, Rees LL (2001). The effect of meeting analyst forecasts and systematic positive forecast errors on the information content of unexpected earnings. Available at SSRN 181929.
- Ni XY, Dai DM, Zhang DX (2017). Equity incentives and audit fees: empirical evidence from China. *Audit Research* 193(1):69-77.
- O'brien PC (1988). Analysts' forecasts as earnings expectations. *Journal of Accounting and Economics* 10(1):53-83.
- Palmrose ZV (1988). An analysis of auditor litigation and audit service quality. *The Accounting Review* 63(1):55-73.
- Payne JL, Robb SWG (2000). Earnings management: the effect of ex ante earnings expectations. *Journal of Accounting, Auditing and Finance* 15(4):371-392.
- Shuto A (2007). Executive compensation and earnings management: Empirical evidence from Japan. *Journal of International Accounting, Auditing and Taxation* 16(1):1-26.
- Simunic DA (1980). The pricing of audit services: theory and evidence. *Journal of Accounting Research* 18(1):161-190.
- Simunic DA, Stein MT (1996). The impact of litigation risk on audit pricing: a review of the economics and the evidence. *Auditing: A Journal of Practice and Theory* 15(S1):119-134.
- Soffer LC, Thiagarajan SR, Walther BR (2000). Earnings preannouncement strategies. *Review of Accounting Studies* 5(1):5-26.
- Subramanyam KR (1996). The pricing of discretionary accruals. *Journal of Accounting and Economics* 22(1-3):249-281.
- Venkataraman R, Weber JP, Willenborg M (2008). Litigation risk, audit quality, and audit fees: evidence from initial public offerings. *The Accounting Review* 83(5):1315-1345.
- Wang K, Sewon O, Iqbal Z (2009). Audit pricing and auditor industry specialization in an emerging market: evidence from China. *Journal of International Accounting, Auditing and Taxation* 18(1):60-72.
- Wang K, Iqbal Z, Smith LM (2011). Auditor market share and industry specialization of non-big 4 firms. *Journal of Accounting and Finance* 11(2):107-127.
- Willenborg M (1999). Empirical analysis of the economic demand for auditing in the initial public offerings market. *Journal of Accounting Research* 37(1):225-238.

*Full Length Research Paper*

# **Determinants of business tax compliance: A case study of Togo**

**Koku Eli Soglo<sup>1\*</sup> and Isaac Amedanou<sup>2</sup>**

<sup>1</sup>Université Clermont Auvergne, CNRS, CERDI, IRD, F-63000 Clermont-Ferrand, France & Université de Lomé, FASEG, Togo.

<sup>2</sup>Research Associate, LASTA & University of Rouen Normandie, Department of Economics, Rouen 76000, France.

Received 22 February, 2023; Accepted 18 April, 2023

**The results of a survey conducted by the Office of Togolese Revenue (OTR) in 2019, which covered 413 formal firms, show that several factors are key determinants of businesses' willingness to pay taxes. These include appreciation of tax fraud, amendment of tax laws, tax knowledge, tax beneficiaries, bribes, severity of penalties, legitimacy of customs duties, appreciation of tax amount, tax burden, legitimacy of Value Added Tax (VAT) and geographical location (Maritime, Plateaux, Centrale, Kara and Savane) of the firms. Using a probit model, the results show that all these factors are key determinants of voluntary tax compliance, except for the tax laws amendment, tax amount appreciation and the tax burden. When isolating the Maritime region, the result remains unchanged except for the fact that the appreciation of tax fraud has no significant impact on voluntary compliance in that region. Finally, the determinants vary once businesses are differentiated by size (Small, Medium and Large) nationally or regionally.**

**Key words :** Tax evasion, tax compliance, Togo, tax consent, firms.

## **INTRODUCTION**

Paying taxes is essential in order to participate in the budget necessary to make a country function. Through taxes, the government is able to educate, care for and defend the population, build roads, support businesses, and help the poor. Although it is unanimously accepted that to run affairs of the State, it is obligatory for the people and businesses to pay taxes, unfortunately this is not enough of a convincing argument for all agents. As a result, some taxpayers' perceptions and attitudes can

reflect a lack of consent to pay taxes (tax avoidance) or illustrate fraudulent practices (tax evasion); this is the so called tax non-compliance.

Tax compliance is defined as the willingness of individuals and taxable entities to act in accordance with the tax laws and administration in letter and spirit without the requirement to use coercive actions (James and Alley, 2002). It is the commitment or the attitude of taxpayers (citizens or businesses) in respecting their

\*Corresponding author. E-mail: [elisoglo0@gmail.com](mailto:elisoglo0@gmail.com).

This work was supported by the Agence Nationale de la Recherche of the French government through the program "Investissements d'avenir " ANR-10-LABX-14-01".

Author(s) agree that this article remain permanently open access under the terms of the [Creative Commons Attribution License 4.0 International License](https://creativecommons.org/licenses/by/4.0/)

declarative and payment obligations by filing their declarations on time and paying their due taxes. However, in the event of non-compliance, there are negative consequences on tax collection, resulting in a significant loss of tax resources that are intended to be used to fund the country's public spending.

In Togo, the mobilisation of tax revenue is at the forefront of the agenda of the State in pursuit of sustainable development. To achieve this, they have embarked on wide-ranging tax reforms with a cross-departmental entity called the Office of Togolese Revenue (OTR) by combining customs and tax administration. The reforms are intended to increase tax revenues significantly, to give the public authorities the necessary funds to operate and the capacity to fully assume their regalian functions. However, we observe that Togo is characterised by a fiscal paradox of relatively high tax rates but with very low tax returns. Hence, the challenges remain significant, which require considerable efforts both from tax authorities and citizens.

In this respect, tax authorities have been continuously introducing measures to support the national economy and to encourage investment. For example, in 2021, entrepreneurs and businesses benefited from tax relief measures. Moreover, the tax authorities have embarked on a process of bringing the tax administration closer to the taxpayers through holding awareness campaigns ('tax citizens days'). This approach consists of making taxpayers understand the necessity and importance of respecting their tax obligations by complying with their tax reporting and payment obligations. But, by all this initiatives, there are still some serious questions that need to be asked whether awareness campaigns raise taxes or tax relief initiatives that are sufficient enough to prevent non-compliance with tax obligations ?

In our view, to better tackle tax avoidance, it is necessary to identify the underlying factors mentioned above. So, this study aims to identify the important determinants that influence Togolese corporate taxpayers to meet their tax obligations. The originality of this paper stems from the use of reliable data obtained directly from the Togolese Tax Office. In addition, the survey includes 413 companies of different sizes (small, medium and large) spread throughout the country, and covering different geographical locations including the five administrative regions (*Maritime, Plateaux, Centrale, Kara and savane*) (Appendix Table 1).

In Togo, tax revenues have increased significantly over the last ten years (Appendix Figure 7), due to increases in different types of taxes, in particular VAT and customs duties, as shown in Figure 1. It shows that VAT, customs duties, corporate income tax (CIT) and personal income tax (PIT) represent on average 40%, 20%, 12% and 7% of total tax revenues respectively.

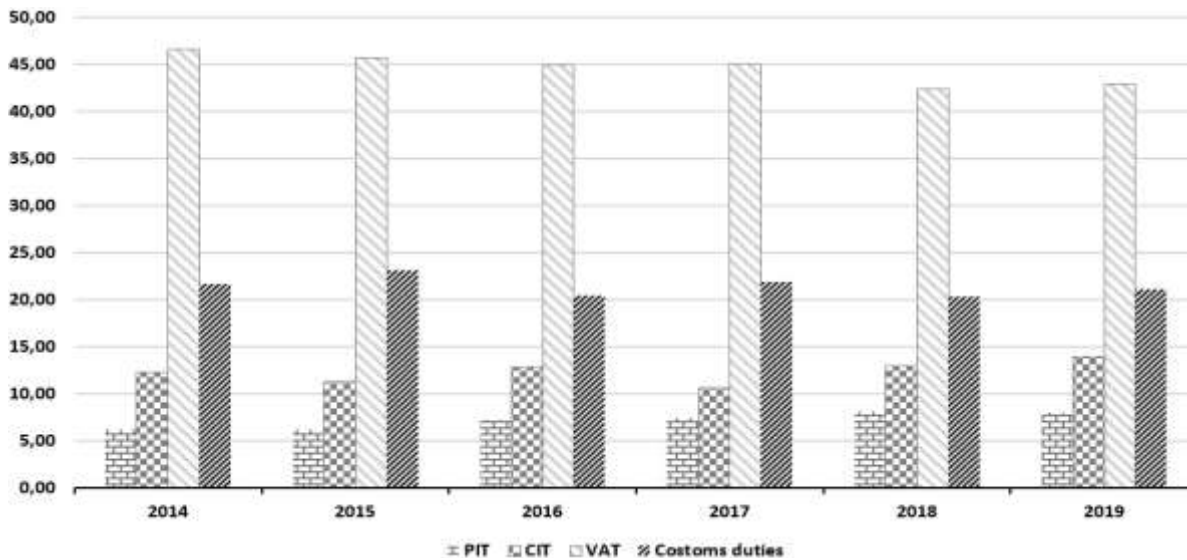
Our results are consistent with those in the literature and can be summarized as follows: Geographical location, tax evasion assessment, bribes, tax knowledge,

tax beneficiaries, the severity of penalties, and the cost of legitimate customs duties have a significant positive relationship with voluntary tax compliance. On the other hand, factors such as the size of the company and the legitimacy of VAT have a disincentive effect on voluntary tax compliance. Furthermore, no significant relationship was found between factors such as the tax burden, the amendment of the tax laws, and the tax paid. Our findings suggest that the determinants of voluntary tax compliance vary depending on the size of the business and the region. Factors such as bribes, severity of penalties, legitimacy of customs duties, tax knowledge, and tax beneficiaries encourage businesses to comply voluntarily with paying taxes. On the other hand, the size of business and the legitimacy of VAT lead to tax evasion. Furthermore, our results indicate that the determinants of voluntary tax compliance differ between the Maritime region and the rest of the sample. The paper is organized as follows: Section 2 relates our work to the existing literature. Section 3 presents a brief description of data, the conceptual framework, and empirical methodology. Section 4 presents and discusses the various findings from baseline models and robustness checks. Finally, Section 5 concludes, presents policy implications and possible directions for future research.

## RELATED LITERATURE

A part of the existing literature on tax revenue collection has often been focused on the different reasons why some taxpayers evade paying taxes. At the outset, some studies divide tax compliance into different approaches in order to better understand the factors that affect the behaviour tax compliance. For instance McBarnet (2003) distinguish four types of compliance. The first type is called *committed compliance* which assumes that taxpayers will obey tax laws without any complaint. The second type, the so-called *capitulative compliance* which occurs at the stage of tax reporting where taxpayers report their taxes in inappropriate ways, for example by cutting expenses or making cash savings in the operation of their business. The third one, *non compliance* where taxpayers rely on tax experts to help them in interpreting the tax laws, allowing them to manipulate their taxes. Finally, *creative compliance* refers to the case where taxpayers will find weaknesses in tax laws by redefining them for their profits and recalculating their costs when they file their taxes. Likewise, we also distinguish two other types of compliance, namely *administration* and *accuracy* of tax returns, which are highlighted in Chow (2004), where taxpayers are free when filing their tax returns, and that determines their ability to file their tax returns well in time each year and to pay the tax accurately.

Several studies have provided a theoretical framework to explain the factors that influence individual compliance



**Figure 1.** Composition of Tax Revenues in Togo (2014-2019).  
Source: Authors based on OTR data.

(Fischer et al., 1992; Cuccia, 1994; Devos, 2014). These theoretical models explain different aspects. Firstly, there is a human aspect which considers that individuals interact with each others in accordance with the social norms prevailing in a society which do not permit them to maximize their utility. Nevertheless, factors related to human behaviour in terms of beliefs, attitudes, and norms are concern of the concept of the behaviour compliance. Other aspects include sociological factors like age and gender, education, level of income, sources of income and employment. Similarly, aspects related to tax complexity, sanctions, the fear of being detected, tax burden, and the moral level of taxpayers are also considered to measure the possibilities of non-compliance.

Moreover, some of the literature also review the tax compliance focusing on empirical evidence by exploring different empirical findings based on geographical areas under study or the estimation methods/techniques used. For instance, authors such as Torgler (2011), Torgler and Schneider (2007), Heinemann (2011), Torgler et al. (2008), Hug and Spörri (2011), Marien and Hooghe (2011) and Frey and Torgler (2007), have established a positive link between individual taxpayers' tax compliance and number of factors like trust in government, legal system, trust in democracy, the military and police, religion and institutional quality. On the contrary, moral conservatism and ethnic fragmentations are factors that reduce the incentives for tax compliance of individual taxpayers according to Marien and Hooghe (2011) and Lago-Peñas and Lago-Peñas (2010). Furthermore, Bobek et al. (2013) have shown that social norms also have an important influence on the behaviour of tax compliance both directly and indirectly. More precisely,

their analysis show that the ethical beliefs of individuals (personal norms) and the expectations of relatives (subjective norms) directly influence tax compliance decisions, while the general expectations of society (injunctive norms) and the actual behaviour of other individuals (descriptive norms) exert an indirect influence.

International literature that focuses more on corporate tax compliance rather than individual agents, also includes a multitude of factors that influence tax compliance, although results vary between researchers. Certain researchers have classified taxpayers' compliance behaviour according to firm characteristics such as, size, nationality of manager, sector and type of firms. For example, Hanlon et al. (2005) observe that small-sized firms are described as more noncompliant than that of medium but the medium-sized firms are more tax compliant than the large firms. Likewise, domestic firms are more compliant than foreign-owned firms. And, state-owned firms are supposed to be more compliant than private firms, while non-multinational firms tend to be more compliant than multinational ones. In contrast, Alm and McClellan (2012) argue that domestic firms evade taxes more and declare less than foreign and state-owned firms. In parallel, other studies have examined the impact of taxpayer knowledge and sanctions on corporate tax compliance such as Oladipupo and Obazee (2016); according to them tax knowledge has a positive impact on tax compliance, but the tax penalty has no significant effect on tax compliance. Whereas Virmani (1989) predicts that avoidance may increase with higher penalties, assuming that firms respond to harsher penalties by lowering production to reduce the probability of detection, which may offset the higher cost of avoidance due to the

higher penalty rates, and thus lead to greater avoidance.

Our study also overlaps with the part of the literature that addresses taxpayers' compliance behaviour in relation to other factors such as age, equity and industry, as well as their attitudes toward tax rate structure, tax complexity, tax enforcement, equity of the legislation and perception of corruption. Factors such as the legitimacy of the state, the efficiency of the tax administration, the legitimacy of the tax authorities, the feeling of belonging to the nation or national pride and the perception of the risk of sanctions and their severity, have also been prominent in tax compliance literature (Abd Obaid et al., 2020; Radulovic, 2019; Mickiewicz et al., 2019; Everest-Phillips and Sandall, 2008). For example, disapproval of tax administration, the risk of being caught and the overall tolerance of tax evasion are negatively associated with corporate tax compliance (Radulovic, 2019). Among those interested in the tax compliance of Small and Medium Enterprises (SMEs), Yucedogru (2013) finds that the perception of the administration and religious beliefs have a significant impact, while patriotism and tax complexity have no real influence on their tax compliance. Additionally, the OECD guidance on the risk of corporate tax evasion shows that SMEs sometimes choose to move into the informal sector to evade taxes.

## DATA AND EMPIRICAL METHODOLOGY

### Empirical data on tax compliance in Togo

This paper carries out an empirical investigation of the determinants of business tax compliance in Togo. For this purpose, data from a survey was used on voluntary tax consent from the Office of Togolese Revenue (OTR) carried in 2019 covering 413 formal firms. The survey includes only formal firms (firms registered at the Chamber of Commerce of Togo, at the business creation center and having a tax certificate, that is firms declared to the OTR) because they are obliged to declare and pay their taxes.

Figure 2a shows that the sample of 413 firms is composed of 56.9%, 20.58%, and 22.52% of small, medium and large businesses respectively. Figure 2b shows that 60% of businesses of all sizes are complying with tax liabilities, while 40% are trying to avoid paying their taxes. This compliance is distributed according to business size and geographic location.

As can be seen from Figure 2c, small businesses have the highest percentage of tax compliance that is 79.2%. The direct implication of this statement is that in Togo, it is not small businesses that are the biggest tax evaders. In comparison, 42% of medium and large businesses show non-compliance. According to the geographical location (see Figure 2d), the *Centrale* and *Plateaux* regions have the highest level of tax compliance among the five economic regions. The businesses surveyed in these regions are all compliant. In the *Savanes* region, 83.33% of businesses are compliant against 16.67% that are not. The *Kara* region shows that 66.67% of firms are compliant, while in the *Maritime* region, 64.88% of businesses are compliant with tax laws whereas 35.12 % are not compliant. In the *Savanes* region, the percentage of firms complying with tax obligations is 83%.

Figure is made from Tax Compliance 1, which includes companies that say they do not want to use Loopholes in the tax law and do not want to "negotiate" with tax collectors to pay less tax.

However, these statistics should be taken with caution as the

number of businesses surveyed in the other regions is very low compared to the *Maritime* region. The point we are making is that, based on the answers provided in the questionnaire, all firms surveyed in *Centrale* and *Plateaux* are classified as compliant, regardless of their total number.

