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The Governance of Tax Audit Enforcement: Indicators on Automation Incentive, Tax Avoidance and Firm Characteristics

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Abstract

The intense development in the Fourth Industrial Revolution (IR 4.0) demands tight governance of tax audit enforcement by the Inland Revenue Board Malaysia (IRBM) on firms claiming automation incentive. Through tax audit enforcement, IRBM provides a monitoring mechanism for corporate governance. However, due to data confidentiality, little has been established on what indicators that caused tax authority to carry out tax audits. In this research, we employed tax return and historical audit data of corporate taxpayers consisting of profitable and loss firms which consistently claim the Reinvestment Allowance (RA) to examine the indicators applied by the tax authority in executing the role of governance. Employing Binary logistic regression, firm characteristic of firms experiencing tax audit was observable, but tax avoidance and incentive utilization indicators were not apparent. Tax avoidance indicators such as effective tax rate and book-tax difference, loss firms, and incentive utilization receive less attention when it comes to tax audit enforcement. Examining firms that experienced tax audit enforcement has enriched our understanding of indicators that draw the interest of tax authorities when it comes to tax audits. Overall, this research could be the first in Malaysia that has used actual historical tax audit record, which has revealed new evidence on the indicators preferred by the IRBM in conducting a tax audit. The slight fine-tuning of the responses, especially on tax avoidance and incentive utilization indicators for tax enforcement might produce comprehensive tax audit coverage and yield a greater mechanism for governance.

Keywords: tax audit enforcement, reinvestment allowance, tax avoidance, firm characteristics, tax returns.

1. Introduction

Tax enforcement executed by the tax authority is a decisive and valuable corporate governance function. The functionality of corporate governance demonstrated by tax enforcement such as reporting unrecognized tax benefits (Brushwood, at el. 2018), detecting tax avoidance (Bozanic, at el. 2017; Kubick, at el. 2016; Hoopes, at el, 2012;), promoting good financial reporting (Hanlon, at el, 2014), detecting income shifting

decisions of multinational corporations (Beuselinck, at el. 2014) reducing the cost of debt financing (Guedhami and Pittman, 2008) and deterring the conflict of interest among stakeholders as well as increasing firms' market value of share (Desai, at el. 2007) is well documented by the prior researchers. The outcomes from prior research prove that tax enforcement strengthens corporate governance and thus, attract great attention from the taxpayers, governments, policymakers and even among the tax researchers.

However, little is known on how tax authorities perform their governance role, such as how a tax audit is selected especially what indicators that caused tax authority to carry out tax audits. Due to data confidentiality, only a few researchers have highlighted this question. One of these researchers focused on the use of public disclosure in financial statements and the tax avoidance measurement employed for audit selection (Bozanic et al. 2017). In another research, Hanlon et al. (2014) extracted data from the IRS's (Internal Revenue Services) Audit Management Information Reporting System (AIMS) and used firms assets, coordinated industry and proximity of tax headquarters to indicate tax audit probability. Similarly, Kubick et al. (2016) used the distance of tax office as an indication for the likelihood of an IRS audit. Unlike previous studies that examined tax authority enforcement activities by linking tax avoidance elements and firm characteristic as a possible indicator for audit selection, we specifically examined incentivized firms that utilize Reinvestment Allowance (RA). RA incentive is designed to encourage firms in the manufacturing sector that embrace in the IR 4.0 (Abd Hamid, at el. 2018). Hence, tax audit enforcement becoming more complex to ensure the incentivized firms achieve the intended objective of RA. In response to Henry and Sansing (2018) who claimed that loss firm found to be excluded in most of the tax research, we included loss firms to our sample. We managed to include these loss firms because there is no restriction for this type of firms from claiming RA. The inclusion of RA utilization and loss firms in this research has added to the variation in firm characteristics, which enabled us to examine the full coverage of an audit enforcement task.

This study employed confidential tax return data (The tax and audit data are subject to strict confidentiality requirements, and outcomes are cautiously presented in the aggregate to maintain this confidentiality) and historical tax audit record of taxpayers' profiles based on the Case Management System (CMS). By only documenting firm characteristics associated with the tax audit indicators and found no association with other indicators such as tax avoidance and incentive utilization, we explained the area of interest in tax audit governance. The rest of this paper is organized as follows: Section II gives the literature review and hypothesis development. Section III outlines

our research methodology, while Section IV covers our empirical results. Section V contains the discussion, and lastly, Section VI concludes.

