EFFECT OF ELECTRONIC TAX INVOICE ADOPTION ON TRANSPARENCY OF INDONESIA STOCK EXCHANGE MAIN BOARD COMPANIES

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Abstract

Purpose
This study analyses the relationship between adopting electronic tax invoice (ETI) and public companies' transparency.

Design/methodology/approach
The analysis was conducted using binary panel data with a random-effects model, with data observations of companies listed on the Main Board of the Indonesia Stock Exchange except for the financial and technology sectors in the 2012-2019 period.

Findings
The analysis results show that ETI affects the transparency of all three types of profits for a subsample of companies with enormous assets on the Main Board. Analysis of the industrial sector shows the industrial sectors of raw goods and secondary consumer goods have a significant influence. Furthermore, the findings of industrial sectors and certain types of profits where ETI has no considerable effect on transparency suggest the ETI application should improve its features. It will prevent transaction manipulation and company's behavior for making income smoothing. On the other hand, it is necessary to carry out a strategy of extracting tax potential for a particular sector related to fictitious invoice cases and frequent affiliate transactions.

Research limitations/implications
This study is interesting to do on a sample of large companies so that it can be known how much ETI adoption affects the transparency of large companies that tend to conduct tax avoidance.

Originality/value
From the various studies that explore the application of digitalization and transparency, until now, the authors have not found studies that study the relationship between digitalization and increased taxpayer transparency.

Keywords:

Transparency, Digitalization, Electronic Tax Invoice, Efaktur, Public Company

INTRODUCTION

The main problem in taxation mechanisms is asymmetric information between taxpayers and tax authorities (Lederman, 2010). Tax authorities have information that is not the same as taxpayers on their tax base, so tax authorities have not been able to carry out tax policies optimally. In practice, complex procedures require tax authorities to access enough information to make no information gap between tax authorities and taxpayers (Safitra & Djamaluddin, 2020). Holm & Schøler (2010) suggests that the way to reduce unbalanced information is to increase corporate transparency.

Bushman (2004) defines corporate transparency as a combined output of a multifacet system in which each component jointly generates, collects, validates, and disseminates information to others outside the company. Wang (2012) stated that transparency is essential in efficiently allocating resources in the economy. Nevertheless, according to Ellul et al. (2016), transparency is two swords: on the one hand, it increases investor confidence, but on the other hand, it will increase the supervision of the tax authorities. Thus, transparency is part of the company's strategy to communicate actively with interested parties with the company.

Furthermore, transparency becomes a critical issue for companies in operation. Transparency creates an ethical dilemma as companies try to uncover information as opportunistic (Mangoting et al., 2019). For example, Pappadá & Zylberberg (2017) found that tax reform in Greece makes the behavior of small and medium-sized companies adjust their level of transparency. The change in the level of transparency occurs in addition to the increase

in tax rates but is also influenced by access to external financing (Straub, 2005). On the other hand, transparency can reveal strategic information to competitors to reduce the potential for innovation (Zhong, 2018). In addition to the company, corporate transparency is an important thing that tax authorities must consider. According to Barreix & Zambrano (2018), international cooperation in terms of transparency in taxation and eradication of tax evasion has been promoted by the Group of Twenty (G20) and the Organization for Economic Cooperation and Development (OECD).

From various transparency perspectives, authors need to look at transparency concerning financial access and tax pressures. In this case, the company's transparency is defined as the part of the activity disclosed. Simultaneously the magnitude of transparency determines how much access to external finance and how much tax pressure it receives. In addition, changes in transparency can be measured through earning smoothing behavior (Ellul et al., 2016). Given the importance of transparency, various ways are done to encourage increased transparency, one of which is by implementing digitalization through ICT (Information Communication Technology) (Bertot et al., 2010).

Some literature studies the application of digitalization to transparency in general. For example, Pina et al. (2007) found similar results in which E-government increased transparency, openness, and accountability of the 15 EU countries. Further EU studies conducted by Bonsón et al. (2012) found that using social media by municipalities increased corporate transparency. Blockchain technology is claimed to have the advantages of real-time transparency and cost savings (Ko et al., 2018).