### Data set and explanatory variables

The data comes from a nationally representative probability survey of firms, based on the latest results of the general firms survey conducted in 2017. The survey method used was a stratified simple random survey, with the "firm" as the unit of study and stratification variable being the size of the firm, which had three modalities: small, medium and large. Results from the survey showed that more than nine out of ten formal firms were localised in the *Maritime* region. The number of units  $n_h$  (where  $h$  represents the stratum) to be selected in each stratum is obtained by applying a proportional allocation to improve the precision of the estimates. To facilitate post-survey processing, a minimum size of thirty units (which empirically is the size required to have precision estimates) will be imposed to be selected in each stratum. Hence our sample size is as follows :

$$n = t^2 \cdot \frac{\sigma}{\epsilon^2}$$

Where  $n$  is the sample size ;  $t$  is the normal distribution percentile determined by the specified confidence level, which is one point ninety-six (1.96) (rounded to two (2)) for a ninety-five percent (95%) precision ;  $\epsilon$  represents the absolute deviation or half of the desired

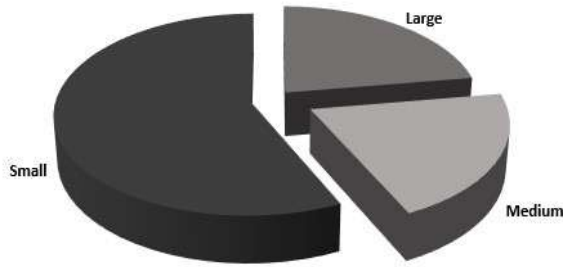
confidence interval for the population;  $\sigma_e$  represents the standard deviation. Considering a 5% precision, the sample size will be :

$$n = \frac{1,96^2}{4x(5\%)^2} = 400$$

To control for cases of non-response, we increase our sample size by 25%. Thus, we obtain for the sample size  $n$  the value of five hundred (500) firms, that is, three hundred and eighty-five (385) in the *Maritime* region and one hundred and fifteen (115) in the hinterland.

The collection was carried out using digital tools (tablet, smartphone) over a period of approximately one month, with the cooperation of the collection agents and their supervisors. Data collection was realised with digital equipment (tablet, smartphone) during approximately one month. For this purpose, data entry applications have been developed on CSPRO version 6.3 for data recording. Data transmission from the Collection Agent to the supervisor is done daily via Bluetooth technology to avoid the risk of data loss due to theft or damage of the tablets/smartphone. A dropbox account has been created for each supervisor to centralize the data collected in the field. After the fieldwork, the collected data were exported from CSPRO to the STATA software for the auditing work, which focused on checking the quality, relevance and completeness of the data entered ; searching for duplicates and out-of-scope entities ; checking the internal consistency of the data ; and correcting atypical values and entry errors. This task was carried out by means of programs in STATA (do files) and the Microsoft Excel "Pivot Tables" tool. After the data cleaning, the database contains four hundred and thirteen (413) firms instead of the five hundred (500) expected, a response rate of eighty-two point six percent (82.60%).

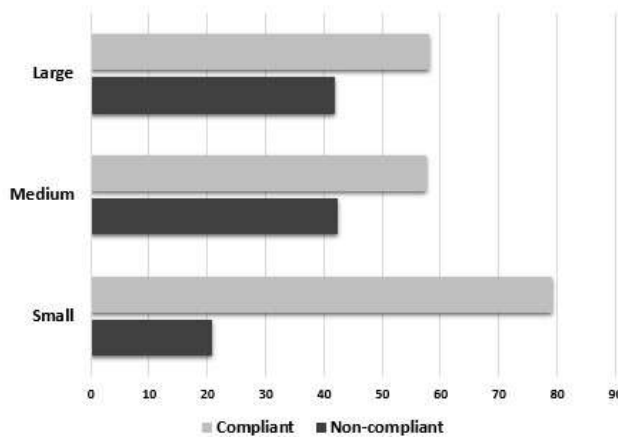
Table 1 describes explanatory variables which are potential determinants of firm Tax compliance in Togo. Since, the objective of



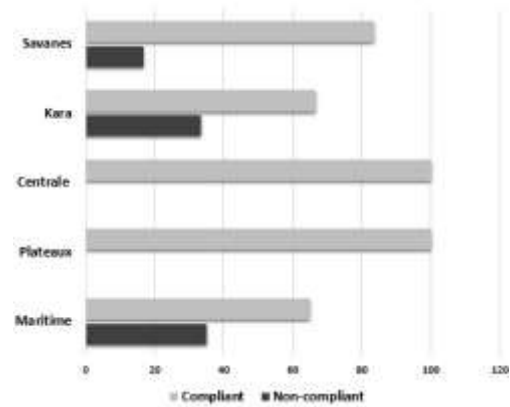
(a) Distribution by size of business



(b) Tax compliance of business



(c) Tax compliance by size of business



(d) Tax compliance by location regions

**Figure 2.** Descriptive statistics.  
Source: Authors

this study is to identify the factors that influence business tax compliance, we consider two aspects such as business characteristics and tax attitudinal aspect. Firm characteristics refers to size and geographical location. The tax attitudinal aspect includes factors such as: Customs duties legitimacy; Taxes owed knowledge; VAT legitimacy; Severity of penalties; Bribes; Tax beneficiaries; Tax amount appreciation; Tax fraud appreciation; Tax laws amendment 2019 and Tax burden. These variables constitute the matrix of explanatory variables of our estimation model and whose description and modalities of answers of the firms are summarized in the table below.

Several studies on tax compliance have focused on individual taxpayers compliance instead of firms. They have provided a theoretical framework to explain the factors that affect individual compliance (Fischer et al., 1992; Cuccia, 1994; Devos, 2014). At the same time, some previous studies of business compliance have recognized that individual taxpayers compliance theory can be applied to explain business compliance (Tedds, 2010; Sapiei et al., 2014).

Similarly, Joulfaian (2000) also mentioned that these theories are appropriate, because of the firms managers preferences. He argues that business managers manage the firm’s finances in such

a way as to have the highest possible profit after paying taxes like an individual person. Based on this premise, we develop the theoretical framework of our study which relates to two categories of variables, business characteristics and tax attitudinal aspects to the tax compliance of businesses. These categories are divided into variables as shown in Figure 3.

**Construction of the dependent variable : Tax compliance measure**

To compute our tax compliance measure, that is our dependent variable, we rely on the three first questions (Appendix Table 3) asked to the businesses through the questionnaire, namely:“(Q501) : Are you currently proud to pay your taxes ?”;“(Q502): If you had the opportunity to pay less by negotiating with an OTR agent for a gift, would you do so ?” and“(Q503): If you had the opportunity to use loopholes in the law to pay less, would you exploit them ?”.

To answer these questions, the firms have the possibility either to choose 1 = “Yes” and 2 = “No”. In order to have a more consistent dependent variable, we compute it as a composite variable based

**Table 1.** The explanatory variables description and categorization.

Variables	Description	Classification		
Size (of business)	This is the classification of businesses by the Office Togolais des Recettes (OTR) according to turnover : large businesses, medium businesses and small businesses.	Classification according to OTR		
Customs duties legitimacy	The opinion of businesses on the appropriateness of taxes, particular customs duties.	0 = No	1 = Yes	
Taxes owed knowledge	The question refers to the knowledge of the provisions of the tax laws, in this case the taxes to which companies are subject.	0 = No	1 = Yes	
Geographical location	This is the region where the company is located according to the administrative divisions of the country.	Location in the administrative regions of the country.		
VAT legitimacy	The opinion of businesses on the appropriateness of taxes, particular Value Added Tax (VAT).	0 = No	1 = Yes	
Severity of penalties	The opinion of tax audit, probability of detection, and tax penalties are included in the questions.	0 = No	1 = Yes	
Bribes	The question refers to the possibility of paying bribes to the tax authorities to pay less tax.	0 = Good 3 = Very bad	1 = Indifferent	2 = Bad
Tax beneficiaries	The question refers to the proper management of collected taxes : the actual destination of the taxes. Do the taxes benefit the whole nation or the public authorities.	0 = To public authorities	1 = To the Togolese nation	
Tax amount appreciation	The opinion of businesses on the amount of tax. Is the amount of tax bearable or too high.	1 = Largely bearable	2 = Acceptable	3 = Too high
Tax fraud appreciation	The question refers to the moral value of companies.	0 = Good thing 3 = Very bad	1 = Indifferent;	2 = Bad
Tax burden	The share of taxes in income.	1 = Less than 5%. 3 = Between 10 and 25% 5 = More than 50%.	2 = Between 5% and 10%	4 = Between 25 and 50%
Tax laws amendment 2019	The question refers to knowledge of the provisions of the tax law, in this case the latest 2019	0 = No	1 = Yes	

Source:Authors

on the last two questions (Q502 and Q503) to compute a dependent variable that is called Tax Compliance 1. Therefore, Tax Compliance 1 includes businesses that declare to be unwilling to use loopholes in the tax laws and unwilling to 'negotiate' with tax collectors to pay less taxes. So, Tax Compliance 1 can be expressed as follows :

$$\text{Tax Compliance 1} = \begin{cases} 1(\text{No, No}) \\ 0 \text{ otherwise} \end{cases} \quad (1)$$

However, since our dependent variable refers to voluntary tax consent, we consider it equally important that our tax compliance measurement takes into account how the taxpayer, the businesses in this case, feel about the taxes they are paying, for example if they are proud to pay taxes or not. Thus, we compute another dependent variable

which is Tax Compliance 2, so that this measurement includes firms that are : unwilling to use tax loopholes, unwilling to negotiate with tax collectors to pay less taxes, and also proud to pay their taxes. Hence, Tax Compliance 2 is defined as follows:

$$\text{Tax Compliance 2} = \begin{cases} 1(\text{No, No, Yes}) \\ 0 \text{ otherwise} \end{cases} \quad (2)$$

Subsequently, the compliance levels are compared between firms according to their size using the two measures that have been constructed to assess the tax compliance level accurately, which are shown in Figure 4. The idea here is to check whether there is a wide disparity in the degree of tax compliance among firms or not, depending on the indicators used. As we can see, the

levels of compliance do not diverge too much, no matter if one uses Tax Compliance 1 or Tax Compliance 2. The difference in tax compliance according to the two indicators is about 12% for small firms and 4% for large and medium firms.

### Model estimation

In the econometric specification of the estimation model, the authors assume that there are a set of explanatory variables (denoted as  $X_i$ ) as described in subsection 3.2 above, that influence firms' tax compliance, that is our dependent variable (denoted as  $\text{TaxCompliance}_i$ ). Therefore, the model is specified as follows :

$$\text{TaxCompliance}_i = F(X_i) \quad (3)$$



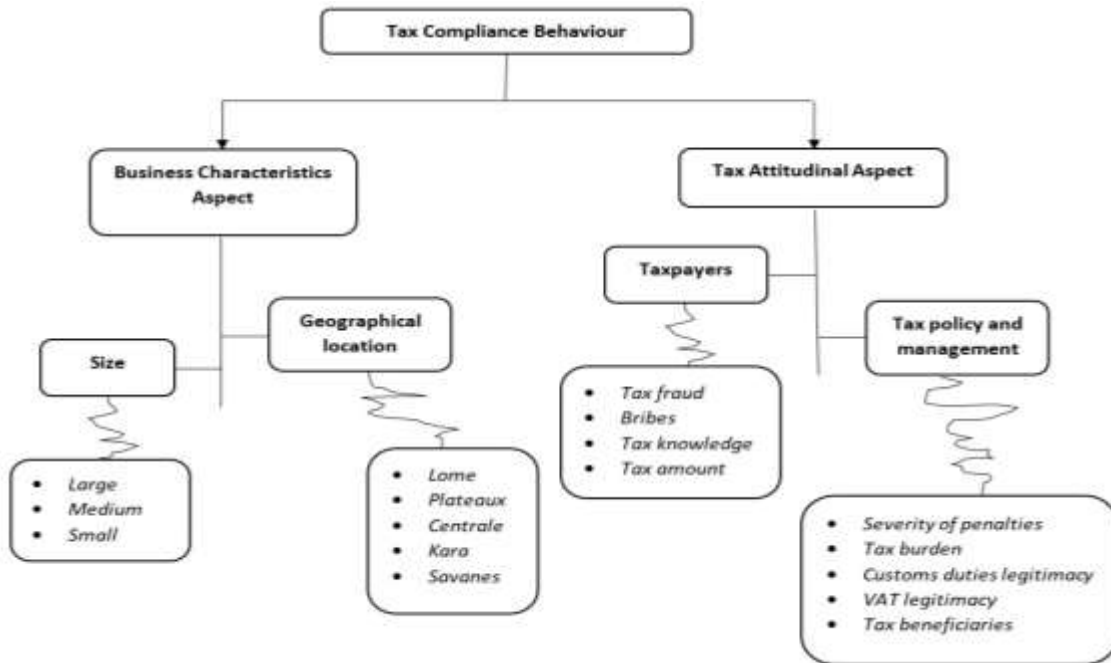


Figure 3. Tax compliance framework.  
Source: Authors

Table 2. Baseline model estimates quality adjustment.

	Tax Compliance 1		Tax Compliance 2	
	Good prediction %	False prediction%	Good prediction %	False prediction %
Tax Compliance = 0	78.33	21.67	72.61	27.39
Tax Compliance = 1	62.79	37.21	63.87	36.13
Total	74.50	25.50	69.63	30.37

Source:Authors

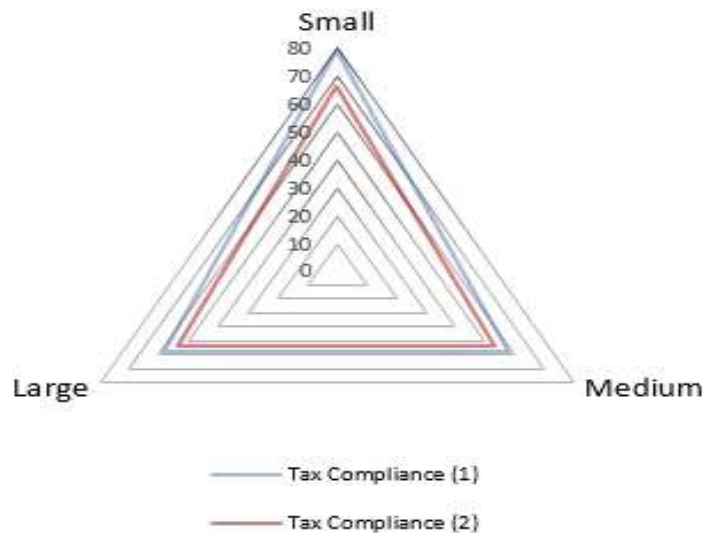


Figure 4. Tax compliance measures by business size.  
Source: Authors

**Table 3a.** Baseline estimates using Tax Compliance 1.

Variable	Tax Compliance 1		
	(1)	(2)	(3)
Geographical location	0.015 (0.573)	0.015 (0.602)	0.013 (0.637)
Size (of business)	-0.237*** (0.000)	-0.243***(0.000)	-0.246*** (0.000)
Tax fraud appreciation (poor)	0.084** (0.024)	0.097** (0.010)	0.097** (0.010)
Bribes (disapproval)	0.145***(0.000)	0.150***(0.000)	0.149***(0.000)
Tax law amendment (2019)	-0.010(0.892)	-0.036(0.624)	-0.034(0.630)
Taxes owed knowledge	0.065(0.380)	0.080(0.284)	0.078(0.296)
Taxes beneficiaries (whole nation)	0.091*(0.088)	0.083(0.126)	0.081(0.137)
Severity of penalties	0.243***(0.001)	0.249***(0.001)	0.252***(0.001)
Customs duties legitimacy	0.155** (0.039)	0.188** (0.014)	0.183** (0.017)
VAT legitimacy	-0.173** (0.003)	-0.153** (0.013)	-0.150** (0.016)
Taxes amount appreciation (too high)	-0.028(0.055)		-0.024(0.621)
Tax burden		0.001(0.978)	0.001 (0.955)
Observations	355	349	349
Wald chi2(11)	77.46	79.60	80.15
Prob > chi2	0.000	0.000	0.000
Pseudo R <sup>2</sup>	0.174	0.181	0.182

Marginal effect reported. Probability value in parenthesis. \*, \*\*, \*\*\* denote significance at 10, 5 and 1%.  
Source: Authors

In the case of probability models, the use of Ordinary Least Squares estimation (OLS) is inappropriate for several reasons, including that the estimated value of *TaxCompliance<sub>i</sub>* is outside the interval [0,1]. In addition, it is also possible that the idiosyncratic error does not follow a normal distribution but a discrete distribution because it can only take two values (0 and 1). In such cases, it is appropriate to identify the impact of variable *X* on the probability of firm to be compliant. For this purpose, equation 3 can be rewritten as follows

$$\begin{cases} Pr(TaxCompliance_i = 1|X_i) = F(X_i) \\ Pr(TaxCompliance_i = 0|X_i) = 1 - F(X_i) \end{cases} \quad (4)$$

In related empirical literature, Logit and Probit estimators are often used to estimate these probability models (Abdu, et al., 2020; Ibrahim et al., 2015; Gbadago and Awunyo-Vitor, 2015; Bilgin, 2014; Serim and Yağanoğlu, 2017; Alm et al., 1993). But, the choice between them depends on the idiosyncratic error distribution function. The probit estimator is recommended when the error distribution function follows a normal distribution. In contrast, when the error distribution function is assumed to follow a logistic distribution, then the logit estimator is recommended. However, according to Greene (2002), the logit and probit models are very similar. And the matter of choice is therefore irrelevant. However, this study focuses on the probit model mainly because of its ability to limit the value of variable within 0 and 1, and its ability to correct for heteroscedasticity in the model (Gbadago and Awunyo-Vitor, 2015).