2. Literature Review and Hypothesis Development

2.1. Tax Audit Enforcement

Broadly speaking, the principal responsibilities of a tax authority is to regulate tax compliance (Murphy, 2008), collect income tax from individuals and business entities (Nessa, at el. 2016) and administer tax administrative obligations (IRBM, 2017). In Malaysia, IRBM conducts two kinds of tax audits, namely field, and desk audits. A field audit would involve a visit to a taxpayer's premises for a detail examination of relevant documents. While a desk audit entails a review of documentation attained from a respective taxpayer and interviews the taxpayer at one of IRBM's offices. According to IRBM, tax audit involves the examination of a taxpayer's business record as well as its financial affairs. The Malaysian Institute of Certified Public Accountants and other professional accounting bodies (2019) acknowledged that tax audit enforcement carried out by IRBM is to ensure that the income and tax liability declared by taxpayers in their tax returns are correct and compliant with the Income Tax Act 1967.

Among academic researchers, tax enforcement is widely acknowledged as a valuable mean for corporate governance. In the earlier years, Desai et al. (2007) established two key insights on the importance and the impact of tax enforcement on corporate governance. Firstly, stricter tax enforcement strengthens corporate governance. Secondly, tax revenue relies on the quality of corporate governance. Correspondingly, Guedhami and Pittman, (2008) and Hoopes et al. (2012) added further evidence that the impact of tax enforcement is stronger when other means of corporate governance are found to be weak. Further, Hanlon et al. (2014) supported Desai et al. (2007) research outcome that the tax authority provides a monitoring mechanism associated with the quality of financial reporting. Recent research conducted by Tennant and Tracey (2019) documented that tax audit enforcement employed among the large taxpayers has led to an increase of firm profitability and the level of the effective tax rate (ETR).

Researches in this area predominantly highlight the importance of tax enforcement (Desai et al. 2007), the effects of tax enforcement (Brushwood et al. 2018; Hanlon et al. 2014), the likelihood and determinants of tax audit (Bozanic et al. 2017), the interaction of tax payers and tax authority (Ayers, Seidman, and Towery, 2017; Beuselinck et al. 2014) and how tax authorities conduct an audit within their resources (Kubick et al. 2016;

Nessa et al. 2016). This research examined the indicators of tax audit enforcement, concentrating on the fundamental information reported in tax returns and financial statements such as firm characteristics and tax avoidance indicators. In addition to these indicators, this research has included the loss firms and more importantly, covered firms that have consistently claim the RA incentive for the period of 2007 to 2016.

This research answers the question on what are the determinants or indicators applied by IRBM in fulfilling the governance role when executing a tax audit enforcement. The governance of tax audit enforcement on selecting audit cases remains a secret, and only the tax authority knows how a taxpayer is selected. However, the audit selection can be predicted. According to Nessa et al. (2016), an understanding of the tax authority's resources such as the reduction or increase in the financial budgets and the strength of a tax authority's employees would allow taxpayers to expect the likelihood of facing the tax audit enforcement. Hoopes et al. (2012) highlighted that firms can discern the trend of tax enforcement activities by paying attention to the leadership and structural changes of tax authority, the trend of government revenue, changes in financial accounting standards, hiring of former tax officers, conversations with peer firms experiencing audits as well as historical annual audit coverage data released by the tax authority.

Based on the Tax Audit Framework issued by IRBM, MICPA et al. (2019) revealed that selection of audit cases was made through a computerized system built on risk analysis criteria and various determinants such as business performance, financial ratios, type of industry, prior compliance track record and third party information. In this research, we reviewed the information disclosed in the annual report released by the IRBM. Valuable information was gathered concerning tax audit enforcement executed by IRBM among the corporate taxpayers. Some of the important insights on tax audit enforcement are summarized as follows:

Although the above information is historical, tax enforcement executed by IRBM relied on various indicators and carried out based on the strategic approach. Moreover, the increasing number of resolved tax audit cases indicates the seriousness of IRBM in performing their governance role. Our research looked at the fundamental indicators or determinants of tax enforcement, which led to the understanding of the coverage and area of interest in tax audit enforcement.

TABLE 1: Valuable Information on Tax Audit Enforcement Activity.

Year	Number of audit cases resolved	Achievement from targeted *KPI (%)	Strategies/preferences
2017	178,583	137.48	- implementation of *Focus Audit* executed by the field audit.
			- tax audit criteria based on risk analysis.
			- digital economy.
			- data mining and collaboration with other agencies.
			- implementation of audit on small and medium enterprise (SMEs).
2016	161,760	142.51	- segmented according to *Industry Based Audit*: information and technology, services, manufacturing, professional, technical and scientific activities and vehicle repair workshops.
			- introduction of *Monitoring Deliberate Tax Defaulters* (MDTD) program focusing on non-compliance taxpayers.
2015	138,203	152.49	- transfer pricing and high-income taxpayers.
			- focusing on the settlement of audit cases which generate the correct amount of taxes.
Note: *key performance indicator			
Source: Extract from IRBM's Annual Report (IRBM, 2015, 2016, 2017)			

2.1.1. Tax Audit Enforcement and Firm Characteristics

Our research questions are based on the various indicators the tax authority considers before the decision for audit is made. We argued that the most basic indicators used by the tax authority in executing tax audit enforcement were firm characteristics. Information on firm characteristics is gathered by the tax authority through the submission of tax returns by the taxpayers (Bozanic et al. 2017). Indicators such as type of firm whether it is multinational or domestic, managerial structural whether the firm has a foreign director or domestic director, type of industry, tax consultants, profitability level as well as audit years have been widely used by the previous researchers to represent tax audit enforcement indicators (Bozanic et al. 2017; Nessa et al. 2016).