From the various studies that explore the application of digitalization and transparency, until now, the authors have not found studies that study the relationship between digitalization and increased taxpayer transparency. Thus, the author is interested in analyzing how

digitalization affects taxpayer transparency. In Indonesia, one of the digitization processes carried out by the Directorate General of Taxes (DGT) is the implementation of electronic tax invoices.

Electronic tax invoice (ETI), known by several terms, includes electronic invoice, electronic tax invoicing, VAT e-invoicing, and e-tax invoicing. Electronic tax invoices are often known and likened to their use with electronic invoices used for transactions in general. Electronic tax invoicing has been carried out in many countries in Latin America and Europe (Barreix & Zambrano, 2018). In Latin American countries, its implementation was started by Chile in 2003. In mid-2017, ETI was implemented by Argentina, Brazil, Ecuador, Mexico, Peru, Uruguay, and several other Latin American countries. While in some European countries have started the requirement to use all transactions using electronic invoices in the public sector, such as Denmark, which requires its use since 2009, and Italy, which has required electronic invoices for B2B operations since 2019. In Indonesia, ETI is known as *Efaktur* to be the achievement of the 2015-2019 DGT Plan and Strategy. In 2014, DGT implemented the implementation of ETI related to the supervision of Taxable Entrepreneurs for VAT Purposes (Pengusaha Kena Pajak or PKP) and the handling of users and issuers of fictitious tax invoices.

The implementation of ETI was carried out gradually; namely, on July 1, 2014, it was applied to 45 certain PKPs selected by the DGT as pilot projects; on July 1, 2015, it applied to all PKPs registered in all Major Taxpayer Regional Offices (Kanwil), in Java and Bali; And July 1, 2016, applies to all of Indonesia. With the implementation of ETI, which has been running for more than five years, it is interesting to research especially related to how the company responds to increasing transparency. To the best of the author's knowledge, there has been no research pertaining to the relationship between ETI and transparency. Most previous studies have studied the influence of ETI and tax compliance, including Fuentes et al. (2016),

Barreix & Zambrano (2018), Templado & Daniel Artana (2018), Bérgolo & Sauval (2018), Qi and Azmi (2021). Other studies analyzing the relationship between tax compliance and transparency include Pappadá & Zylberberg (2017), Juliartha Nugraha & Ery Setiawan (2019), and Mangoting et al. (2019). This study will contribute to the literature by examining the influence of ETI adoption on transparency.

This study used a sample of public companies listed on the Main Board of the Indonesia Stock Exchange. The company on the Main Board has relatively large assets, a good track record, and has made a profit (Indonesia Stock Exchange, 2010). Some studies state that large companies in Indonesia tend to do tax avoidance (Ardyansah & Zulaikha, 2014; Mulyati et al., 2019). Thus, this study is interesting to do on a sample of large companies so that it can be known how much ETI adoption affects the transparency of large companies that tend to conduct tax avoidance.

LITERATURE REVIEW AND HYPOTHESES

ETI-related research is conducted in various countries, especially in Latin America, which has the characteristics of developing countries. As mentioned in Barreix & Zambrano (2018), in Ecuador, the impact of ETI increased assessed tax by 18% in 2015 and 25% in 2016 (Andino, 2018). In Mexico, the impact of ETI increased the cumulative income declared, so taxes increased by 6.5% in 2014 and 6.6% in 2015 (Fuentes et al., 2016). In Argentina, there was an increase in tax revenues between 0% in 2008 to 10.7% in 2013 because of ETI (Templado & Daniel Artana, 2018). The same results were obtained in Brazil. The impact of ETI adoption increased reported revenue by 22% in four years (Naritomi, 2019). In Uruguay, electronic invoicing impacts tax revenues to increase the estimated amount of corporate payments by 3.7% (Bérgolo & Sauval, 2018).