## RESULTS AND DISCUSSION

### Baseline model estimates

The predictive quality of the model is summarized in

Table 3, which presents statistics on the predictive quality of the model for each of the dependent variables. For example, the model has a predictive quality of 74.5% using Tax Compliance 1 as the dependent variable (column 1) and 69.6% for Tax Compliance 2 as the dependent variable (column 3). Similarly, it is also possible to obtain the quality of adjustment by the ROC Curve presented in Appendix Figures 1 and 6. For the two dependent variables Tax Compliance 1 and Tax Compliance 2, the “Area under the ROC Curve” statistics confirm a high quality of adjustment, of 78% and 77%, respectively. To detect the presence or absence of multicollinearity of the independent variables in our model, we calculated the Variance Inflation Factor (VIF).

The VIF results were generally below 5, which indicate that multicollinearity is not an issue in the model. The threshold value commonly used to indicate the presence of multicollinearity is a tolerance value is  $(1/VIF) < 0.10$  or equal to  $VIF > 10$  (Nugroho and Zulaikha, 2012). Appendix Table 2 shows that the VIF of our explanatory variables are less than 10 ( $VIF < 10$ ) and the inverse of the VIF is greater than 0.10 ( $1/VIF > 0.10$ ). Therefore, it can conclude the absence of multicollinearity of our independent variables.

### Factors that explain tax compliance of businesses in Togo

Having identified the potential factors that influence voluntary tax compliance in Togolese companies and through the use of probit models, we estimate our

**Table 3b.** Baseline estimates using tax compliance 2.

Variable	Tax compliance 2		
	(1)	(2)	(3)
Geographical location	0.059*(0.054)	0.055*(0.078)	0.051*(0.098)
Size (of business)	-0.206***(0.000)	-0.202***(0.000)	-0.213***(0.000)
Tax fraud appreciation (poor)	0.111***(0.010)	0.122***(0.005)	0.122***(0.005)
Bribes (disapproval)	0.109***(0.008)	0.109***(0.007)	0.106***(0.009)
Tax law amendment (2019)	-0.015(0.848)	-0.025(0.754)	-0.023(0.780)
Taxes owed knowledge	0.161***(0.051)	0.172***(0.039)	0.170***(0.042)
Taxes beneficiaries (whole nation)	0.221***(0.000)	0.220***(0.000)	0.214***(0.000)
Severity of penalties	0.214***(0.004)	0.208***(0.005)	0.218***(0.004)
Customs duties legitimacy	0.137*(0.084)	0.157***(0.050)	0.142*(0.074)
VAT legitimacy	-0.192***(0.006)	-0.185***(0.011)	-0.180***(0.014)
Taxes amount appreciation (too high)	-0.079(0.139)		-0.071(0.186)
Tax burden		-0.010(0.684)	-0.007(0.750)
Observations	355	349	349
Wald chi2(11)	83.00	80.14	81.94
Prob > chi2	0.000	0.000	0.000
Pseudo R2	0.179	0.174	0.178

Marginal effect reported. Probability value in parenthesis. \*, \*\*, \*\*\* denote significance at 10, 5 and 1%.

Source: Authors

baseline models using two dependent variables. The results are presented in Table 3a and 3b. In Table 3a, the dependent variable Tax Compliance 1 includes businesses that declare to be unwilling to use loopholes in the tax laws or not to negotiate with tax collectors to pay less tax. Table 3b, the dependent variable Tax Compliance 2 includes businesses that declare to be unwilling to use loopholes in the tax laws or not to negotiate with tax collectors to pay less tax and are proud to pay their taxes. Column 1 and 2 (Table 4a and 4b) include two proxies for tax burden used in an alternative manner, while column 3 includes both. Using stata 17, the findings show that some variables significantly explain the tax compliance of businesses.

### **Tax compliance 1 - findings**

Considering Tax Compliance 1 as the dependent variable, the findings reveal number of patterns. The first statistically important factor is the size of business. A negative statistical relationship was found between the business size and tax compliance. The associated marginal effect indicates that, large businesses are 23.7% less likely to be compliant than small businesses. This result is in line with that of Abdul-Jabbar (2009), but in contrast with Mohamad and Deris (2018) and Mohd Nor et al. (2010) who found that business size influences tax compliance positively due to the effective internal controlling within the firms. It implies that large businesses have strict procedure for monitoring of

financial reporting, due to which they report their taxes properly. Moreover, large businesses must also maintain their reputation towards their business partners, so they will be more obedient than smaller firms (Azrina Mohd Yusof, 2014). In addition, Nur-Tegin (2008) also argues that large businesses are more likely to be compliant than small businesses. He explains that they are the main targets of tax officers to boost tax revenue. It means that larger businesses have greater potential to increase revenue than smaller businesses, so it becomes easy for small firms to be invisible. Therefore, based on previous research, it can be easily concluded that the internal monitoring within firms in Togo is very low both in small, medium or large businesses. In addition, the level of tax audit conducted by OTR is not up to the mark, so the bigger firms still have the tendency to evade taxes. Most large businesses benefit from foreign capital, which gives them opportunities to reduce taxes through tax havens. Similarly, they can also overcharge salaries and other expenses to increase costs and minimize their taxes (Kemme et al., 2020). Finally, large businesses also have enormous power to negotiate for exceptional concession. However, some different findings upon the influence of firm size toward compliance refer to different proxy used by researchers.

"Similar to Mohd Nor et al. (2010), this study divides the firms' size according to their turnover, while some use the number of employees (Nur-Tegin, 2008)."

The second and third statistically important factors are tax fraud appreciation and bribes and they have positive effects on businesses' tax compliance. These two

**Table 4a.** Robustness checking using tax compliance 1 (Firm size).

Variable	(1)	(2)	(3)	(4)	(5)
	Small	Medium	Large	Exclu. small	Baseline
Geographical location	0.015(0.377)				0.013(0.637)
Tax fraud appreciation (poor)	0.108***(0.003)	0.023(0.785)	0.041(0.629)	0.065(0.262)	0.097**(0.010)
Bribes (disapproval)	0.124***(0.000)	0.159*(0.054)	-0.044(0.630)	0.093(0.129)	0.149***(0.000)
Tax law amendment (2019)	-0.003(0.969)	-0.266(0.105)	0.207(0.301)	-0.051(0.699)	-0.034(0.630)
Taxes owed knowledge	0.146**(0.016)	-0.124(0.566)	0.319**(0.044)	0.232*(0.084)	0.078(0.296)
Taxes beneficiaries (whole nation)	-0.060(0.295)	-0.043(0.730)	0.185(0.142)	0.118(0.146)	0.081(0.137)
Severity of penalties	0.124**(0.097)	0.569***(0.000)	0.466***(0.000)	0.504***(0.000)	0.252***(0.001)
Customs duties legitimacy	0.205***(0.000)		0.027(0.939)	0.224(0.386)	0.183**(0.017)
VAT legitimacy	-0.010**(0.021)		0.135(0.673)	-0.362**(0.050)	-0.150**(0.016)
Taxes amount appreciation (too high)	-0.061(0.215)	-0.119(0.237)	0.027(0.812)	-0.052(0.482)	-0.024(0.621)
Tax burden	0.022(0.337)	0.023(0.669)	0.045(0.359)	-0.008(0.829)	0.001(0.955)
Observations	174	81	91	175	349
Wald chi2(..)	56.59	15.65	15.95	23.88	80.15
Prob > chi2	0.000	0.048	0.010	0.008	0.000
Pseudo R2	0.399	0.184	0.128	0.133	0.182

Marginal effect reported. Probability value in parenthesis. \*, \*\*, \*\*\* denote significance at 10, 5 and 1%.  
Source: Authors

**Table 4b.** Robustness checkin using tax compliance 2 (Firm size).

Variable	(1)	(2)	(3)	(4)	(5)
	Small	Medium	Large	Exclu.small	Baseline
Geographical location	0.056*(0.000)				0.051*(0.098)
Tax fraud appreciation (poor)	0.239***(0.000)	0.025(0.765)	-0.002(0.984)	0.052(0.389)	0.122***(0.005)
Bribes (disapproval)	0.089*(0.081)	0.151*(0.086)	0.003(0.971)	0.082(0.193)	0.106***(0.009)
Tax law amendment (2019)	0.034(0.726)	0.323**(0.050)	0.238(0.245)	-0.102(0.462)	-0.023(0.780)
Taxes owed knowledge	0.248***(0.005)	-0.159(0.486)	-0.060(0.816)	-0.087(0.614)	0.170**(0.042)
Taxes beneficiaries (whole nation)	0.116(0.147)	0.140(0.264)	0.276**(0.025)	0.200**(0.013)	0.214***(0.000)
Severity of penalties	0.105(0.277)	0.497***(0.000)	0.481***(0.000)	0.486***(0.000)	0.218***(0.004)
Customs duties legitimacy	0.240***(0.001)		-0.063(0.857)	0.134(0.619)	0.142*(0.074)
VAT legitimacy	-0.199**(0.005)				-0.180**(0.014)
Taxes amount appreciation (too high)	-0.199**(0.011)	-0.116(0.256)	0.038(0.737)	-0.051(0.503)	-0.071(0.186)
Tax burden	-0.020(0.557)	0.001(0.985)	-0.035(0.490)	-0.012(0.735)	-0.007(0.750)
Observations	174	81	89	171	349
Wald chi2(..)	59.28	14.66	14.25	21.62	81.94
Prob > chi2	0.000	0.066	0.013	0.010	0.000
Pseudo R2	0.328	0.179	0.162	0.140	0.178

Marginal effect reported. Probability value in parenthesis. \*, \*\*, \*\*\* denote significance at 10, 5 and 1%.  
Source: Authors

variables measure the ethics and morals of firms in comparison to their compliance with tax laws. They are categorized in order from good to very bad accordingly. These results suggest that businesses believing that tax evasion and bribing tax collectors to pay less taxes is wrong, are more likely to be compliant. The respective marginal effects are 9.7% and 14.9% meaning that such

firms are more likely to comply with their tax obligations. Thus, a reduction in corruption by tax collectors of the OTR can increase business compliance in Togo. This result is consistent with Alm and McClellan (2012) who argue that, a corrupt tax administration system (due to bribes) reduces reporting and so increases tax evasion.

The authors underline that reducing corruption in tax

administration improves corporate tax compliance.

Tax beneficiaries would be positively and significantly correlated with businesses' tax compliance. Thus, firms that believe that taxes benefit the whole nation are more willing to pay than those who believe that taxes benefit the public authorities—only. The associated marginal effect indicates that firms that believe taxes benefit the nation as a whole are 9.1% more likely to be compliant than firms that believe taxes benefit public authorities. This means that good management of tax revenues encourages firms to participate in the financing of public goods by paying their taxes. Also, better explanation of the origin of the resources collected would enable the taxpayer to better understand the need for the institution of a tax and thus to freely consent to pay taxes (Fjeldstad and Semboja, 2001).

The results also point to a positive and significant association between the severity of penalties and tax compliance. This implies that high penalties will surely generate more corporate tax compliance in Togo. According to the associated marginal effect, there is 25.2% chance that high penalties will force firms to comply with tax legislation. This result is in contradiction with Andreoni et al. (1998) who claimed that the compliance rate will remain high in the modern tax system even though tax sanctions are low because there are other factors which effect the compliance, like non economic factors (human behaviour). This reason is also supported by Falanni (2015) who summarized that the important factors to increase the voluntary compliance are through the improvement of moral and ethics of the taxpayers rather than imposing high penalties. The positive effect of the severity of sanctions on companies tax compliance is also associated with more regular tax audits, thus a higher probability of being caught. The process of audit in Togo for businesses is based on certain selection criteria in which all firms are not included. But, some firms selected are mostly based on their suspicious history or reporting transactions below the amount aggregated in the OTR's books. The audit selection is also correlated with the size of the businesses, then, it will influence compliance (Falanni, 2015). Large businesses are more eligible for the audit, as they are the major taxpayers to the OTR. However, the OTR is making an effort to audit as many firms as possible over a period of 3 years, the statute of limitations beyond which tax fraud is no longer reprehensible.

Furthermore, we also find that custom duties legitimacy is positively and significantly related to businesses' tax compliance. This means that taxpayers who find custom duties legitimate are more willing to pay than those who do not. Firms that find tariffs legitimate are 18.3% more likely to be compliant. Contrary to custom duties, VAT legitimacy has been negative in connection with businesses' tax compliance. In terms of marginal effect, there is a 15% lower chance that businesses which find VAT legitimate are not compliant. This negative

relationship can be attributed to various imperfections in VAT implementation in the country, particularly to non-fluid refunds of VAT credits. This result is not consistent with our expectations. One would think that firms which believe in VAT legitimacy are more willing to pay. So, how can we explain this contradictory result? Let's take for example small businesses that bear VAT paid because of the non-fluid repayment of VAT credits in developing countries. It should be recalled that by definition small businesses are not registered for VAT, therefore they are not entitled to charge VAT on sale, and consequently cannot deduct the amount of VAT paid on purchase of inputs, imports etc. However, These small businesses sometimes or very often bear the amount of VAT paid, which increases their production costs making them less competitive. It is possible, therefore, that these difficulties experienced by small businesses may lead to deviant behaviour *vis-a-vis* tax compliance. Moreover, avoiding tax obligations is an acceptable argument to explain the negative relationship between the legitimacy of VAT and tax compliance in small businesses as they represent a significant share of our sample, 56.9%.

## Tax compliance 2 - findings

However, our study has not found any significant relationship between tax compliance and the variables geographical location, tax laws amendment (2019), tax burden, tax owed knowledge, and tax amount appreciation while using the dependent variable Tax Compliance 1. But some of them become significant when we use Tax Compliance 2 as the dependent variable. This is another measure of tax compliance that includes firms that are unwilling to use tax loopholes, unwilling to negotiate with collectors to pay less tax, and are also proud to pay their taxes.

It can be seen that all the factors that significantly explain Tax Compliance 1 in Table 4 also explain the alternative measure that is, Tax Compliance 2. Furthermore, a weak (one star (\*)), medium (two stars (\*\*)) and strong (three stars (\*\*\*)) positive statistical significance can be found in other factors such as geographical location, knowledge of the law, and tax beneficiary respectively.

Concerning the variable geographical location, we have found a potential positive association with tax compliance. The implication of the result is that the firms furthest from the capital are the most compliant. The estimated marginal effect is 5.1% meaning that firms located in other regions are 5.1% more likely to be compliant than those in the *Maritime* region. There are several reasons for such correlation. In this respect, it could be assumed that it is easier to control firms located outside the *Maritime* region due to their extremely low numbers. Since there is a high concentration of firms in the *Maritime* region, this could make tax controls more



**Figure 5.** Administrative map and sample distribution.  
Source: Authors

complex, and therefore enhance tax avoidance behavior of firms.

Moreover, the coefficient of tax laws knowledge positively impacts corporate tax compliance. According to the associated marginal effect, firms that know the tax laws are 17% more likely to be compliant than those that do not. Previous studies have shown evidence that tax knowledge has a very close relationship with taxpayers' ability to understand the laws and regulations of taxation, and their ability to comply with them (Singh and Bhupalan, 2001).

Finally, a positive correlation was found between tax compliance and tax beneficiaries. This variable contains those firms which consider that taxes paid give profit to the whole nation. According to the associated marginal effect, these firms are 21.4% more likely to be tax compliant.

### Robustness tests

We do not present the results of the robustness tests in the paper, but we have tested for differences in tax compliance depending on business size, and for

variations in tax compliance among different administrative regions. The nature of these results, in our opinion, is linked to the distribution of the sampled businesses across the country, according to which the *Maritime* region alone accounts for more than 84%. Therefore, the non-representatives of businesses in the other regions (Figure 5) does not allow us to predict a statistically valid relationship between tax compliance and belonging to a given administrative region in the country.

Moreover, this unequal distribution of the sample in the different administrative regions makes it necessary to reconsider the *Maritime* region as an isolated entity and to re-examine the tax compliance of businesses in this region. In total, 349 out of the 413 businesses surveyed are located in this region. Thus, we first investigate the factors that determine tax compliance of businesses in the *Maritime* region and then test whether there are differences in tax compliance according to the size of the businesses in the region.

### ***Does firm size matter to tax compliance in Togo ?***

The results of the estimation of the factors explaining tax compliance by business size are presented in Table 4. Accordingly, the determinants vary depending on whether the business is of small, medium or large size.

For small businesses, no matter which dependent variable is used, the variables such as tax fraud appreciation, bribes, tax knowledge, and customs duties legitimacy positively influence tax compliance of small businesses, while VAT legitimacy is associated with an incentive to allow/pursue tax avoidance on the part of small businesses.

Furthermore, the severity of penalties also encourage small businesses to be compliant but only in the model using Tax Compliance 1 (Table 4a). Finally, for small businesses, geographical location has a positive influence on compliance while the appreciation of the amount of tax has a negative effect, but only the model including Tax Compliance 2 predicts these relationships. The results in columns 2 of each Table 4 provide evidence on the factors that determine the tax compliance of medium-sized businesses. They indicate that the bribes to deal with taxes and the severity of penalties are the determining factors with an incentive effect. The results are the same for both dependent variables. For large businesses, compliance is enforced in the presence of severe penalties whether the dependent variable considered is Tax Compliance 1 or 2. In addition, knowledge of the taxes to which one is subject (with Tax Compliance 1) leads to evasion of tax compliance, while the fact of considering that the tax will benefit the whole nation (with Tax Compliance 2) encourage large businesses to respect tax compliance.