We argued that the information on the scale of operation of a domestic firm or a multinational firm does influence the choice of the tax authority when performing tax audit. A research performed by Kubick et al. (2016) has postulated that the IRS is more likely to choose domestic taxpayers given the close distance to a tax office, which would incur a lower audit cost. Nevertheless, they found that the IRS is not interested with local firms but rather conduct an audit examination based on their industry know-how. Form their survey analysis on tax directors of multinational firms,

Hoopes et al. (2012) revealed that stricter audit enforcement did not prevent firms from applying tax aggressive scheme. In another research Beuselinck et al. (2014) claimed that the multinational firms took advantage of weaker tax enforcement to shift their income. The rationale behind this relied on the variation in the scale of operations. This rationale is further supported by Salihu et al. (2015), who documented that multinational firms operating in Malaysia were exploiting their international scale of operations to evade taxes. Although multinational firms are more exposed to international tax planning (Transfer pricing, international tax system and different accounting systems) compared to domestic firms, Dyreng, at el. (2017) found that both types of firms have recorded the same decreasing trend in ETR.

Next, we contended that the managerial structural whether the firm has a foreign director or domestic director does influence over the choice made by tax authorities to execute tax audit enforcement. The basis behind this relied on the outcomes of previous research which proved that foreign director is connected with the interest of foreigner toward the host country (Salihu et al., 2015), cross-border investment (Masulis, at el. 2012), monitoring firm performance (Estélyi and Nisar, 2016). Due to the segregation of ownership and control, a firm with either a foreign or domestic director has the opportunity to use the complexity in corporate taxation to divert the income elsewhere. For instance, Salihu et al. (2015) found that there are significant positive associations between a foreign director (Salihu et al., (2015) use foreign director and foreign shareholding as proxies for foreign interest) and tax avoidance. However, stricter tax audit monitoring would prevent (El Ghoul, at el, (2011) and make it harder for the directors or managers (insiders) to gain personal benefits (Hanlon et al. 2014). In light of stricter audit enforcement, Brushwood et al. (2018) found that managers are more cautious when reporting tax.

In previous research, the type of industry has been commonly used as a possible preference by the tax authority when conducting audit enforcement (Brushwood et al. 2018; Ayers et al. 2017; Kubick et al. 2016; El Ghoul et al. 2011). We also noted in the annual report released by IRBM, which states that the course of audit enforcement has been segmented according to the *Industry Based Audit,* as shown in Table 1. Our research consisted of incentivized firms that are heavily involved in plant and machinery. Thus, we concluded that industry indicators (ISEC) are informative to the tax authority.

Hired tax consultant provide services such as accounting and taxation affairs. According to Frecknall-Hughes and Moizer, (2015), services provided by the tax consultant are divided into compliance work and tax planning or avoidance advice. The aim of tax compliance is to ensure that every economic transaction complies with tax law.

The role of tax consultants is to serve the interest of their clients hence, there are occasions where there is deliberate manipulation to reduce the amount of tax payable. On the other hand, there are researches where tax consultant is the additional force that improves corporate governance at the firm level. Hoopes et al. (2012) state that firms' corporate governance improved when they hire an auditor from the Big Four showing negative interactions with tax audit probability. Even though the evidence highlights two different effects of tax consultants, we hypothesized that tax consultants (TC) have significant influence over tax audit.

Next, we argued that profitability (ROA) and profit versus loss status (FS) are conceivably key elements that attract the attention of tax authority to conduct tax audits. The government through its tax authority have its share of profit in tax payable, thus, the government is interested to ensure the actual profit earned is reported (Hanlon et al. 2014). The government's or tax authority's interest in firms' profit is reasonable because Frank at el. (2009) reported that profitability measured by the return of asset (ROA) has a positive association with tax avoidance. Other researchers affirmed that profitability has a positive relationship with the probability of being selected for a tax audit (Kubick et al. 2016). Unlike other researches, which excluded the loss firms, we have included an additional variable that could explain precisely the loss year status firms as well as profit years status firms. The main difference between profitability level and profit vs. loss firms is that profitability captures the economic magnitude in terms of percentage while profit vs. loss detects whether a firm record negative or positive profit within the observation year.