Some literature measures corporate transparency. Turrent and Ariza (2012) created an index to measure the transparency of companies on the internet (electronic corporate transparency index on the internet or e-CTI). Pappadá & Zylberberg (2017) measures transparency by looking at the disclosed share of assets. Ellul et al. (2016) use the accrual component of revenue to measure transparency, i.e., earning smoothing. As an alternative to earning smoothing, some literature uses income smoothing with the Eckel index (1981) to look at how corporate management manipulates profits like the study conducted by Albrecht & Richardson (1990); Alexandri & Anjani (2014); Santos & Santos (2020) and Safitri & Sari, (2021). At the same time, Zhong (2018) made a transparency measurement by looking at the quality of financial reporting, global accounting standards, and the quality of the external information environment. From some of the approaches to measuring corporate transparency above, the author uses income smoothing by using index calculations according to Eckel's study (1981); that is, the company is categorized as transparent if the coefficient of variation of profit is less than the coefficient of variation of revenue. The coefficient of variation of profit is the ratio of the standard deviation of the difference in profit to the average difference in profit. The same formula is used to calculate the coefficient of variation of revenue (Eckel, 1981).

Income smoothing involves the manipulation of invoices without exception of tax invoices (2017). The use of tax invoices in the VAT administration system has many loopholes that the taxpayer can abuse. One form of misuse of tax invoices is the manipulation of sales data transactions, commonly called fictitious tax invoice cases. There are more than 50% of tax cases in Indonesia caused by fictitious tax invoices (2015). Tax invoices that are not closely monitored and can be printed by various parties with an enormous face value become commodities to be traded (Putranti & Yamin, 2009).

The existence of this convenience creates a significant gap for companies to manipulate

profits and reduce the level of transparency. For this reason, changes in the administration of tax invoices through ETI are expected to change the company's behavior in committing fraud. There is a direct influence of the application of ETI on the transparency of the company. This happens because of several ETI features that prevent *fraud* between parties who make transactions. In the study, Safitra (2019) mentioned some of these features (QR Code, activation code and password, digital certificate renewal). Based on earlier information and literature, the adoption of ETI is expected to increase the company's transparency.

H1: ETI adoption positively affects corporate transparency.

According to the DGT 2020 Performance Report (Direktorat Jenderal Pajak, 2020), the Directorate General of Taxes explores the tax potential of specific industrial sectors to improve performance efficiency and effectiveness. When it comes to corporate transparency, there are studies, namely the studies of Ashari et al. (1994), and Mahmud (2012), which found that certain industrial sectors have different transparency behaviors in terms of income smoothing.

H2: Differences in industry sectors have an impact on the relationship between ETI adoption and corporate transparency

RESEARCH METHODS

The authors used a sample of 301 observations (firms-intervals) that met the following criteria:

- The company is listed for the period 2012-2019 on the Main Board of the Indonesia Stock Exchange 2019.
- Companies of all sectors except IDXFINANCE and IDXTECHNO sectors. Companies in

the sector are engaged in the financial services sector, which is almost entirely VAT exempt, so most companies in the IDXFINANCE sector do not intensively use ETI. The IDXTECHNO sector does not have enough observations for regression.

- The company has complete data according to the variables used in this study.
- Observations included in the outlier were eliminated. The authors detected outliers in the asymmetric distribution using a boxplot as Aucremanne et al. (2004) study.

In this study, to test the first hypothesis, the authors measured how the adoption of ETI would change the level of transparency of the company by using the following data panel model by adapting Habib's study (2005), wherein the model (1), (2), and (3) using a binary panel data with a random-effects model (command xtlogit on STATA).