Additionally, in order to compensate for the low number of medium and large businesses compared to small businesses, we perform a new estimation in which

**Table 5a.** Robustness checking using tax compliance 1 (Regional effects).

Variable	(1)	(2)	(3)	(4)
	Maritime	Small	Medium	Large
Size (of business)	-0.240***(0.000)			
Tax fraud appreciation (poor)	0.064(0.157)	0.67(0.306)	0.023(0.781)	0.041(0.629)
Bribes (disapproval)	0.116**(0.012)	0.089*(0.070)	0.208**(0.013)	-0.044(0.630)
Tax law amendment (2019)	0.014(0.866)	0.097(0.335)	-0.176(0.286)	0.207(0.301)
Taxes owed knowledge	0.045(0.620)	0.184*(0.056)	-0.228(0.175)	-0.319**(0.044)
Taxes beneficiaries (whole nation)	0.067(0.300)	-0.283*** (0.029)	0.086(0.485)	0.185(0.142)
Severity of penalties	0.317***(0.000)	0.204** (0.056)	0.506*** (0.000)	0.466*** (0.000)
Customs duties legitimacy	0.188** (0.055)	0.366*** (0.000)		0.027(0.939)
VAT legitimacy	-0.138(0.110)	-0.153*** (0.007)		0.135(0.673)
Taxes amount appreciation (too high)	-0.023(0.685)	-0.054(0.612)	-0.083(0.401)	0.027(0.812)
Tax burden	-0.010(0.698)	0.044(0.197)	0.027(0.631)	-0.045(0.359)
Observations	289	114	84	91
Wald chi2(..)	55.02	46.52	15.06	15.95
Prob > chi2	0.000	0.000	0.058	0.101
Pseudo R2	0.139	0.370	0.183	0.128

Marginal effect reported. Probability value in parenthesis. \*, \*\*, \*\*\* denote significance at 10%, 5% and 1%.

Source: Authors

medium and large businesses are included. The results are in the columns 4 of both tables 4a and 4b, similar to those for large businesses. The only notable difference is that the legitimacy of VAT becomes significant and negative, indicating that medium and large businesses that find VAT legitimate are not willing to pay it. The idea of non-fluid refunds of VAT credits is still admissible to explain VAT evasion by these businesses, although they would be taxable unlike small businesses.

Lastly, it can be observed that in columns 5 of these Tables (4a and 4b) the baseline models are still reported. The idea is to compare the results according to the size of businesses to the baseline model in order to shed light on the idea that the determining factors identified in the later are not influenced by the high number of small businesses in our sample. Clearly, the results of the reference model are similar to those of small businesses, although some of the factors determining the tax compliance in the reference model are not in accordance with the small businesses or *vice versa*. For example, in the reference model, tax beneficiaries provide an incentive to comply with but do not determine compliance for small businesses according to the two dependent variables (Tax Compliance 1 and 2). Conversely, tax owed knowledge (Tax Compliance 1) and tax amount appreciation (Tax Compliance 2) significantly explain small business compliance but do not explain in the baseline model.

However, by definition, this simply explains the concentration of Togo's businesses in the most developed region, and it is this reality that is reflected in the composition of the sample in terms of geographical location.

### **Robustness check focusing on the Maritime region**

We therefore focus on the Maritime region, which includes 349 of the total 413 surveyed businesses, and identify the factors explaining voluntary tax compliance, as well as the determinants by business size within this region. Table 5a and 5b presents the analysis of the determinants of tax compliance, by business size.

Some factors significantly explain voluntary compliance regardless of the dependent variable used. For example, the size of the business is associated with non-compliance that is in the *Maritime* region, large businesses are more likely to avoid paying taxes. While the more severe the penalties imposed by the tax authorities, the more compliant businesses tend to be. Other factors are only significant in a particular model. It is the case of bribes and legitimacy of custom duties that are found to push businesses towards voluntary compliance in the model using Tax Compliance 1. By contrast, in the model with Tax Compliance 2, knowledge of the tax laws, and the taxes beneficiary, positively influences voluntary compliance while businesses find VAT legitimate but are not willing to pay it.

We can say that factors that are key determinants of tax compliance at national level are not all significant at the regional level. It means that there would be a regional effect that would be interesting to investigate further, but unfortunately we could not carry out this analysis due to data constraints as we already mentioned.

The first finding that emerges from the estimates by business size is that, among small businesses, regardless of the dependent variables we consider, factors such as knowledge of the tax laws, legitimacy of

**Table 5b.** Robustness checking using Tax Compliance 2 (Regional effects).

Variable	(1)	(2)	(3)	(4)
	Maritime	Small	Medium	Large
Size (of business)	-0.200***(0.000)			
Tax fraud appreciation (poor)	0.072(0.146)	0.209**(0.037)	0.025(0.765)	-0.015(0.865)
Bribes (disapproval)	0.071(0.133)	-0.016(0.841)	0.197**(0.026)	0.010(0.918)
Tax law amendment (2019)	0.019(0.839)	0.143(0.286)	-0.242(0.147)	0.255(0.179)
Taxes owed knowledge	0.160*(0.098)	0.298**(0.020)	-0.258(0.164)	0.048(0.843)
Taxes beneficiaries (whole nation)	0.236***(0.000)	0.171(0.142)	0.177(0.147)	0.296**(0.014)
Severity of penalties	0.261***(0.001)	0.146(0.256)	0.436**(0.002)	0.464***(0.000)
Customs duties legitimacy	0.136(0.167)	0.272**(0.018)		-0.087(0.801)
VAT legitimacy	-0.189*(0.046)	-0.312***(0.002)		
Taxes amount appreciation (too high)	-0.077(0.207)	-0.319**(0.016)	-0.084(0.406)	0.025(0.830)
Tax burden	-0.017(0.551)	-0.017(0.731)	0.004(0.940)	-0.035(0.491)
Observations	289	114	84	91
Wald chi2(..)	55.80	42.27	14.77	14.53
Prob > chi2	0.000	0.000	0.064	0.105
Pseudo R2	0.143	0.304	0.178	0.170

Marginal effect reported. Probability value in parenthesis. \*, \*\*, \*\*\* denote significance at 10, 5 and 1%.

Source: Authors

custom duties and VAT are found to be determinants of voluntary compliance. In contrast to the others, which push for compliance, VAT legitimacy leads to tax avoidance. After that, it can be pointed out that factors such as bribes, tax beneficiaries and severity of penalties are also significant in the specification with Tax Compliance 1. If compliance is negatively influenced by the tax beneficiaries, it is enhanced by factors like bribes and severity of penalties. In addition, the tax fraud and taxes amount appreciation is also relevant in the specification with Tax Compliance 2. More specifically, the amount of the tax induces tax avoidance, whereas the tax fraud appreciation rather encourages compliance with tax obligations.

For medium-sized businesses, the results are identical in both specifications. Therefore, variables such as bribes and the severity of penalties are positive and significant i.e. these factors accelerate voluntary compliance.

Finally, for large businesses, three valid determinants were identified. The severity of penalties is positive and significant in both specifications. It would be an accelerating factor for voluntary compliance. It is tax knowledge that is associated with tax avoidance in the specification using Tax Compliance 1 but unlike tax beneficiaries which rather favour voluntary compliance according to the specification Tax Compliance.

## CONCLUSIONS AND POLICY IMPLICATIONS

In this paper, factors that contribute to the compliance of businesses have been highlighted with their tax

obligations in Togo. The model defines voluntary tax compliance behaviour based on two aspects, that is characteristics of businesses (size and geographical location) and tax attitudinal aspects (attitudes of taxpayers, tax policy and management). The tax compliance of businesses was captured in two different ways according to their responses to the surveys that were administered to them. The first measure we define is Tax Compliance 1, which includes businesses that declare that they do not want to use loopholes in the tax laws or negotiate with tax collectors to pay less tax. The second measure, Tax Compliance 2, includes businesses that not only declare themselves unwilling to use tax loopholes or negotiate with tax collectors to pay less tax, but are also proud to pay their taxes. Several factors have been identified as potential candidates for determining voluntary tax compliance. These include factors such as bribes, severity of penalties, legitimacy of customs duties, geographical location, tax evasion appreciation, tax burden, amendment of the tax laws, tax paid, tax knowledge, tax beneficiaries, legitimacy of VAT and size of businesses.

Most results are in line with expectations. On the one hand, the study concluded that geographical location, tax evasion assessment, bribes, tax knowledge, tax beneficiaries, the severity of penalties and the costs of legitimate custom duties are factors that incite businesses to pay taxes voluntarily. Additionally, the size of a business and the legitimacy of VAT are more likely to be linked to tax evasion. Initially, it did not seem logical to us that the legitimacy of VAT should be associated with any attempt at tax evasion. Nevertheless, while VAT is



intended to be neutral for businesses, its application through VAT policy and the operation of tax administrations in developing countries often leads some businesses to evade their tax obligations.

Furthermore detailed analysis by business size showed that the determinants of tax compliance of small businesses are not the same as those of medium and large businesses. We also found a regional effect of the determinants of Togolese businesses' tax compliance. For businesses located in the *Maritime* region, their determinants differ from those identified at the national level. Unfortunately, the analysis could not be carried out at the level of the other administrative regions of the country because the data we have did not allow it. In view of these conclusions, some recommendations can be made to improve the tax compliance of businesses in Togo.

First of all, it is imperative that the OTR works to improve the conditions of application of VAT. In terms of VAT policy, for social reasons, many goods and services are exempted from VAT, either completely or partially. For example, these exemptions are at the origin of VAT credit creation. When these credits are not reimbursed (as is the case of small non-taxable businesses because their turnover is below the required threshold) or not reimbursed quickly or not totally (as is often the case for medium and large taxable businesses), this weighs on businesses in terms of the costs they have to bear on production. This automatically undermines the efficiency of the tax system. It would therefore be very useful for the tax administration to reduce, as far as possible, the multiple exemptions in favour of targeted assistance to the vulnerable households, as was the case with the Novissi program, initiated during the COVID-19 crisis by the Togolese government, a program hailed by the 2019 Nobel Economics Prize winners Abhijit Banerjee and Esther Duflo. In addition, it is essential to set up a fluid mechanism for the reimbursement of VAT credits, so that VAT is only borne by final consumers and effectively neutral for businesses.

Secondly, the OTR must also acquire more technical, human and financial resources in order to carry out proper tax audits and identify firms that sometimes make false declarations or attempt to circumvent the tax laws in order to avoid paying taxes.

Given the idea of future research, it would be interesting to include more firms located in the other regions, in order to better analyze the regional effect of factors that underline the voluntary tax compliance of the firms. In this way, we could have the determinants of tax compliance in each of the five administrative regions of the country. It would also be useful to compare the tax compliance of foreign companies with that of domestic firms, but the database used in this paper does not differentiate between foreign and domestic owned firms. Another important extension will be to distinguish between firms according to their activities (production of

goods and/or services) as well as their sectors of activity (agriculture, agro-industry, construction, transport, telecommunications, etc.) in order to draw lessons in terms of tax policy, control and tax collection for a better efficiency of the tax system. Finally, it will also be important to examine whether certain tax policies, such as tax credits for certain firms, are an instrument for tackling tax evasion.

Another limitation of this work is that of all studies conducted with survey data, that of the honesty of the respondents. Nevertheless, all the procedures in the survey have been respected to minimize this risk.

## CONFLICT OF INTERESTS

The authors have not declared any conflicts of interests.

## REFERENCES

- Abd Obaid MM, Ibrahim I, Udin NM (2020). An investigation of the determinants of tax compliance among yemeni manufacturing smes using the fisher model. *International Journal of Psychosocial Rehabilitation* 24(04):1809-1824.
- Abdul-Jabbar H (2009). Non-conformité fiscale des petites et moyennes entreprises en malaisie : D'eterminants et cou'ts de conformité fiscale (Unpublished doctoral dissertation).
- Abdu M, Jibir A, Muhammad T (2020). Analysis of tax compliance in sub-saharan africa. Evidence from firm-level study. *Econometric Research in Finance* 5(2):119-142.
- Alm J, McClellan C (2012). Tax morale and tax compliance from the firm's perspective. *Kyklos* 65(1):1-17.
- Alm J, Bahl R, Murray MN (1993). Audit selection and income tax underreporting in the tax compliance game. *Journal of development Economics* 42(1):1-33.
- Andreoni J, Erard B, Feinstein J (1998). Tax compliance. *Journal of Economic Literature* 36(2):818-860.
- Azrina Mohd Yusof N, Ming Ling L, Bee Wah Y (2014). Tax non-compliance among SMCs in Malaysia: Tax audit evidence. *Journal of Applied Accounting Research* 15(2):215-234.
- Bilgin C (2014). Determinants of tax morale in Spain and Turkey: An empirical analysis. *European Journal of Government and Economics* 3(1):60-74.
- Bobek DD, Hageman AM, Kelliher CF (2013). Analyzing the role of social norms in tax compliance behavior. *Journal of Business Ethics* 115(3):451-468.
- Chow C (2004). Gearing up for the self-assessment tax regime for individuals. *Tax National* 2:20-23.
- Cuccia AD (1994). The effects of increased sanctions on paid tax preparers: Integrating economic and psychological factors. *The Journal of the American Taxation Association* 16(1):41.
- Devos K (2014). Tax compliance theory and the literature. In *Factors influencing individual taxpayer compliance behaviour*. pp. 13-65.
- Everest-Phillips M, Sandall R (2008). Linking business tax reform with governance: how to measure success washington. *DC : World Bank*.
- Falanni Z (2015). Determinants of corporate taxpayer compliance behaviour : A study case at "Duren sawit small tax office in indonesia". *Economic Development, Indonesia*, 20. Available at: [https://thesis.eur.nl/pub/33410/ZFalanni\\_MA\\_2014\\_15\\_ECD\\_DD.pdf](https://thesis.eur.nl/pub/33410/ZFalanni_MA_2014_15_ECD_DD.pdf)
- Fischer CM, Wartick M, Mark MM (1992). Detection probability and taxpayer compliance: A review of the literature. *Journal of Accounting Literature* 11:1.
- Fjeldstad OH, Semboja J (2001). Why people pay taxes: The case of the development levy in Tanzania (Pourquoi les gens paient des imp'ots : le cas de la taxe de d'veloppement en tanzanie). *World Development* 29(12):2059-2074.

- Frey BS, Torgler B (2007). Tax morale and conditional cooperation. *Journal of Comparative Economics* 35(1):136-159.
- Gbadago FY, Awunyo-Vitor D (2015). Gift tax compliance in Ghana: Evidence from Kumasi metropolis. *Journal of Accounting and Taxation* 7(2):29-37.
- Greene W (2002). *Econometric analysis*. New Jersey : Prentice Hall.
- Hanlon M, Mills LF, Slemrod JB (2005). An empirical examination of corporate tax noncompliance. *Ross School of Business Paper* (1025).
- Heinemann F (2011). Economic crisis and morale. *European Journal of Law and Economics* 32(1):35-49.
- Hug S, Spörri F (2011). Referendums, trust, and tax evasion. *European Journal of Political Economy* 27(1):120-131.
- Ibrahim M, Musah A, Abdul-Hanan A (2015). Beyond enforcement: what drives tax morale in Ghana?. *Humanomics* 31(4):399-414.
- James S, Alley C (2002). Tax compliance, self-assessment and tax administration. Available at: <https://ore.exeter.ac.uk/repository/bitstream/handle/10036/47458/james2.pdf>
- Joulfaian D (2000). Corporate income tax evasion and managerial preferences. *Review of Economics and Statistics* 82(4):698-701.
- Kemme DM, Parikh B, Steigner T (2020). Tax morale and international tax evasion. *Journal of World Business* 55(3):101052.
- Lago-Peñas I, Lago-Peñas S (2010). The determinants of tax morale in comparative perspective: Evidence from European countries. *European Journal of Political Economy* 26(4):441-453.
- Marien S, Hooghe M (2011). Does political trust matter? an empirical investigation into the relation between political trust and support for law compliance. *European Journal of Political Research* 50(2):267-291.
- McBarnet D (2003). When compliance is not the solution but the problem: From changes in law to changes in attitude. *Taxing democracy: Understanding tax avoidance and evasion*, 229.
- Mickiewicz T, Rebmann A, Sauka A (2019). To pay or not to pay? Business owners' tax morale: Testing a neo-institutional framework in a transition environment. *Journal of Business Ethics* 157:75-93.
- Mohamad M, Deris MS (2018). Determinants of Tax Noncompliance among Small and Medium Enterprises in Klang Valley, Malaysia. *Turkish Online Journal of Design Art and Communication* 8:1293-1299.
- Mohd Nor J, Ahmad N, Mohd Saleh N (2010). Fraudulent financial reporting and company characteristics: tax audit evidence. *Journal of Financial Reporting and Accounting* 8(2):128-142.
- Nur-Tegin KD (2008). Determinants of business tax compliance. *The BE Journal of Economic Analysis and Policy* 8(1):1-10.
- Nugroho RA, Zulaikha Z (2012). Factors affecting willingness to pay taxes with the consciousness of paying taxes as an intervening variable: A case study of individual taxpayers doing free work registered at KPP Pratama Semarang Tengah Satu. *Diponegoro Journal of Accounting* 1(1):150-160.
- Oladipupo AO, Obazee U (2016). Tax knowledge, penalties and tax compliance in small and medium scale enterprises in Nigeria. *IBusiness* 8(1):1-9.
- Radulovic B (2019). Morality of informality : Tax morale in the Serbian business sector—an empirical investigation. *Industrija* 47(1):43-60.
- Sapiei NS, Kasipillai J, Eze UC (2014). Determinants of tax compliance behaviour of corporate taxpayers in Malaysia. *eJTR* 12:383.
- Serim N, Yağanoğlu NY (2017). Good governance and tax compliance: An ordered probit application in Çanakkale. Available at: <http://acikerisim.comu.edu.tr/xmlui/handle/20.500.12428/1791>
- Singh V, Bhupalan R (2001). The Malaysian self-assessment system of taxation: Issues and challenges. *Tax Nasional* 3(1):12-17.
- Tedds LM (2010). Keeping it off the books : an empirical investigation of firms that engage in tax evasion. *Applied Economics* 42(19):2459-2473.
- Torgler B (2011). Tax morale, eastern Europe and European enlargement. *The World Bank*.
- Torgler B, Schaffner M, Macintyre A (2008). Tax compliance, tax morale and governance quality. In *Proceedings of the 16th annual conference on Pacific Basin Finance, Economics, Accounting and Management* pp. 1-25.
- Torgler B, Schneider F (2007). What shapes attitudes toward paying taxes? Evidence from multicultural European countries. *Social Science Quarterly* 88(2):443-470.
- Virmani A (1989). Indirect tax evasion and production efficiency. *Journal of Public Economics* 39(2):223-237.
- Yucedogru R (2013). Understanding tax morale and tax compliance of SMEs: An example of Turkey.