We hypothesized that the tax authority predetermines year-based audit (AUDYR) and when the actual year of tax audit take place (AYA) is strongly connected to the tax audit enforcement. We noted that the selection on the year of assessment (Y/A) for audit is chosen through the internal computerized system and is based on risk analysis (IRBM, 2017). We are unaware of the criteria of risk analysis, however, we generally assume that the year of assessment chosen is to ensure firm declares the right amount of tax and complies with the provision of the laws and rulings. Due to timing difference, the year of actual audit takes place does not necessarily occur in the same year predetermined by the tax authority. We noted that the year of the actual audit carried out by the assessment officer is the year when communication with a taxpayer is initiated, audit examination is conducted, tax issues or any disputes are discussed, audit adjustment are proposed and lastly, the audit case is resolved. Therefore, as to when audit cases are systematically chosen by the computerized system and when assessment officers initiate contact with taxpayers, we strongly expect the execution of tax audit enforcement likely to occur.

In this research, we have included all the above-mentioned variables to explain determinants that may contribute directly to the selection of tax audits. Overall, we expected the indicators in firm characteristics to have a substantial association with the likelihood of being selected by the tax authority for tax audit enforcement. Thus, we propose the following hypotheses:

H1 Indicators on firm experiencing tax audit enforcement (EXAUD) associated with firm characteristics

2.1.2. Tax Audit Enforcement and Tax Avoidance

Several types of research carried out in countries that are engaged in an advance taxation system have demonstrated that tax audit enforcement is triggered by tax avoidance indicators such as ETR (Hoopes et al., 2012) as well as book-tax difference (Bozanic et al. 2017). Subjected to less cost and resources involved in conducting tax enforcement, Hoopes et al. (2012) suggested that stricter tax audit enforcement would lead to a decrease in tax avoidance, and subsequently, would increase revenue. There are several reasons as to why tax authorities are interested in these indicators. According to Bozanic et al. (2017), a tax authority like the IRS is inherently interested in ETR because this indicator provides information on international tax strategies while higher book-tax difference indicates higher tax avoidance. Additionally, ETR and book-tax difference indicators have been proven to trigger tax avoidance activities by previous scholars (Higgins, at el. 2015; Lisowsky, 2010; Frank et al. 2009; Wilson, 2009; Dyreng, at el. 2008; Desai, 2003). Since tax authorities are determined to detect corporate tax avoidance, we expected the selection of audits for tax enforcement to be driven by tax avoidance indicators. We purposed our second hypothesis as follows:

H2 Indicators on firm experiencing tax audit enforcement (EXAUD) associated with tax avoidance

2.1.3. Tax Audit Enforcement and Automation Incentive

Briefly, RA is a special tax relief introduced in 1979, which is designed for manufacturing firms to stimulate investments in automation, modernization, expansion, and diversification of businesses. With 60% of tax deduction provided on qualifying capital expenditure, firms can utilize this incentive to expand and transform their business into a fully automated and modernized operation. Unlike any other incentives such as investment tax allowance and pioneer status, which is governed by the Malaysia

Investment Development Authority (MIDA), RA is governed and administrated by IRBM. What makes RA closely associated with IR 4.0 is that the provisions contained in the investment of qualifying capital expenditure of RA apply to the nine pillars of technology-related in IR 4.0. The nine pillars of technology-related component of IR 4.0 which has been widely discussed by the researchers known as an autonomous robot, internet of things, big data analytics, horizontal and vertical system integration, cybersecurity, the cloud, augmented reality, simulation, and lastly, additive manufacturing (Saucedo-Martínez, at el. 2017; Kamarul Bahrin, at el. 2016; Rußmann et al. 2015). According to Abd Hamid et al. (2018), RA is designed to support IR 4.0 since it provides cost reduction in the form of a specific tax deduction for a firm's wish to invest in the modernization and automation scheme. In their research, the utilization of RA had been applied to access firms' readiness in embracing IR 4.0. They further suggested that tax audit should be carried out to increase the effective utilization of RA incentive. Following Abd Hamid et al. (2018), this research use RA utilization to represent the application of automation incentive.