In the context of this research, namely the binary logistic panel data, the research model for testing the first hypothesis, namely the influence of ETI on transparency, is as follows.

$$\text{Transgp}_{it} = \beta_0 + \beta_{11}ETI_{it} + \beta_{21}Profit_{it} + \beta_{31}Debt_{it} + \beta_{41}Tax_{it} + \beta_{51}Size_{it} + \beta_{61}Sektor_i + \varepsilon_{it} \quad (1)$$

$$\text{Transop}_{it} = \beta_0 + \beta_{12}ETI_{it} + \beta_{22}Profit_{it} + \beta_{32}Debt_{it} + \beta_{42}Tax_{it} + \beta_{52}Size_{it} + \beta_{62}Sektor_i + \varepsilon_{it} \quad (2)$$

$$\text{Transnp}_{it} = \beta_0 + \beta_{13}ETI_{it} + \beta_{23}Profit_{it} + \beta_{33}Debt_{it} + \beta_{43}Tax_{it} + \beta_{53}Size_{it} + \beta_{63}Sektor_i + \varepsilon_{it} \quad (3)$$

To test the second hypothesis, namely the influence of the industrial sector on the ETI adoption relationship on the transparency of public companies, the author uses a model (4) to a model (6), which is a modification of the model (1) to the model (3). The author adds the ETI*Sektor interaction variable to be interpreted through the odds value (Buis, 2010)

$$\text{Transgp}_{it} = \beta_0 + \beta_{14}ETI_{it} + \beta_{24}Sektor_i + \beta_{34}ETI_{it}{}^{*}Sektor_i + \beta_{44}Profit_{it} + \beta_{54}Debt_{it} + \beta_{64}Tax_{it} + \beta_{74}Size_{it} + \varepsilon_{it} \quad (4)$$

$$\text{Transop}_{it} = \beta_0 + \beta_{15}ETI_{it} + \beta_{25}Sektor_i + \beta_{35}ETI_{it}{}^{*}Sektor_i + \beta_{45}Profit_{it} + \beta_{55}Debt_{it} + \beta_{65}Tax_{it} + \beta_{75}Size_{it} + \varepsilon_{it} \quad (5)$$

$$\text{Transnp}_{it} = \beta_0 + \beta_{16}ETI_{it} + \beta_{26}Sektor_i + \beta_{36}ETI_{it}{}^{*}Sektor_i + \beta_{46}Profit_{it} + \beta_{56}Debt_{it} + \beta_{66}Tax_{it} + \beta_{76}Size_{it} + \varepsilon_{it} \quad (6)$$

There are two-time intervals in this study, namely the interval before the adoption of ETI in 2012-2015 and the interval after the adoption of ETI in 2016-2019. This research used a cut-off in 2016 because ETI was used nationally in Indonesia so that the influence of ETI could be measured entirely. An operational variables definition in this research is explained in Appendix 1. Dependent variables are binary dummy variables that correspond to the categorization of smoothing behavior based on the Eckel index (1981).

RESULT AND DISCUSSION

Appendix 2 provides the descriptive statistic. The average variable ETI is 0.5, where there are two periods t with individual companies before adopting ETI and after adopting ETI. The transgp, transop, and transnp variables have an average value of more than 0.5, which indicates that the company tends to be transparent. The average debt-equity ratio above 1 show that the company is very dependent on external finance where the company has more debt than the capital owned. The above statistics show that companies that rely on external finance tend to be more transparent, according to Pappadá & Zylberberg (2017).

On the first hypothesis testing in Appendix 3, ETI affects significantly all types of profits. At gross profit with significance alpha=5%, the tendency of companies to choose to be transparent is greater than that of companies that use ETI than those that have not used ETI.

Meanwhile, operating profit tends to be 1.7 times but at a confidence level of 10%. The same result was seen in the net profit where the effect of ETI adoption was significant with an odds ratio of 1.7 at a rate of α 10%. The above results show that the use of ETI is effective in large companies in increasing transparency. This is supported by arguments that show that large companies tend not to manipulate profits due to profit stability and the strict supervision of external parties such as analysts, investors, and government represented by tax authority (Bathke Jr et al., 1989; Holland & Jackson, 2004). This is contrary to the results of the study of Mulyati et al. (2019) with a sample of companies in the consumer goods and manufacturing sectors of the Indonesia Stock Exchange in 2014-2019 which shows that the larger the company's assets, the more tax avoidance will be. Different results may be affected by using different periods and samples.