**Appendix Table 1.** Descriptive statistics.

Variable	Obs	Mean	Std.Dev.	Min	Max
Tax compliance	361	0.687	0.464	0	1
Geographical location	413	1.392	1.027	1	5
Business size	413	1.656	0.823	1	3
Tax fraud appreciation	360	2.356	0.685	0	3
Bribes to Deal with Taxes	397	2.327	0.717	0	3
Tax laws amendment (2019)	367	0.548	0.498	0	1
Tax knowledge	401	0.658	0.475	0	1
Tax beneficiaries	361	0.468	0.500	0	1
Severity of penalties	400	0.777	0.416	0	1
Customs duties legitimacy	400	0.725	0.447	0	1
VAT legitimacy	400	0.848	0.360	0	1
Taxes amount appreciation	402	2.410	0.691	1	3
Tax burden	396	2.720	1.260	1	5

**Appendix Table 2.** Variance inflation factor (VIF).

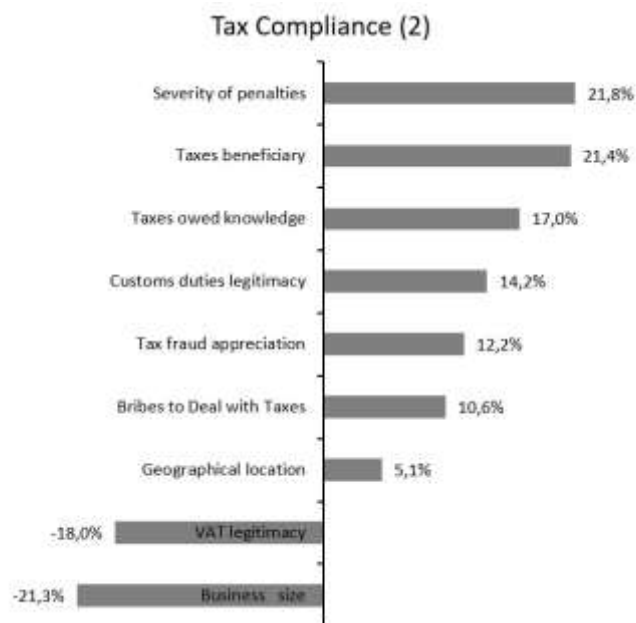
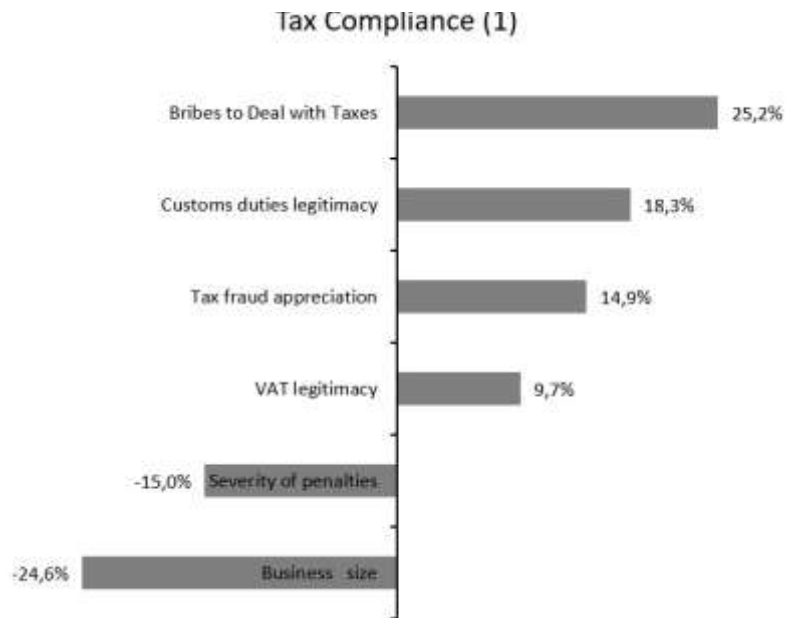
Variables	VIF	1/VIF
Tax laws amendment (2019)	2.00	0.500
Business size	1.96	0.509
Customs duties legitimacy	1.62	0.617
Taxes owed knowledge	1.60	0.626
Geographical location	1.37	0.732
VAT legitimacy	1.29	0.775
Severity of penalties	1.22	0.820
Bribes to Deal with Taxes	1.20	0.835
Tax beneficiaries	1.19	0.840
Taxes amount appreciation	1.11	0.898
Tax fraud appreciation	1.11	0.901
Tax burden	1.07	0.933

**Appendix Table 3.** Surveys administered to businesses.

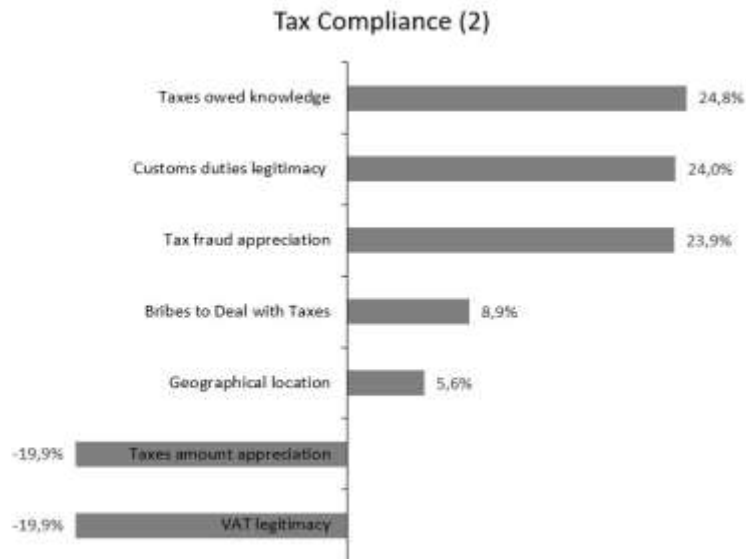
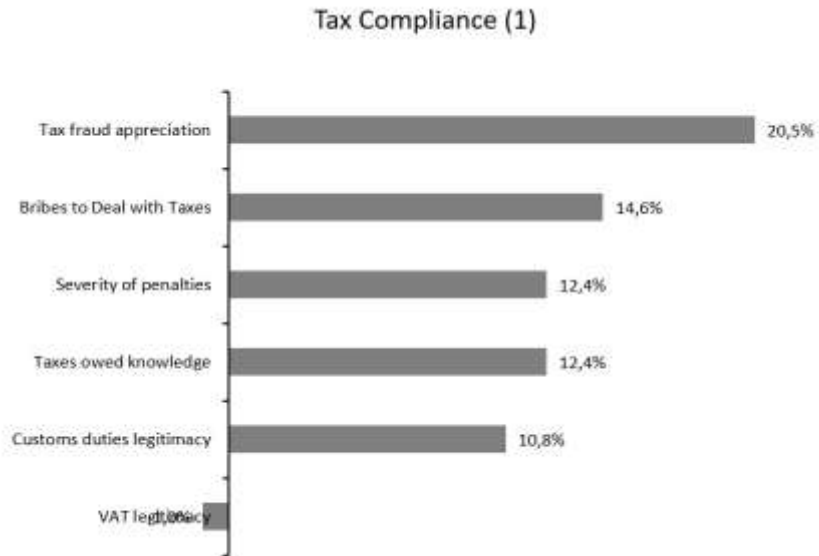
Variables	Questions	Modalities
Tax compliance (Q501)	If you had the opportunity to pay less by negotiating with an OTR collectors for a gift, would you do it ?	1 = Yes 2 = No
Tax compliance (Q502)	If you had the opportunity to use gaps in the law to pay less, would you exploit them ?	1 = Yes 2 = No
Tax compliance (Q503)	Are you currently proud to pay your taxes ?	1 = Yes 2 = No
Tax fraud appreciation (Q511)	Do you think a citizen should use gaps in the law to pay less tax ?	1 = Very poor 2 = Poor 3 = Indifferent 4 = Good
Bribes (Q512)	How do you judge negotiation with OTR collectors to pay less tax ?	1 = Very poor 2 = Poor 3 = Indifferent 4 = Good

Appendix Table 3. Cont'd

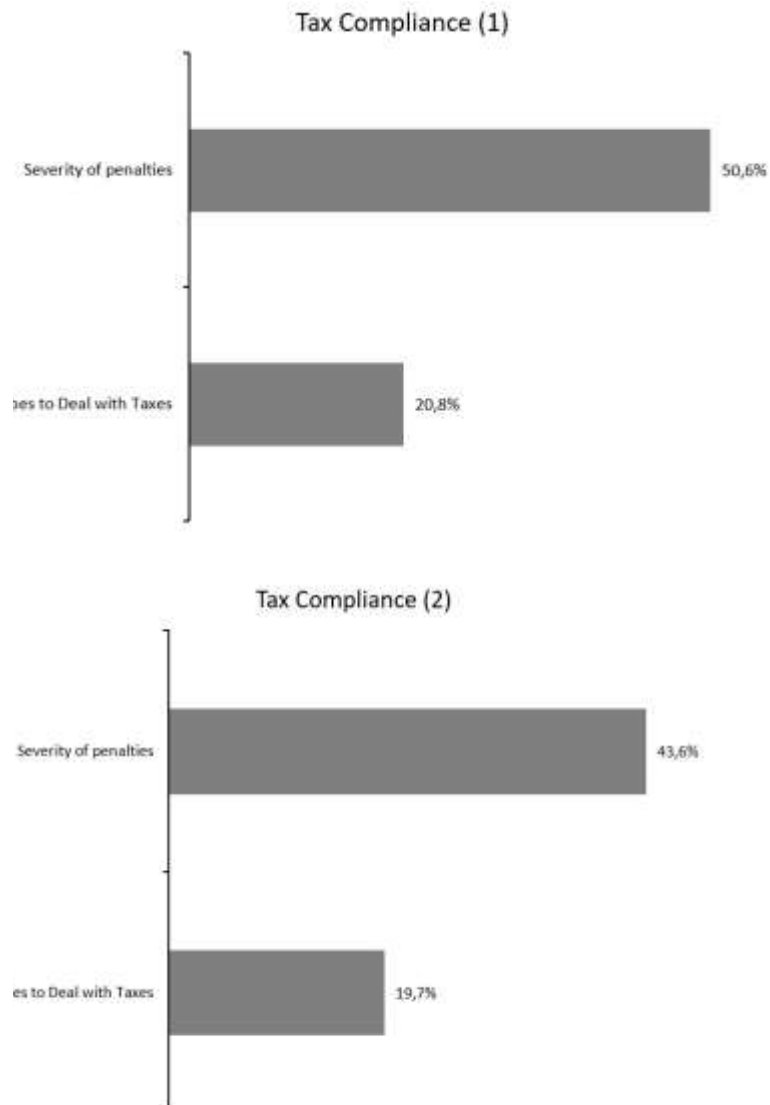
Tax laws amendment,2019 (Q518)	Are you informed of the tax changes introduced by the 2019 management finance law ?	1 = Yes 2 = No
Taxes owed knowledge (Q519)	Do you know all the taxes you are subject to ?	1 = Yes 2 = No
Geographical location (Q21)	According to the administrative division of the country.	1 = Maritime 2 = Plateaux 3 = Centrale 4 = Kara 5 = Savanes
Tax beneficiaries (Q524)	Do you think that the taxes paid serve more :	1 = Whole Togolese nation 2 = Public authorities
Severity of penalties (Q544)	In your opinion, with the advent of the OTR, is the tax administration more intransigent when fraudulent behavior is discovered ?	1 = Yes 2 = No
Tax burden (Q547)	How much of your income is from the taxes you personally paid for 2018 ?	1 = Less de 5% 2 = Enter 5 and 10% 3 = Enter 10 and 25% 4 = Ente 25 and 50% 5 = More 50%
Tax amount appreciation (Q548)	What is your impression of the amount of taxes you pay in Togo ?	1 = Largely supportable 2 = Acceptable 3 = Too high
VAT legitimacy (Q551-N)	Do you think it is legitimate to impose the following taxes on taxpayers in Togo ?	1 = Yes 2 = No
Customs duties legitimacy (Q551-O)	Do you think it is legitimate to impose the following taxes on taxpayers in Togo ?	1 = Yes 2 = No



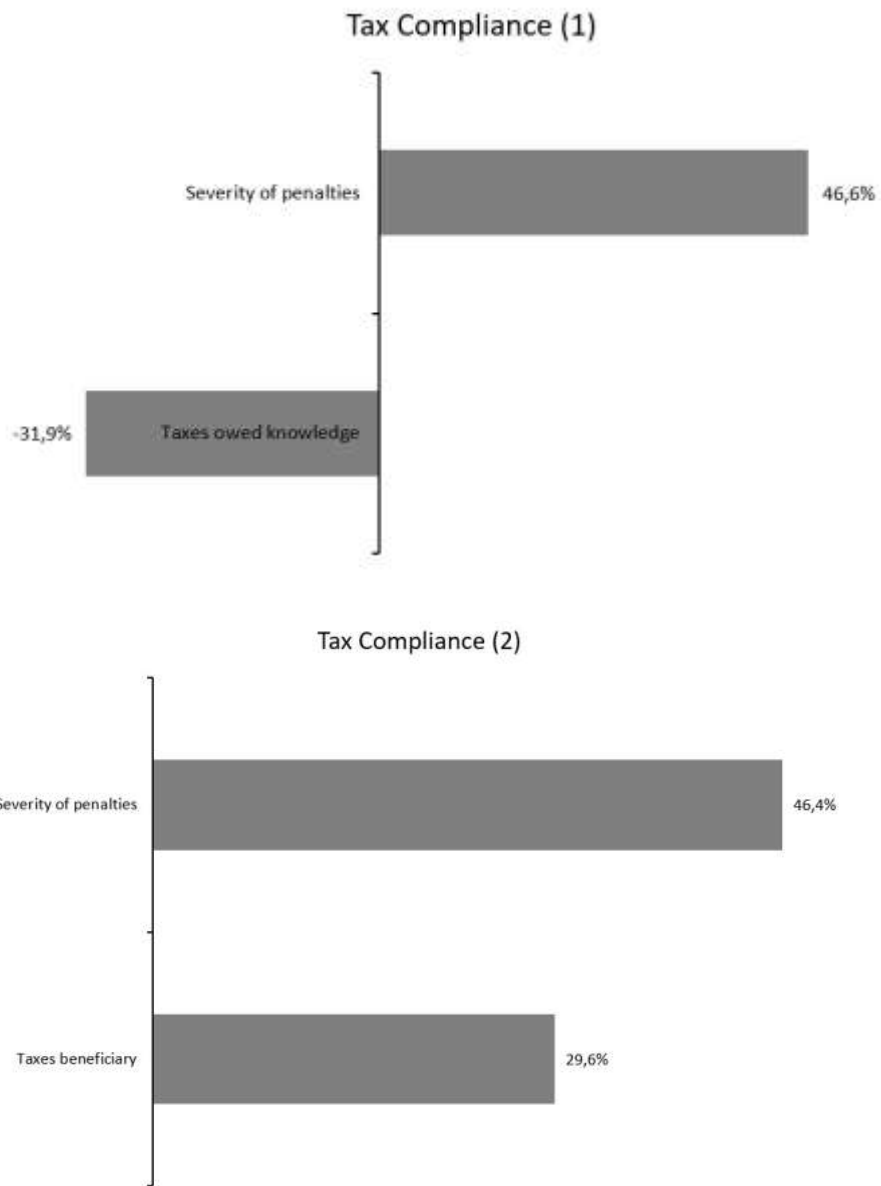
**Appendix Figure 1.** Determinants of business tax compliance (baseline model).