We included RA utilization (RAUTI) for two reasons. First, we were aware that our entire sample firms used in this research claimed RA. We were interested in examining whether RA utilization rate attracts tax audit. There is research that focused on the determinants of RA utilization. Concerned with the low utilization rate of RA incentive, Abd Hamid et al. (2018) conducted a research to identify the determinants of incentive utilization and discovered that not all firms that claimed RA was able to fully utilize the incentive as expected. Secondly, firms in their tax planning strategies will seek to exploit opportunities presented by tax incentives to lower their tax burden through tax avoidance. Issues connected to tax incentive implementation such as compliance with qualifying conditions, continuous monitoring compliance and possible misuse of tax incentive need to be considered by governments and policymakers. Continuous monitoring of incentive is fundamentally important to prevent the misappropriation of tax incentives. For instance, Zolt (2014) has raised several conditions where tax incentive can be abused such as fictitious investments, overvaluation of assets, manipulation of the non-qualifying activities into qualifying activities as well as the transfer of pricing schemes to related entities. Knowing the extensive capital required in IR 4.0, the complexity, and potential misappropriation of the tax incentive we predict that tax audit conducted by IRBM will concentrate on incentivized firms not only on compliance and avoidance issues but also on how a firm makes full use of RA incentive in IR 4.0. Thus, we purposed our third hypothesis as follows:

H3 Indicators on firm experiencing tax audit enforcement (EXAUD) associated with Reinvestment Allowance Utilization (RAUTI)

3. Methodology

3.1. Data and Sample Selection

To empirically test the hypotheses H1 to H3 on various indicators for tax audit enforcement, we merged data from two sources: i. confidential tax return data (Compiled by the Department of Analytical and Statistics of Tax Operational Division of the Inland Revenue Board of Malaysia (IRBM)) and ii. historical tax audit record of taxpayers' profiles based on internally generated by the Case Management System (CMS). The criteria for sample selection are described in Table 2. A total of 7,153 sample firms claiming RA during the period of 2007 to 2016 were identified and were sorted according to the firm-year observation that exhibited complete data as well as firms that consistently reported RA utilized and RA unutilized in the specific columns provided in the tax return. After performing multiple data filtration, we identified 401 samples and completed 4,010 observations (10 observation years).

TABLE 2: Sample Selection Criteria.

DATA	Criteria	Number of Firms
tax return	Total sample frame consists of firm utilising RA	7,153
	Exclude: firms not utilizing RA consistently in all observation years (2006-2017) and firms reported incomplete RA claim in tax returns.	(5,955)
	Full sample inclusive of firms reported positive and negative nett incomes	1,198
	Restrict: firms reported extreme values of ROA more than 100% and -100% firms with incomplete variables data.	(797)
audit record	Final samples of firms consist of profit and loss firms are matched with the historical audit record.	401

3.2. Regression Specifications

The objective of this research is to examine indicators in firm characteristics, tax avoidance and RA utilization that caused tax authority to carry out tax audit enforcement. Accordingly, we developed a regression model to examine whether firms experiencing tax audit are connected with firm characteristics, measures of tax avoidance and RA utilization. The model is as follows:

EXPERIENCING TAX AUDIT = α +β1 FIRM'S CHARACTERISTICS + β2TAX AVOIDANCE + β3 RA UTILIZATION εi,t

Our measure of tax audit enforcement consists of a dichotomous outcome, whether firms experiencing tax audit enforcement or did not. We employed Binary logistic regression (Logistic regression uses to test models in predicting categorical outcomes (Pallant, 2016)) to predict the indicators used by the tax authority to determine tax audit enforcement. In the above equation, EXPERIENCING TAX AUDIT (EXAUD) is used as a proxy for tax audit enforcement. Data on EXAUD are derived from confidential historical audit records of taxpayers generated by CMS. In this research, firms that had experienced tax audit executed by the tax authority for the observation period of 2017 to 2016 were indicated as "1", while firms that did not experience and faced tax audit for the same period of observation were assigned as "0". We did not segregate the tax audit approach, be it field or desk audit. In sum, as long as a firm experienced one of the tax audit approaches, we assumed that the firm was audited. We included FIRM'S CHARACTERISTICS, TAX AVOIDANCE, and RA UTILIZATION as predictor variables when examining the indicators for tax audit enforcement. Firm characteristics consist of rich data such as as year audit criteria (AUDYR), actual years of audit (AYA), return on asset (ROA), firm status (FS), taxpayer profiles (TPP), industrial sectors (ISEC), firms' directorship (FD) and lastly tax consultant (TC). We employed the most common indicators to detect tax avoidance strategy, which is an effective tax rate (ETR) and book-tax difference (BTD). Finally, we included RA utilization as our predictor variable to examine the indictor used by tax authority before executing a tax audit. We explained the measurement of all other variables in the next section.

3.3. Variable Definitions

Table 3 lists the variables used in the empirical analysis.

4. Results

Binary logistic regression was performed to predict the influence of the number of variables on the possible indicators used by the tax authority to execute tax audits. Table 4 shows the observation and categorical variable coding. In this table, each variable is observable and has completed 4,010 frequency of occurrence. Among the highest frequency recorded by a variable is EXAUD with 84%, FS (profit) 81.8%, and followed by other variables. Table 5 shows the descriptive statistic for ETR, BTD, ROA,

TABLE 3: Measurement of Variables.

Variables	Operationalization and measurement of variables
AUDYR	Year audit criteria predetermined by internal computerized system of IRBM. Year of audit pre-selected by the system is indicated as "1" at year t and "0" for years not selected.
AYA	Actual year of audit represents the year of tax audit conducted by the tax officer. Actual year of audit is indicated as "1" at year t and "0" otherwise.
ETR	Effective Tax Rate measured by tax payable divided by nett accounting income.
RAUTI	Reinvestment Allowance (RA) utilization (in percentage) measured by RA claimed during the year divided by actual maximum amount of RA at year t.
ROA	Return on asset proxy for profitability. ROA is measured by nett accounting income divided by total assets.
BTD	Book-tax difference computed as pre-tax book income less estimated taxable income divided by total assets at year t. Our data on taxable income is incomplete. Alternatively, we used tax payable divided by Malaysia's statutory tax rate at year t to derive estimated taxable income.
FD	Firm directorship is a categorical variable. The presence of a foreign director in a firm is referred to as FDIR and DDIR is for the presence of a domestic director.
TPP	We use taxpayers' profile predetermined and codded by the IRBM. Tax Payer Profiles (TPP) is noted as:
	Multinational taxpayers abbreviated to "TPP1" where i) total income, income from other business sources and profits generated from related foreign firm exceeding RM 25million. ii) Sales, purchase, total expenditure incurred, and total income generated from related foreign firm exceeding RM15million iii) loan made to or from related foreign firm.
	Big taxpayer denotes as "TPP2", where sales exceeding RM30 million
	Normal taxpayer denotes as "TPP3", where sales not exceeding RM30 million.
TC	Tax Consultant is a dummy variable for firms that engaged the services of the BIG Four audit firms is indicated as "1" and "0" for non-BIG Four.
ISEC	Sector industry is a dummy variable categorized according to firm's core business: 1 is for electric and electronics, 2 is for metal and minerals, 3 is for food and beverage, 4 is for textile and garment, 5 is for wood, paper and printing, 6 is for petroleum, chemical, rubber, and plastics, 7 is for automobile, equipment, and other manufacturers and finally, 8 for agricultural.
FS	Firm years status is a dummy variable for firms reporting positive profit in t years is indicated as "1" at year t and "0" on firms reporting negative profit at year t.

and RA utilization. For each variable shown in the table, there is a 95% confidence interval for mean within the lower and upper bound.

The model as a whole explained between 17.3% (Cox and Snell R square) and 29.8% (Nagelkerke R squared) of the variance in tax audit execution (EXAUD) and correctly

TABLE 4: Categorical Variable Coding.

Variables	Descriptions and Coding	Frequency	Percent (%)
Experiencing Tax Audit (EXAUD)	No-0	630	15.7
	Yes-1	3,380	84.3
Year Audit criteria (AUDYR)	No-0	3,173	79.1
	Yes-1	837	20.9
Actual Years Audit (AYA)	No-0	2,952	73.6
	Yes-1	1,058	26.4
Firm Years Status (FS)	Loss-0	730	18.2
	Profit-1	3,280	81.8
Tax Payer Profiles (TPP)	Branch-1	2,140	53.4
	Big Tax Payer-2	1,390	34.7
	Multinational-3	480	12.0
Industrial Sectors (ISEC)	Electrical and electronics-1	560	14.0
	Metal and minerals-2	660	16.5
	Food and Beverage-3	350	8.7
	Textile and Garments-4	80	2.0
	Wood, Paper and Printing-5	940	23.4
	Petroleum, chemical, rubber and plastics-6	710	17.7
	Automobile, equipment and other manufactures-7	610	15.2
	Agricultural (Palm Oil and Livestock)-8	100	2.5
Firm Directorship (FD)	Domestic Director-0	2,790	69.6
	Foreign Director-1	1,220	30.4
Tax Consultant (TC)	Non-big Four auditor-0	2,690	67.1
	Big Four Auditor-1	1,320	32.9
Total		4,010	100%

Note: For the definition of variables, refer to Table 3

classified 83.7% of the firms. Table 6 reports on the sensitivity of the model. Based on the sensitivity of this model, we were able to accurately classify 99% of the firms which experienced tax audit enforcement.

As shown in Table 7, only firm characteristics indicators such as AUDYR, TAXAUD, FS, TPP2, FD1 and ISEC 2, 4, 5, 6, 7 made a unique statistically significant contribution to the model of predicting tax audit indicators applied by the tax authority. The most reliable indicator of tax audit enforcement is year audit criteria predetermined by the internal computerized system of IRBM (AUDYR), recorded an odd ratio of 91.01. This indicated that a firm was identified by the internal computerized system was over 91 times more likely to experience tax audit enforcement than a firm that was not selected by the system. The odds for firms showing profit status FS to EXAUD is 1.52

TABLE 5: Descriptive Statistics for ETR, RAUTI, ROA and BTD.