**Appendix Figure 2.** Determinants of business tax compliance by business size (small).

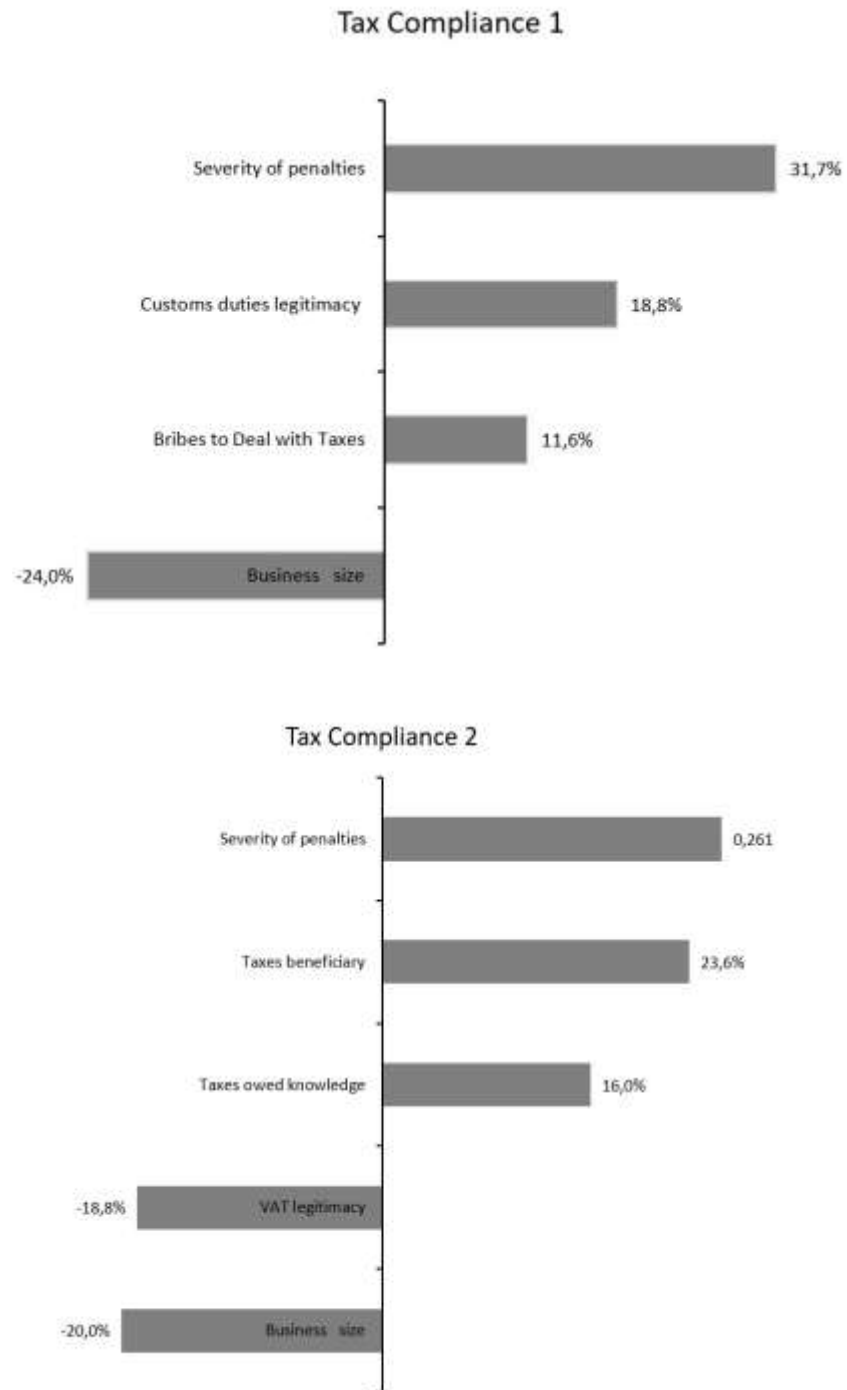


**Appendix Figure 3.** Determinants of business tax compliance by business size (medium).

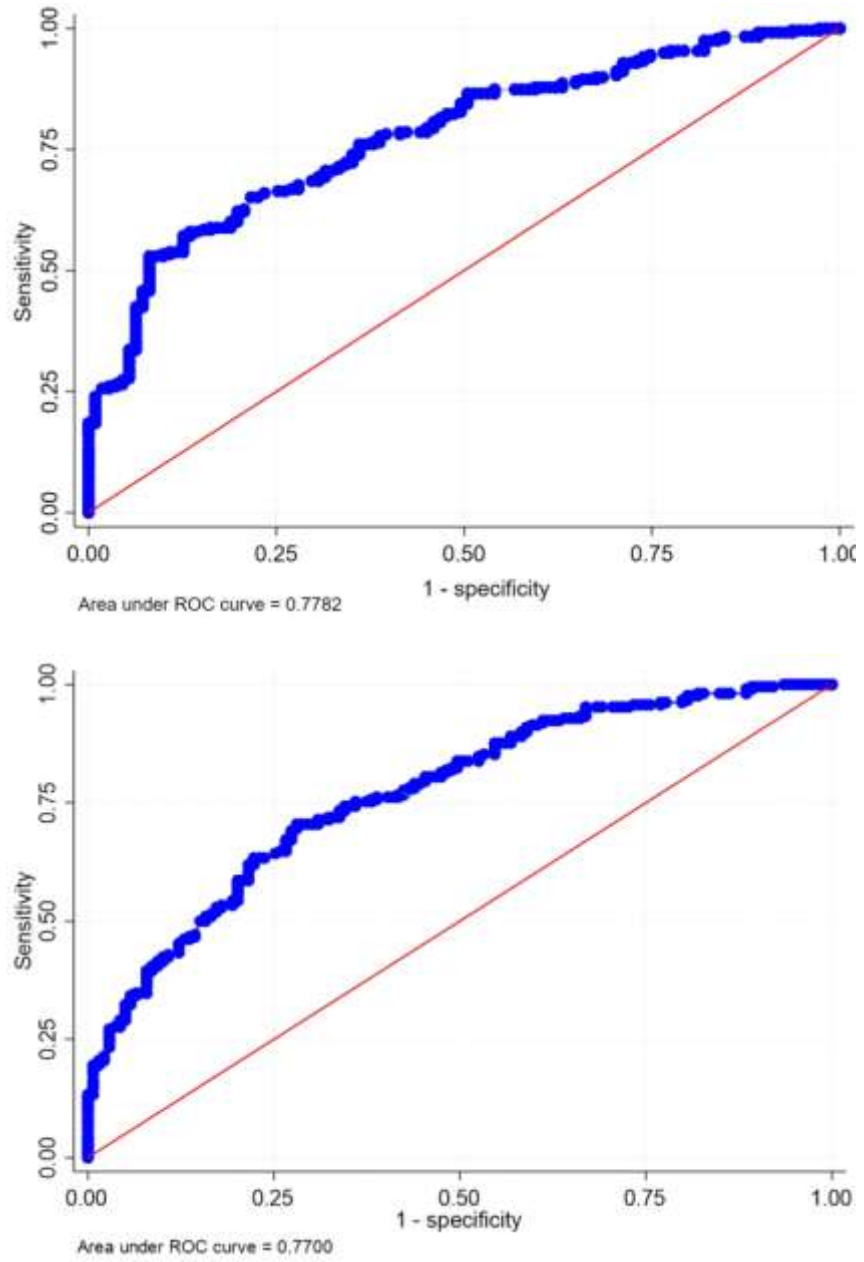


**Appendix Figure 4.** Determinants of business tax compliance by business size (large).

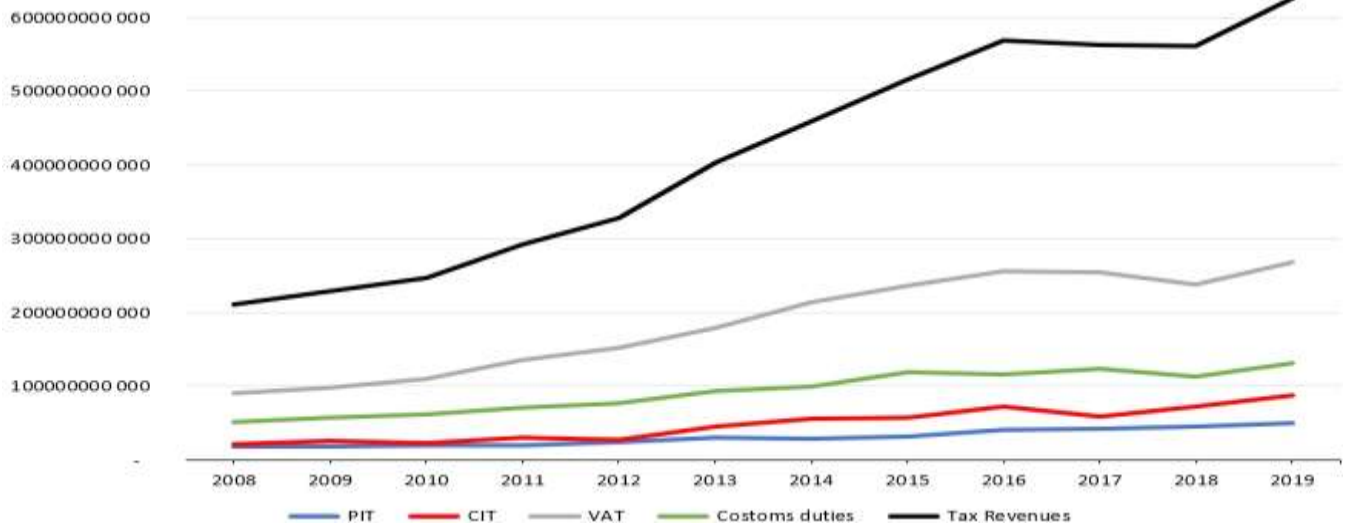




**Appendix Figure 5.** Determinants of business tax compliance by region (maritime).



Appendix Figure 6. Area under ROC curve.



Appendix Figure 7. Evolution of tax revenues in Togo (2008-2019).

*Full Length Research Paper*

# **Influence of computer literacy levels on tax compliance among Harare central business district small and medium enterprises**

**Nhundu Walter<sup>1\*</sup> and Matamande Wilson<sup>2</sup>**

<sup>1</sup>Faculty of Commerce and Law, Zimbabwe Open University, Harare, Zimbabwe.

<sup>2</sup>Department of Finance and Accounting, University of Zimbabwe, Zimbabwe.

Received 29 March, 2023; Accepted 3 May, 2023

**The goal of this research is to ascertain the influence of computer literacy levels on tax compliance among Harare central business district small and medium enterprises. The research employed a survey descriptive research approach, in which primary data collection methods and self-administered questionnaires were used to collect quantitative data and 13000 SMEs were the intended audience. Using stratified random sampling, a sample size of 389 participants was chosen as being representative of the target population. The data was gathered using descriptive statistics, and was analyzed using the Statistical Package for Social Sciences (SPSS) version 21.0. The study found that SMEs' computer literacy skills were positively correlated with tax compliance. The results demonstrate that the degree of computer literacy has a favourable impact on tax compliance, with each unit increase in computer literacy increasing tax compliance.**

**Key words:** Computer literacy levels, small and medium enterprises, tax compliance.

## **INTRODUCTION**

According to Auyat (2013), the accessibility of the internet and computer proficiency has a direct bearing on the usage of online tax returns. Online tax services commonly employ internet-based platforms, and Azmi and Bee (2010) believe that having a basic grasp of how to use the internet is crucial. Osebe (2013) claims that online tax filing is expensive due to inadequate computer skills. Mandola (2013) asserts that taxpayers must seek the assistance of third parties because they are unable to utilize the e-filing system swiftly and effectively or because they are unaware of the kinds of information that are needed. Ramoo (2006) underlined that the lengthier

time required for online filing is a result of the inability to utilize the system quickly and effectively without often entering the help menus or contacting third parties.

Ofori (2009) asserts that the cost of adopting online tax filing increases when the taxpayer lacks computer literacy, leading to a preference for manual filing. The taxpayers may choose between handling the electronic filing themselves notwithstanding the challenges of navigating the online system (Muhangi, 2012). Hussein et al. (2010) pointed out that in this situation, the user must be able to use the website's self-help menus and self-navigate on the internet platform with little to no trouble

\*Corresponding author. E-mail: [nhunduwalt@gmail.com](mailto:nhunduwalt@gmail.com). Tel: 00263772309680.

Similar research on the elements influencing utilization and acceptance of the e-filing system in Kenya by major taxpayers was carried out by Muita (2011). The research examined the technological requirements for e-filing users, the skills they require to utilize that technology, and the willingness of the tax authority to boost the use of tax compliance-based technology.

According to the report, e-filing in Kenya will not take off without the right personnel, infrastructure, and business climate. Kiring'a et al. (2017) made a suggestion that having an online tax filing system set up is one thing, but being able to use it by taxpayers is quite another. With computers available at home or at work, more people are likely to submit their taxes online. Additionally, the more comfortable they are using the internet, the simpler it will become for them to utilize the e-filing system since it will be more accessible to them (Carter et al., 2011). Therefore, because they are computer literate and frequently have access to a computer and high-speed internet, the taxpayers in the Harare Central Business Area may easily access and use the e-filing platform if they wish to. Mandola's (2013) research indicates that the majority are good with computers, which greatly facilitates and encourages them to comprehend and use e-filing technology. Most of them have access to the internet and to computers at their places of work and often use it, which enables them to use the online system with ease. As a result, some choose to file paperwork manually, which has an impact on how well e-services are implemented since consumers are less willing to accept and utilize the technology.

Computer proficiency, familiarity with information technology, and knowledge of tax regulations are some of the technical abilities needed for effective installations of E-tax administration systems.

Eshet (2012) emphasized that computer skills required a wide range of complex sociocultural, intellectual, psychological, and physical abilities. According to Osterman (2013), computer literacy is composed of three key components: develop suitable skills, cognitive abilities, creative abilities, and communication skills. Technological procedural skills are the fundamental computer abilities needed to use information with contemporary graphic user interface design and to browse the internet. Intellectual abilities engage with educational concerns, whereas inventiveness and interpersonal abilities are focused on the media platforms component of computers in modern culture.

Such abilities are crucial for the achievement of e-government delivery of services. In order to increase tax income through the acceptance of electronic services, computer proficiency is essential in addition to tax training for Small and Medium Enterprises (Bornman and Wassermann, 2018). While increasing income creation and achieving tax compliance are challenging tasks, the difficulty can be reduced by using basic computer skills and taxation knowledge (Aksnes, 2014).

The capacity of the public to use state e-services, which call for specialized internet and computer capabilities, is essential for their achievement (Kasyoka et al., 2022).

Basic and necessary communication abilities, such as the ability to utilize and administer ICT resources and amenities, are referred to as computer literacy (Tomaszewicz (2015), claims that among various other things, sending emails with attachments, using search engines in online conversations, groups, and discussion boards, and also phone appointments online, are among the fundamental abilities that can be employed to gauge computer literacy.

Government support and citizen adoption are both essential to the effectiveness of e-Government services (Kasyoka et al., 2022). With the state's technological investment and the potential for efficiency savings, it is crucial that taxpayers embrace E-tax management solutions (Mhuri and Kiarie, 2015). Even though there is a greater need to strengthen tax collection and implementation, developing nations like Zimbabwe continue to struggle with the adoption of online services, which results in low tax compliance. Even though it's crucial for the success of any electronic service initiatives, academics have not centred on how computer literacy affects people's willingness to utilize online services.

Nonetheless, Muita (2011) concluded that it aids in tax administration and reduces costs in his investigation of the elements that influence the effective adoption of e-filing in Zimbabwe. By examining how computer literacy affects the implementation of computerized tax systems in Harare Central Business District, the current study aimed to close a knowledge gap in the field through the following objectives:

- a. To examine the computer literacy levels on tax compliance of SMEs in Harare (Zimbabwe).
- b. To identify the effect of tax e-filing security regarding tax adherence among SMEs.
- c. To establish SMEs perception towards online tax filing system on tax compliance.

### **Scope of the study**

This study aims to examine how computer literacy affects small- to medium-sized businesses' compliance with tax laws, with a particular focus on those located in the Harare Central Business District. The impact of SMEs' computer literacy on tax compliance should not be disregarded for a number of reasons. As the government's primary function is to raise money through ZIMRA, this is crucial to bring numerous unregulated SMEs on record so that they can pay their taxes and help reduce the nation's soaring debt. Several industrialized and emerging countries are giving this study issue fast-rising priority. The research will broaden our corpus of

expertise that already exists and the body of literature that will be consulted by ZIMRA, the Ministry of Small and Medium Businesses, and other scholars. Whereas there are theories that address the variables affecting computer literacy levels, little is known regarding the actual impact of computer literacy levels on the tax compliance of SMEs in developing nations like Zimbabwe.

### Delimitations

- (a) Registered participants who are outside Harare Central Business District were not included in the research
- (b) SMEs registered on ZIMRA E- Filing system and have been in business for five or more years.

### Limitations of the study

- i) The sample size could be insufficient to adequately represent all SMEs country wide because it will be challenging to draw meaningful conclusions from the data and because statistical tests typically call for a bigger sample to ensure a fair representation distribution among the population and for it to be regarded sample of the population as a whole for purposes of generalization or transfer.
- ii) Harare CBD is comprised of registered SMEs with different information technology backgrounds, that is website literacy or not.

## LITERATURE REVIEW AND HYPOTHESIS FORMATION

In this part of the research, a brief summary of past studies on the consequences of computer literacy levels, online tax security, and SMEs' attitudes of tax compliance is given. Based on that review, we formulate the hypothesis on the connections between the elements shown in Figure 1. Many traders lack the computer abilities required to execute the proper tax filings. Worthington (2006) notes that, although academics and policymakers have sought to describe financial knowledge, different people may have different interpretations of what it means. Elmi et al. (2015) backs up this claim. According to Elmi et al. (2015), literacy is "the capability to distinguish, comprehend, clarify, induce, convey, and calculate applying published and authored accoutrements communed with assorted portions."

According to the Institute of Economic Affairs (2012), the majority of SMEs lack the computer skills necessary to use online tax services. Research on "the performance of SMEs in India" was conducted in 2013 by Nathan Associates Inc. The study discovered that the majority of SMEs could not provide e-services because they lacked

the computer knowledge required to connect to the internet.

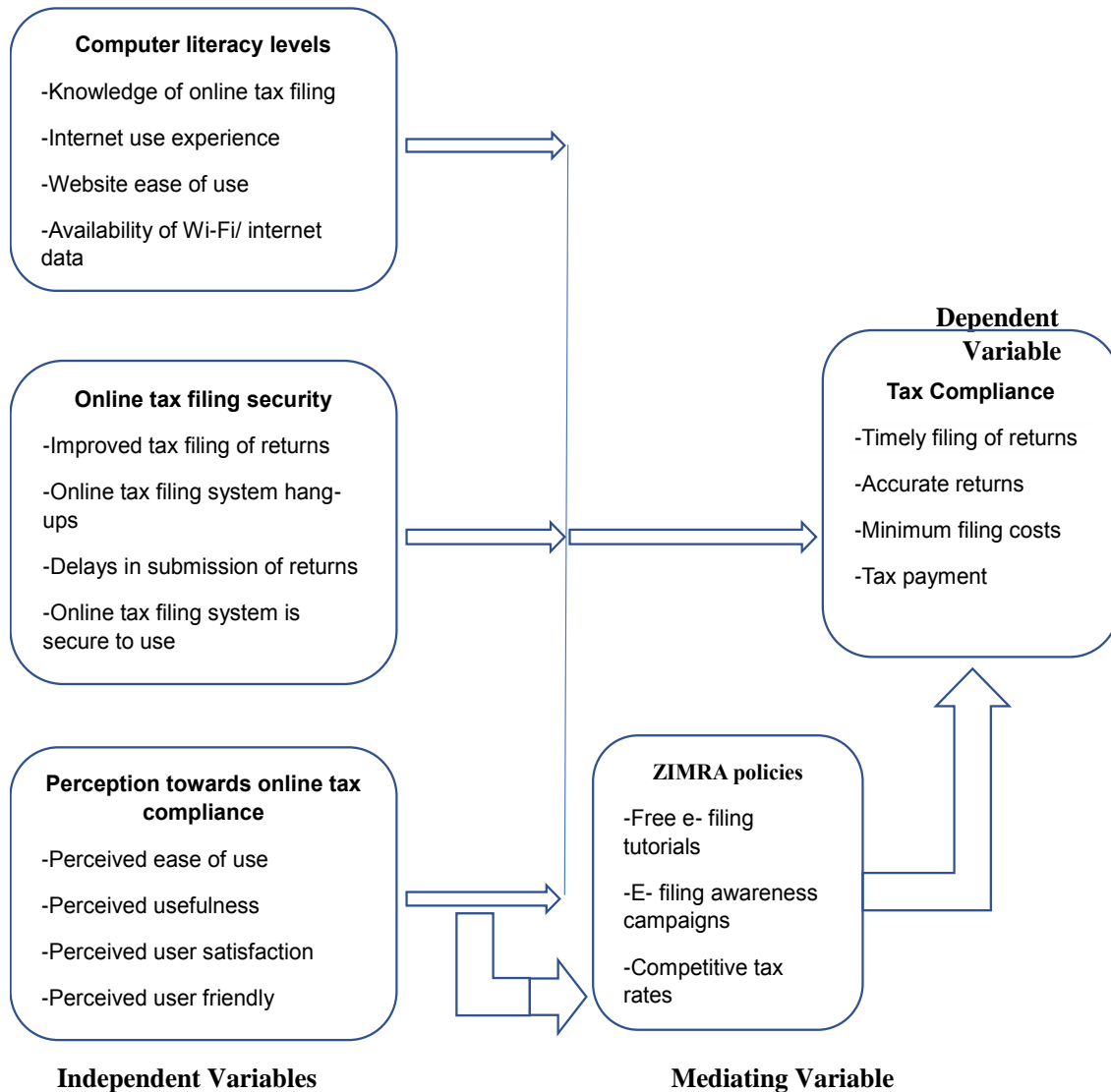
Information technology competency is essential for the implementation of electronic tax administration systems since technology acceptance is highly dependent on the user's ability to use the technology. Alam and Noor (2010) conducted research in Malaysia to identify the factors influencing SMEs' usage of the internet. The study's size of the sample of SMEs was 465. The findings showed that SMEs' acceptance of web applications is influenced by their level of computer expertise and experience.

Kasyoka et al. (2022) investigated the effective implementation of the online taxation system in Nairobi County. According to the results of the correlation analysis, technical expertise and the adoption of Kenya Revenue Authority e-tax administrations have a Pearson's correlation ( $r$ ) of 0.746 and a  $p$ -value of 0.000. This suggests a strong positive connection among the two factors. It was ruled that there existed a material connection among the two factors. The results of the regression study showed that technical competence is a significant factor in determining the adoption of Kenya Revenue Authority e-tax administrations, with a positive relation to each other. The research came to the conclusion that technical skill is a critical success element in establishing e-tax systems since it favourably effects the adoption of those systems.

Ojeniyi and Adetimirin (2016) conducted research on the impact of ICT literacy on professors' use of online material in Nigeria. Total enumeration sample and a descriptive research methodology were used in the investigation. Ajayi Crowther University and Lead City University contributed 234 scholarly personnel to the sample. The two institutions' scholarly personnel have access to the greatest resources via email and websites. The usage of e-resources by teachers, which determines the adoption of Information technology, and Information technology literacy abilities were shown to be significantly positively correlated in the research. This suggests that user Information technology literacy is essential for the effective use of electronic services.

Ogbuiyi et al. (2014) examined the impact of computer literacy and internet searching on undergraduates' utilization of learning resources in the Babcock University library. In this study, a method of survey research was used. Questionnaire survey was used for the data gathering process. The findings showed that the major issue preventing online academic content searches was the library's inadequate computer infrastructure. The authors came to the conclusion that creating good web searches requires computer proficiency. In order to properly deliver its e-services to all stakeholders, which include the small and medium enterprises, state agencies authorized to develop online services should guarantee that all target users have competency in computer skills.

This is a fact Zimbabwe Revenue Authority should embrace.



**Figure 1.** Conceptual framework.  
Source: Authors' own design.

Ofcom (2015) posit that SMEs lacked the technical expertise to manage their connection with their internet service providers for information technology (IT) and technical assistance. The survey also discovered that as a result, the majority of SMEs are unable to independently resolve simple connection issues. The introduction of e-services that need internet-based applications has suffered as a result of this lack of technical expertise to address connectivity issues. This poses a problem for a government organization, such as ZIMRA, to introduce e-services among SMEs. Alam and Noor (2010) performed a study in Malaysia in order to evaluate the variables influencing SMEs' use of the internet. The study's sample size was 465 Small and medium enterprises. The findings showed that Small and Medium Enterprises' adoption of internet applications are

influenced by their level of computer expertise and experience. The research suggested that the government organizations charged with executing Information Technology improvements solve the intended clients' computer literacy challenges.

Kamarulzaman and Azmi (2010), claim that taxpayers who lack Computer literacy find it difficult to use the online filing procedure. They wind up taking a long time to understand how the system works. The majority of SMEs lack the computer skills necessary to use online tax services (Institute of Economic Affairs, 2012). According to Nathan Associates Inc. (2013) performed research on "the performance of SMEs in India" using the internet. The results showed that the majority of SMEs lacked the technical know-how to utilize the internet, which caused the deployment of e-services to fail. As how innovation is

**Table 1.** Reliability statistics.

	Part 1	Value	0.899
		No. of Items	5 <sup>a</sup>
Cronbach's alpha	Part 2	Value	0.898
		No. of Items	5 <sup>a</sup>
	Total N of Items		10
Correlations between forms			0.958
Spearman – brown	Equal length		0.979
Coefficient	Unequal length		0.979
Guttman split- half coefficient			0.979

<sup>a</sup>The items are: E- filing, Online- swift, Slow- internet, E- filing secure, Easywebsite. <sup>b</sup>The items are: Accutax, Easy- tax returns, Design- online, Online- faster, Understandol.  
Source: Authors.

embraced relies upon the user's capacity to utilize the technology, computer technology competency is crucial for the adoption of online tax systems administration. Consequently, the following hypotheses have been made in relation to the variables that serve as the foundation of this research:

**Hypothesis 1:** *Computer literacy levels does not significantly influence SMEs' adherence with tax laws in Harare Central Business District.* The majority of SMEs lack the computer skills necessary to use online tax services (Institute of Economic Affairs, 2012). Therefore, this hypothesis is meant to investigate the impact of SMEs computer literacy levels on tax compliance.

**Hypothesis 2:** *Online tax filing security does not significantly affect tax compliance among SMEs.* This hypothesis 2 was used to examine how taxpayers would respond to compliance, particularly if they filed their returns online using vulnerable computers. Many information security issues, such as users' safe identification, internet security, authentication procedures, secrecy, trustworthiness, and online verification, have an impact on how effectively online services are deployed (Singh, 2011). Hence, the adoption of online filing systems and tax compliance are hampered by security issues.

**Hypothesis 3:** *SMEs perception does not significantly impact tax compliance.* Nalendro (2014) agrees that a taxpayer's impression of their own awareness influences how they act in relation to paying taxes. Additionally, he argued that the more aware the taxpayers become, the best prepared they are to effectively govern their behaviour and behave in conformity with the tax regulations, resulting in a higher degree of compliance. In light of this, the purpose of this hypothesis was to investigate whether small and medium-sized businesses

had an impact on tax compliance.

## RESEARCH METHOD

Survey questionnaires were used to collect quantitative data from chosen SMEs in the Harare CBD that were registered for online filing in the ZIMRA database and have been in operation for at least five years. Cooper (2003) asserts that descriptive design identifies and quantifies the reasons behind the correlations between variables. The three study goals were collected using structured questionnaires. The questionnaire was developed using a 5-Likert Scale, where 1 is Strongly Agree and 5 is Strongly Disagree, in order to achieve certain study objectives and undertake hypothesis testing. Kothari (2009) asserts that 5-point Likert scales are used because they are more trustworthy and able to provide more information. Face validity was used to evaluate questionnaires for readability, arrangement, practicality, clarity, wording, and style; content validity was used to determine the subject matter that is relevant to this inquiry. The researcher also utilized the inter-rater reliability strategy to prove equivalence. Internal consistency was tested using the split-half reliability approach, which confirms that each component of an appropriate tools and techniques the same feature. Cronbach's Alpha scores for the effects of computer literacy levels, the security of electronic tax filing, and the perception of electronic tax filing on tax compliance in Table 1 were .899 and .898, respectively. Cronbach and Meehl (1955), cited by Wasao (2014), discovered that values of 0.70 and above are good markers of internal consistency and dependability.

### Study population and sampling procedures

The population of the current study was limited to the Small and Medium Businesses (SME) in Harare's Central Business District (CBD), which includes hardware stores, saloons, auto parts stores, auto repair shops, driving schools, grocery stores, pharmacies, and transporters. The intended audience is 13000 SMEs in Harare (CBD) registered on the ZIMRA e-filing tax system database. This study used a total sample size of 389 as an accurate representation of the desired audience using the stratified random sampling approach. Using a sample to make judgments regarding the population as a whole is standard procedure in research (Saad, 2011). With 380 respondents as the final sample, this research had



**Table 2.** Correlations of SMEs computer literacy levels and tax compliance.

		<b>Compliance</b>	<b>Easy website</b>	<b>Easy-tax returns</b>	<b>Online-faster</b>
Compliance	Pearson correlation	1	0.079	0.828**	0.839**
	Sig. (2-tailed)		0.124	0.000	0.000
	N	380	380	380	380
Easy website	Pearson correlation	0.079	1	0.064	0.031
	Sig. (2-tailed)	0.124		0.213	0.550
	N	380	380	380	380
Easy-tax returns	Pearson correlation	0.828**	0.064	1	0.744**
	Sig. (2-tailed)	0.000	0.213		0.000
	N	380	380	380	380
Online-faster	Pearson correlation	0.839**	0.031	0.744**	1
	Sig. (2-tailed)	0.000	0.550	0.000	
	N	380	380	380	380

\*\*Correlation is significant at the 0.01 level (2-tailed).  
Source: Authors.

a 97.7% response rate, and just 9 forms (2.3%) were left blank. Considering that it exceeded the 50% minimum level that Mugenda and Mugenda (2009) advice, 97.7% is large enough to produce statistically significant results.

**Data presentation**

Pre-coded data from surveys were entered into Excel spreadsheets and examined using the Statistical Package for the Social Sciences. The impact of computer literacy levels on small- and medium-sized businesses' compliance with tax laws in Zimbabwe's Harare Central Business Area was examined using regression analysis. This was done to assess the independent variables' capacity to explain the variation of the dependent variable (tax compliance). Data were shown using graphs, tables, pie charts, and descriptive narratives. The one-way ANOVA was used to assess if the linear regression model adequately matched the data or whether the three independent variables were useful predictors of the dependent variable.

**SMEs demographic and background information**

According to the findings, 126 men and 254 women, or 33.16 and 66.84%, respectively, responded to the 380 questionnaires that the sampled SMEs returned. In addition, 45 (11.84%) of the participants are under the age of 30, followed by 66 (17.37%) respondents age range between 31 and 35, 72 (18.95%) respondents age range between 36 and 40, 162 (42.63%) respondents age range between 41 and 45, and 35 (9.21%) respondents who are beyond 45. According to the SME's educational levels, 86 (22.63%) have a college diploma or certificate, 61 (16.05%) have "A" level certificate, 74 (19.47%) have "O" level certificate, 100 (26.32%) have a bachelor's degree, 50 (13.16%) have a master's degree, and the remaining 9 (2.37%) do not have a degree. This demonstrates that all respondents had completed their basic education and that the SMEs sector in Harare CBD had a high literacy rate (Masarirambi, 2013).

**DATA ANALYSIS AND RESULTS**

**Correlation analysis and descriptive statistics**

As shown in Tables 2 to 4, multiple linear regression was used to assess the overall influence of computer literacy, the impact of online tax filing security, and attitudes of SMEs on tax compliance within the Harare Central Business District.

Table 2 revealed that the significant Spearman correlation coefficient values of 0.828 and 0.839 shows that there is a very strong positive correlation between SMEs computer literacy levels and tax compliance. Thus, as SMEs computer literacy levels increases, tax compliance levels also increase indicating that this relationship was statistically significant at the 0.01 level. On the other hand, the EASYWEBSITE variable showed a correlation coefficient value of 0.079. This is a very weak positive correlation between SMEs computer literacy levels and tax compliance.

Table 3 indicated that the correlation coefficient values of 0.016 and 0.063 shows that there is a very weak positive correlation between online tax filing security and tax compliance. Hence, as online tax filing security weakly increases, tax compliance levels also weakly increase indicating that this relationship was not statistically significant at the 0.01 level. However, the variable E-FILING SECURE showed a correlation coefficient value of -0.052. This is a very weak negative correlation between online tax filing security and tax compliance.

Table 4 showed that the correlation coefficient values of -0.099 and -0.042 reveals that there is a very weak

**Table 3.** Correlations of online tax filing security and tax compliance.

		Compliance	Online-swift	Slow- internet	E- filing secure
Compliance	Pearson correlation	1	0.016	0.063	-0.052
	Sig. (2-tailed)		0.754	223	0.314
	N	380	380	380	380
Online-swift	Pearson correlation	0.016	1	0.898**	0.720**
	Sig. (2-tailed)	0.754		0.000	0.000
	N	380	380	380	380
Slow- internet	Pearson correlation	0.063	0.898**	1	0.799**
	Sig. (2-tailed)	223	0.000		0.000
	N	380	380	380	380
E- filing secure	Pearson correlation	-0.052	0.720**	0.799**	1
	Sig. (2-tailed)	0.314	0.000	0.000	
	N	380	380	380	380

\*\*Correlation is significant at the 0.01 level (2-tailed).

Source: Authors

**Table 4.** Correlations of SMEs perception towards tax compliance.

		Compliance	Design-online	Accutex	Understanol
Compliance	Pearson correlation	1	-0.099	-0.42	0.018
	Sig. (2-tailed)		0.054	0.409	0.731
	N	380	380	380	380
Design-online	Pearson correlation	-0.099	1	0.930**	.605**
	Sig. (2-tailed)	0.054		0.000	0.000
	N	380	380	380	380
Accutex	Pearson correlation	-0.42	.930**	1	.526**
	Sig. (2-tailed)	0.409	0.000		0.000
	N	380	380	380	380
Understanol	Pearson correlation	0.018	0.605**	.526**	1
	Sig. (2-tailed)	0.731	0.000	0.000	
	N	380	380	380	380

\*\*Correlation is significant at the 0.01 level (2-tailed).

Source: Authors.

negative correlation between SMEs perceptions and tax compliance. Thus, as SMEs perceptions decreases, tax compliance also decrease indicating that this relationship was not statistically significant at the 0.01 level. Also, the UNDERSTANOL variable showed a correlation coefficient value of 0.018. This is a very weak positive correlation between SMEs perceptions and tax compliance.

The model's unstandardized coefficients in Table 5 were examined in order to ascertain the effects of

computer literacy levels, online tax filing security, and perceptions of online tax filing on tax compliance at a separate level. The levels of tax compliance would increase by 1.609 if the impacts of computer literacy level, perception of online tax filing, and online tax filing security all remained unchanged at zero as alluded by the regression equation's coefficient of intercept (1.609).

A unit decrease in online tax filing security would result in a unit decrease in tax compliance, according to the

Table 5. Coefficients.

Model	Unstandardized coefficients	Std. error	Standardized coefficients	t	Sig.	Correlations	Partial	Part	Collinearity statistics	VIF
	B		Beta			Zero-order			Tolerance	
1 (Constant)	1.609	0.099		16.326	0.000					
Online-swift	-0.363	0.122	-0.419	-2.968	0.003	0.016	-0.152	-0.145	0.119	8.390
Slow-internet	-0.002	0.119	-0.003	-0.017	0.986	0.063	-0.001	-0.001	0.064	15.578
E-filing secure	-0.223	0.104	-0.329	-2.149	0.032	-0.052	0-.111	-0.105	0.101	9.890
E-filing	0.142	0.057	0.417	2.512	0.012	-0.030	0.129	0.122	0.086	11.584
Accutax	0.129	0.067	0.276	1.927	0.055	-0.042	0.100	0.094	0.116	8.627
Easywebsite	0.397	0.127	0.563	3.136	0.002	0.079	0.161	0.153	0.074	13.566
Easy-tax returns	0.143	0.063	0.278	2.264	0.024	0.064	0.117	0.110	0.158	6.340
Design-online	-0.348	0.078	-0.751	-4.450	0.000	0-.099	-0.225	-0.217	0.083	11.999
Online-faster	-0.010	0.069	-0.015	-0.146	0.884	0.031	-0.008	-0.007	0.215	4.662

<sup>a</sup>Dependant variable: Compliance.