Statistics/Variables		ETR	RAUTI	ROA	BTD
Mean		0.0887	0.3460	0.0543	0.0355
95% Confidence Interval for Mean	Lower Bound	0.0847	0.3332	0.0495	0.0338
	Upper Bound	0.0927	0.3588	0.0590	0.0372
5% Trimmed Mean		0.0715	0.3289	0.0578	0.0297
Median		0.0528	0.1165	0.0510	0.0209
Variance		0.0167	0.1705	0.0234	0.0030
Std. Deviation		0.1291	0.4129	0.1528	0.0544
Minimum		0	0	-0.9926	-0.3328
Maximum		1	1	0.9993	0.9829
Range		1	1	1.9919	1.3157

Note: For the definition of variables, refer to Table 3

TABLE 6: Model Sensitivity.

Observed		Predicted		
		EXAUD		Percentage Correct
		No	Yes	
EXAUD	No	11	619	1.7
	Yes	33	3347	99.0
Overall Percentage				83.7

times higher compared to firms showing loss status. TPP2 and FD1 showed significant and negative coefficients. These coefficients indicated that the odds of "Big Taxpayer" (TPP2) to EXAUD were.629 times lower than the normal and multinational taxpayers. The possibility of firms with foreign directors was.620 times less likely to experience tax audit enforcement (EXAUD). All industry sectors (ISEC) reported significant coefficient to EXAUD, except for electric and electronics (ISEC1) and food and beverage (ISEC 3) industries. Moreover, the odds of the Big Four audit firms hired by the firm was 1.635 higher than firms hiring non-Big Four audit firms to face EXAUD. Unexpectedly, our indicator variables for tax avoidance such as ETR and BTD as well as RA utilization reported insignificant coefficients in this model.

5. Discussion

Our identification approach mainly focused on rational expectations of firm will experiencing tax audit enforcement relying on firm characteristics and tax avoidance indicators for an observable period of 10 years. Considering the complexity and possible abuse

TABLE 7: Variables in the Equation.

Indicator Variables	B	S.E	Wald	Sig.	Exp(B)
FS Profit (1)	.419	.165	6.460	.011	1.520
ROA	-1.075	.449	5.722	.017	.341
Tax Payer Profiles			7.320	.026	
TPP(1)	-.098	.118	.681	.409	.907
TPP(2)	-.464	.174	7.141	.008	.629
FD(1)	-.479	.120	15.920	.000	.620
ISEC			121.703	.000	
ISEC(1)	-.056	.159	.125	.724	.946
ISEC(2)	2.089	.349	35.860	.000	8.078
ISEC(3)	-.521	.283	3.374	.066	.594
ISEC(4)	1.324	.180	54.171	.000	3.757
ISEC(5)	.330	.163	4.087	.043	1.391
ISEC(6)	.496	.167	8.866	.003	1.642
ISEC(7)	.904	.374	5.834	.016	2.469
TC(1)	.492	.125	15.452	.000	1.635
AUDYR(1)	4.510	.711	40.259	.000	90.907
AYA(1)	2.406	.224	115.074	.000	11.090
ETR	-.512	.451	1.292	.256	.599
BTD	-.647	1.047	.381	.537	.524
RAUTI	.014	.141	.009	.923	1.014
Constant	.537	.175	9.452	.002	1.711

Note: For the definitions of variables, refer to Table 3

Statistical analysis: tested at significance level of α = 0.05 (p-value) with 95% confidence interval

of tax incentive, we included RA incentive utilization, the incentive which was designed to support IR 4.0. Overall, our Binary logistic equation showed that firm characteristic indicators were observable but tax avoidance and incentive utilization indicators were not apparent to tax audit enforcement.

Even though our model of sensitivity correctly predicted a high percentage (83.7%) of firms experiencing tax audit and provided 4,010 complete firm observations, the results have to be interpreted carefully. The reason is that our interest and sample consist of firms claiming RA. Thus, the findings from this research cannot be generalized to represent the entire corporate taxation population though we have included the various types of corporate taxpayers such as multinational firms, big taxpayers and normal taxpayers to widen the area of interest in this research. Our logistic equation shows all indicators in firm characteristics tested on EXAUD are significant and thus,

strongly support H1. The strongest predictor of a firm experiencing tax audit is AUDYR, indicating that the tax audit enforcement selection is mainly to improve tax compliance. Other indicators such as TAXAUD, FS, ROA, TPP2, FD1, TC and ISEC 2, 4, 5, 6, 7 show significant association toward tax audit execution and thus, support all the hypotheses tested on firm characteristics. Our profitability indicator which is measured by ROA interestingly shows a negative association on EXAUD. In line with Bozanic et al. (2017), this outcome indicates that the selection of tax audit is based on a decreasing trend in profit and approaching loss status. Consistent with Mills (1998) and Hanlon and Slemrod (2007) who claimed that loss firms have a lower probability of facing an audit, this research affirms that firms reporting negative profit throughout the year of observation received less attention from the tax authority versus firms that show a positive profit. As such, the tax authority might share a similar view with Ayers et al. (2017) who reported that loss firms have a lower chance of engaging tax avoidance strategies.