Source: Author’s Computation from survey research (2023).

beta coefficient of online tax filing security, which is cumulatively -0.588 (-0.363, -0.002 and -0.223); t - statistics -0.751 (-0.419, -0.003, -0.223); and p-significance -5.134 (-2.968, -0.017, -2.149). Similar to the previous example, the cumulative beta coefficient for the perception of online tax filing is -0.215 (0.143, -0.348, and -0.010); the t statistic is -2.332 (2.264, -4.450, -0.146); and the p-significance is 0.908 (0.024, 0.000, 0.884), indicating that a unit decline in the perception of electronic tax filing would result in a 21.5% decline in tax compliance levels. In addition, an increase in computer literacy would result in a 0.668 (0.142, 0.129, and 0.397); t - statistics 7.575 (2.512, 1.927, 3.136); and p-significance 0.069. (0.012, 0.055, 0.002). With regards to the calculations, a single increase in SMEs' computer literacy levels will result in a 66.8% rise in tax compliance. According to their coefficients in the following linear regression equation, two independent variables cumulatively had a negative

impact on the dependent variable, whereas one independent variable had a positive impact:

$$\text{Tax Compliance} = 1.609 + 0.668(x_1) - 0.588(x_2) - 0.215(x_3)$$

Where  $x_1$  = Computer literacy levels;  $x_2$  = Online tax filing security;  $x_3$  = Perception of online tax filing

**DISCUSSION**

The multiple correlation coefficients (R) in Table 6 demonstrated a significant and positive link between the dependent variable and the three independent variables, with a value of 0.349. The three independent factors nevertheless accounted for 12.2% of the variance in tax compliance, according to the factor determining the coefficient (R Square).

The three independent variables: computer

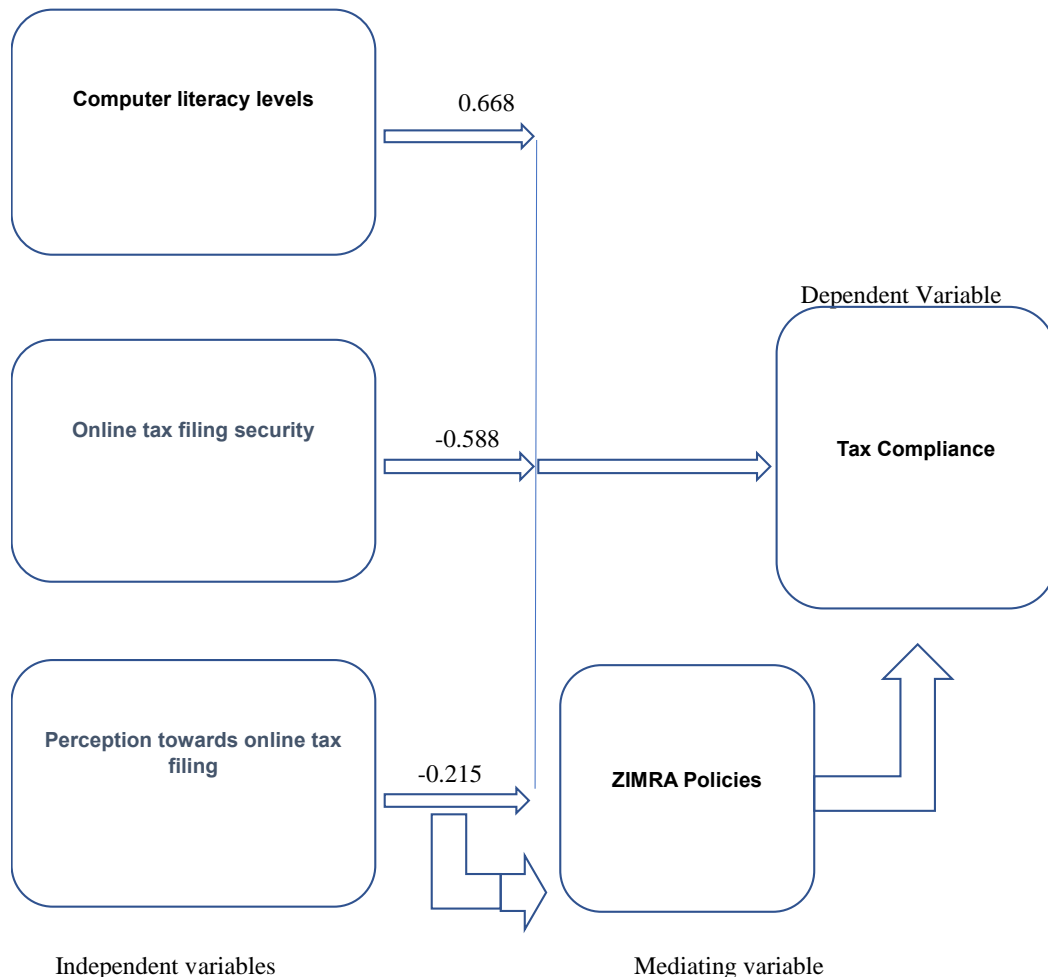
literacy levels, the security of online tax filing, and attitudes toward tax compliance represented by ONLINESWIFT, SLOWINTERNET, E-FILING SECURE, EFILING, ACCUTAX, EASYWEBSITE, EASYTAXRETURNS, DESIGNONLINE, and ONLINE-FASTER account for the variation in tax compliance. The relationship between the variables under study is shown by the correlation coefficient, or R.

Computer literacy levels, the usage of the online tax filing system, and tax compliance are all correlated. Thus, an incremental rise in SMEs' computer literacy levels will result in an increase in tax compliance of around 66.8%. This proves that SMEs will pay their taxes on time provided they are familiar with online tax filing systems, internet usage, website use, and are supported by constant Wi-Fi or internet data availability. The results of the study by Cadiz- Gabejan and Takenaka (2021) agree with the results of this study, even though they looked at a different field.

**Table 6.** Summary of the model.

Model	R	R square	Adjusted R square	Std error of the estimate	R Square change	Change statistics F Change	df1	df2	Sig. F Change
1	0.349 <sup>a</sup>	0.122	0.100	0.462	0.122	5.701	9	370	0.000

a. Predictors: (Constant), Online-faster, Accutax, Easy-tax returns, E-filing secure, Easy website, Design-online, Slow-internet  
 Source: Author’s Computation from survey research (2023).



**Figure 2.** Summary of the results model.  
 Source: Researcher’s computation (2023).

Their research aimed to find out how much students in junior high school in the Philippines know about computers and if it affects how well they do in school. The study found out that the students need to improve their computer skills in word processing, making spreadsheets, creating presentations, and using computers in general. The study also revealed that if a student is good at using computers for certain subjects, their grades will be better in those subjects. According to the report, ZIMRA should step in and provide free e-filing seminars in all of its

branches nationally in order for the improvement in tax compliance to continue.

A negative association between tax compliance and the security of online tax filing was also revealed by the results in Figure 2. This suggests that there will be a 58.8% decrease in tax compliance as a result of a one-time enhancement in the security of SMEs' online tax filing. This demonstrates that if people believe the online filing system is not safe enough, they will file fewer tax returns, and if the system keeps hanging up, they are

compelled to postpone completing their taxes. ZIMRA can change this by examining the online tax system in order to increase the server's effectiveness both during peak times and during regular times. Figure 2 also depicted the link between SMEs' perceptions of online tax filing and tax compliance. According to the findings, a temporary improvement in SMEs' attitudes toward online tax filing will cause a 21.5% drop in tax compliance. This suggests that taxpayers will not comply if they believe the online tax system is not simple, practical, user-satisfying, and user-friendly. In order to provide SMEs a favourable impression of the online tax filing system as well as by giving reasonable tax rates to improve tax compliance, ZIMRA may increase e-filing awareness programs to remedy this negative association. Consequently, it is anticipated that taxpayers (SMEs) will accurately calculate tax returns, submit tax returns on time, at the lowest possible cost, and pay the numerous tax returns to ZIMRA once all the negative correlations have been addressed and aggregated with the current strong relationships to improve tax compliance.

### Recommendations

The study therefore finds that SMEs' computer literacy levels of the electronic tax filing system have a positive impact on their tax compliance. As a result, it recommends ZIMRA to offer taxpayers free computer tutorials on e-filing at its branches throughout the nation, review the online tax filing system to enhance security, and increase awareness campaigns to encourage a positive perception of the electronic tax filing system in order to maximize compliance. The recommendations made above are thoroughly emphasized below.

The study's results revealed a relationship between computer literacy and tax compliance when paying taxes online. This implies that ZIMRA should connect with the taxpayers and give them free computer training on e-filing in order to promote and raise the tax compliance rate of SMEs.

It is believed that people would cooperate to submit and pay for their different tax returns if the online tax filing system was secure. ZIMRA could consistently do this by utilizing well-known media including radio, television, and pamphlets. They were shown to be the most successful, while the use of the internet, newspapers, and workshops was found to be the least effective (Nyamwanza et al. 2014).

ZIMRA should uphold a positive company reputation and make sure that a welcoming client service culture is created in order to encourage taxpayers' voluntary and cooperative compliance (Siavhundu, 2020). He continued by saying that treating taxpayers properly would increase their sense of worth and ownership over the money being collected, which would improve tax compliance. ZIMRA must constantly address the major issue of corruption

among the board members, management, and all employees since it influences how taxpayers see tax compliance.

While we applaud ZIMRA for opening the first WI-FI free Self-service Facility (Kiosk) at Kurima House in Harare, we urge them to do the same as soon as possible in all other centres across the nation. This will improve computer literacy, which will increase tax compliance by encouraging more taxpayers to file tax returns and make payments. The fact that these facilities offer a platform for initial registration into ZIMRA's E-Services, recording Income Tax, VAT, and PAYE Tax Returns on E- Services and E- Taxes, and validating Tax Clearances granted on ZIMRA E-Services makes them essential for all taxpayers, not just SMEs. It is also important to remember that ZIMRA staff will be on ready to assist and direct any taxpayers who are having trouble using the E-Services.

### Areas for further study

Based on the study's findings, conclusions, suggestions, and limitations, future research in the following areas might be suggested to advance our understanding of this topic and to support the study's findings. To come to a comprehensive conclusion regarding the effect of the computer literacy levels on the tax compliance of SMEs in Zimbabwe, it is first necessary to conduct more research on small and medium-sized businesses in other tax districts, such as Masvingo, Gweru, Kadoma, Beitbridge, Bulawayo, and Mutare. The effect of computer literacy levels on the tax compliance of important economic sectors including mining, transportation, and energy should also be investigated.

### CONFLICT OF INTERESTS

The authors have not declared any conflicts of interests.

### REFERENCES

- Aksnes F (2014). Tax Compliance, Enforcement, and Taxpayer Education. A Paper presented at a workshop organized by International Centre for Tax and Development. Maputo: International Centre for Tax and Development pp. 30-31.
- Alam SS, Noor K (2010). ICT Adoption in Small and Medium Enterprises: An Empirical Evidence of Service Sectors in Malaysia. *International Journal of Business and Management* 4(2):112-125.
- Auyat M (2013). E- Tax Service System and Its Adoption at Uganda Revenue Authority. *Interdisciplinary Journal of Contemporary Research in Business* 2(4):36-39.
- Azmi AC, Bee NL (2010). The Acceptance of the e-Filing System by Malaysian Taxpayers: A Simplified Model. *Electronic Journal of e-Government* 8(1):23-32.
- Bornman M, Wassermann M (2018). Tax literacy in the digital economy. *eJournal of Tax Research* 2(1):1-15.
- Cadiz-Gabejan AM, Takenaka MC Jr (2021). Students' Computer Literacy and Academic Performance. *Journal of World Englishes and*

- Educational Practices 3(6):29-42.
- Carter J, Noble S, Russell A, Swanson E (2011). Developing statistical literacy using real-world data: investigating socioeconomic secondary data resources used in research and teaching. *International Journal of Research and Method in Education* 34(3):223-240.
- Cooper RD (2003). *Business Research Methods*. McGraw-Hill School Education Group.
- Cronbach JL, Meehl PE (1955). Construct validity in psychological tests. *Psychological Bulletin* 52(4):281.
- Elmi MA, Evans K, Tirimba OI (2015). Relationship between Tax Compliance Barriers and Government's Revenue Generation at Gabonimo Market in Somaliland. *International Journal of Business Management and Economic Research* 6(6):380-399.
- Eshet Y (2012). Thinking in the Digital Era: A Revised Model for Digital Literacy. *Issues in Informing Science and Information Technology* 9:267-276.
- Hussein R, Mohamed N, Ahlan AR, Mahmud M, Aditiawarman U (2010). An Integrated Model on Online Tax Adoption in Malaysia. *International Journal of Asian Social Science* 3(2):1-16.
- Institute of Economic Affairs (2012). *Informal Sector and Taxation in Kenya. The Budget Focus*. A publication of the IEA Budget Information Programme 29.
- Kamarulzaman Y, Azmi AAC (2010). Tax e-filing adoption in Malaysia: a conceptual model. *Journal of E-Government Studies and Best Practices* 2010:1-6.
- Kasyoka EM, Yusuf M, Senelwa A (2022). Digital literacy and successful implementation of electronic tax administration system in Nairobi County. *International Academic Journal of Information Systems and Technology* 2(1):311-320.
- Kirin'ga SE, Jagongo A (2017). Impact of Online Tax Filing on Tax Compliance among Small and Medium Enterprises (MSE) in Kibwezi Sub-County in Kenya.
- Kothari CR (2009). *Research Methodology. Methods and Techniques* (2<sup>nd</sup>.ed.). New Delhi: New Age International Publishers.
- Mandola V (2013). *Factors Influencing the Adoption and use of Integrated Tax Management System by Medium and Small Taxpayers in Nairobi Central Business District*. Nairobi: Unpublished MA in Project Planning and Management, Project submitted to the University of Nairobi, Kenya.
- Masarirambi CT (2013). *An Investigation into Factors Associated with Tax Evasion in the Zimbabwe Informal Sector: A Survey of Mbare Magaba Informal Traders*.
- Mugenda OM, Mugenda AG (2009). *Research Methods: Quantitative and Qualitative Approaches*. Nairobi: Acts Press.
- Muhangi D (2012). *Taxation and Growth of Small-Scale Business Enterprises in Uganda. A Case Study of Kikumbo Market, Central Division in Kampala District*. *International Journal of Business and Management Invention* 2(3):45-47.
- Muita E (2011). *Factors that Influence Adoption and Use of E-Filing System of Kenya Revenue Authority Among the Large Taxpayers*. Nairobi: Unpublished MBA Project submitted to the JKUAT Nairobi, Kenya.
- Muturi HM, Kiarie N (2015). Effects of online tax system on tax compliance among small taxpayers in Meru County, Kenya. *International Journal of Economics, Commerce and Management* 3(12):280-297.
- Nalendro TI (2014). *Affecting Factors Compliance with Paying Taxes for Entrepreneurs with Environment as a Moderating Variable*. Central Java, Semarang, Indonesia: Faculty of Economics and Business, University Diponegoro.
- Nathan Associates Inc (2013). *Unleashing the Potential. Internet's Role in the Performance of India's Small and Medium Enterprises*.
- Nyamwanza T, Mavhiki S, Mapetere D, Nyamwanza L (2014). An analysis of SMEs attitude and practices towards tax compliance in Zimbabwe. *Sage Open* 4(3):2158244014542776.
- Ofcom (2015). *Adults' media use and attitudes: Report 2015*.
- Ofori EG (2009). *Taxation of the informal sector in Ghana: A critical examination (Doctoral dissertation)* pp. 4-40.
- Ogbuiyi DC, Ogbuiyi SU, Oriogu C (2014). Influence of Computer Literacy Skills and Online Searching on Undergraduates' Use of Academic Materials in Babcock University Library. *Journal of Humanities and Social Science* 19(7):49-53.
- Ojeniyi AO, Adetimirin A (2016). *ICT Literacy Skills and Electronic Information Resources Use by Lecturers in Two Private Universities in Oyo State, Nigeria*. *Library Philosophy and Practice (e-journal)* pp. 1-20.
- Osebe R (2013). *An Analysis of Factors Affecting Tax Compliance in the Real Estate Sector in Kenya: A Case Study of Real Estate Owners in Nakuru Town*. *Journal of Emerging Issues in Economics, Finance, and Banking* 1(4):7-9.
- Osterman M (2013). *Digital Literacy: Definition, Theoretical Framework, and Competencies*. Florida: Florida International University, USA.
- Ramoo V (2006). *Determinants of Perceived Ease of Use of E-Filing*. *Journal of Emerging Issues in Economics, Finance and Banking* 3(1):17-20.
- Saad N (2011). *Fairness Perceptions and Compliance Behaviour: Taxpayers' Judgments in Self-Assessment Environments*. University of Canterbury.
- Siavhundu T (2020). *The Effectiveness of ZIMRA's Electronic- Services Platform in Inducing Tax Compliance in Zimbabwe*.
- Singh S (2011). *E-Governance: Information Security Issues*. *International Conference on Computer Science and Information Technology (ICCSIT'2011)*. Bhopal, India pp. 120-124.
- Tomaszewicz AA (2015). *The impact of digital literacy on e-government development*. *Online Journal of Applied Knowledge Management* 3(2):45-58.
- Wasao D (2014). *The Effect of Online Tax System on Tax Compliance among Small Taxpayers in East of Nairobi Tax District*. Unpublished Project. University of Nairobi, Kenya.
- Worthington AC (2006). *Predicting financial literacy in Australia*. University of Wollongong.

**Related Journals:**