Firms that hired their tax consultants from the Big Four demonstrated 1.63 times higher chances of facing tax audit as compared to firms that engaged the services from non-Big Four. Even though prior researches claimed that firms were better governed and possessed a higher value when they appointed tax consultants from the Big Four (Hoopes et al. 2012), our finding proved that hiring tax consultants from the Big Four did not deter firms from being selected by the tax authority. Next, our industry sector (ISEC) indicator mostly showed significant predictor of EXAUD except for electric and electronics as well as food and beverage industries. As mentioned in their annual report, IRBM applied the Industry Based Audit approach as a basis to conduct tax audits. Thus, the significant association of ISEC on EXAUD is not surprising and strongly support our hypothesis. This indicates that the information on types of industries is informative to a tax authority when conducting tax audits.

Our measure for tax audit execution (EXAUD) is based on whether firms experienced tax audit during the 10-year observation period. Instead of using probability rates or public information disclosure as in research conducted by Bozanic et al. (2017) and Hoopes et al. 2012), we employed actual tax audit recorded to analyze firms that experienced tax audit enforcement. We found vigorous outcomes that our predictor for TAX AVOIDANCE measured by the effective tax rate (ETR) and boo-tax difference (BTD) as well as indicators of RA UTILIZATION was not associated with EXAUD. Overall, these results are inconsistent with the notion that the tax authority had preferences on the measures of tax avoidance (ETR, BTD) as well as RA utilization (RAUTI). In this research, RAUTI was also found to be insignificant on EXAUD. RAUTI showed how much tax benefit claimed by a firm. We concluded that the tax audit conducted on incentivized

firm looked at regular tax compliance issues rather than a detailed examination of the intensity of firms claiming tax benefits. As such, these results shed light on the untouched area that the tax authority needs to consider seriously before initiating tax audits.

6. Conclusion and Implications

We examine the indicators or determinants of firms that had experienced tax audit enforcement by connecting tax returns and historical tax audit data to firm characteristics as well as tax avoidance indicators. Confidential data were employed to accurately predict the occurrence of tax audit conducted by the tax authority on firms that consistently claimed RA from 2007 to 2016. Unlike all other previous studies that examined tax audit enforcement relating to common indicators associated to firm characteristics and tax avoidance, we extended the focus of ours research by examining incentivized firms that utilized RA and included loss firms. We found that tax audit enforcement is driven by firm characteristics such as AUDYR, TAXAUD, FS, ROA, TPP2, FD1, TC, and ISEC. In terms of tax avoidance and the RA utilization indicator, we unexpectedly discover that these determinants to be insignificant and unrelated to tax audit enforcement.

By examining firms experiencing tax audit enforcement has enriched our understanding of indicators that caused tax authorities to carry out tax audits. Beyond this established understanding, we could possibly predict why tax audit enforcement was conducted. For instance, our firm characteristic variables, especially AUDYR, showed significant association to tax audit enforcement. We come to understand that the motive for selecting and conducting audits is to mainly deter in compliance as well as to detect risk associated with firm characteristics. We included loss firms because this type of firm also benefitted from the RA incentive. The insignificant result in this research suggested that tax audit enforcement has ignored this type of firms. Therefore, the incentive claim by loss firm will not be uncovered and the tax position of this type of firms remain unknown. Our result also explicates that tax authority had fewer preferences on the measures of incentive related to IR 4.0 when it comes to tax audits. Interestingly, one of the research conducted in German by Ruᵡßmann et al. (2015) forecast on enormous additional revenue generated to the country as a result of the application of IR 4.0. Therefore, IR 4.0 is the next great task to be embedded in governing the tax audit. This research also conveyed an important message among corporate taxpayers. A high percentage of 84.3 tax audit occurrence, indicates a high possibility of the corporate

firm being selected for tax audit and thus, taxpayers are urged to better prepare to face the taxmen.

More importantly, this research revealed new evidence on the area that has been focused as well as the untouched area yet to be discovered by the tax authority during the course of a tax audit. Although it would be premature at this early phase to propose policy prescriptions, such as recommending that the tax authority should devote more effort to concentrate on tax avoidance indicators (ETR and BTD) and in RA incentive utilization (RAUTI), we help fill another gap by providing some insight to the alternative indicators to be used by tax authority for enforcing tax audit governance.

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