In Appendix 4, the results of assessing the second hypothesis show the secondary consumer sector (IDXCYCLIC) exerts a significant positive influence on the relationship between ETI adoption and corporate transparency on all types of profits. While the raw goods sector (IDXBASIC), and the secondary consumer sector (IDXNONCYC) show a significant positive impact on gross profit and net profit but not on operating profit. At the same time, other sectors are not significant in all types of profits. This analysis uses the odds value, which is the ratio of the probability of the company being transparent with the probability of being non-transparent. For example, in the IDXCYCLIC sector, the probability of finding a transparent company is 30% higher than the probability of finding a non-transparent company in terms of gross profit.

From the results of the second hypothesis testing, there is an issue of why ETI has varying effects in the industrial sector and certain types of profits. There are two arguments to explain why that's the case. First, there are still fictitious modes of tax invoices through manipulation of transactions in certain sectors and types of profits that have not been resolved through ETI

according to the studies of Barreix & Zambrano (2018) and Amri & Prihandini (2019). This is reinforced by the statement of the Minister of Finance of the Republic of Indonesia that as many as 80.76% of the 499 Taxpayers registered at the Regional Office of Large Taxpayers were proven to have used fake tax invoices in 2015 where ETI was already in effect in Java and Bali starting July 2015 (Musri & Dwiyanti, 2019). After the adoption of ETI nationwide, fictitious tax invoice transactions are also still found, with the number of fictitious tax invoice cases amounting to 525 cases with a potential state loss of one trillion rupiahs (Direktorat Jenderal Pajak, 2018). Second, affiliate transactions such as transfer pricing also affect income smoothing (Aristyatama & Bandiyono, 2021). The company can determine the transfer price with the subsidiary so that the price agreement cannot be prevented even if it has used ETI. For example, the IDXENERGY and IDXHEALTH sectors did not have a significant impact, and the authors suspect that there are transfer pricing practices (Beer & Loeprick, 2015).

CONCLUSION, LIMITATIONS, AND RECOMMENDATIONS

This study analyzes ETI adoption's effect on public companies' transparency and whether this applies to companies in certain industry sectors. The analysis results show that the use of ETI significantly increases transparency in Main Board companies. Furthermore, judging from the industrial sector, the implementation of ETI significantly affects the transparency of the secondary consumer goods industry (IDXCYCLIC) in the Main Board companies.

Related to the policy implications of the findings in this study are expected to be empirical facts for the government, in this case, the Directorate General of Taxes, in developing a digital-based tax administration system. Furthermore, the findings of certain industrial sectors and types of profit where ETI has no significant effect on transparency show that the ETI application can be improved in its features to prevent transaction manipulation, making it easier for

companies to carry out income smoothing. On the other hand, it is necessary to carry out strategies for extracting tax potential in sectors and types of profits related to fictitious invoice modes and affiliate transactions often carried out in sector types and types of profit aforementioned.

The use of a sample of public companies in analyzing the effect of ETI on transparency is a separate issue in terms of regression models. The use of binary logistic panel data with random effects has a potential coefficient value that is more biased than fixed effects but with a smaller standard error (Allison, 2009). Public companies are considered to have to follow the rules that encourage increased transparency so that there is a potential for selection bias in measuring the effect of ETI on transparency. To overcome this, a sample of a private company is needed to represent a more reliable result. In this study, the use of ETI is a means of VAT administration, but in the Tax control variable, the author uses data on all types of taxes so that this becomes less relevant in this study. Tax variables that use the Effective Tax Rate proxy are less capture the level of tax avoidance so it is expected that the following research will use variables related to tax audits.

Apart from the regression model, the authors suspect that affiliate transactions influence whether the industrial sector has a role in the relationship between ETI adoption and transparency of public companies, according to the study by Aristyatama & Bandiyono (2021). However, the author has not been able to measure the magnitude of the influence of such affiliate transactions in the empirical model. Further research is expected to include affiliate transactions in the empirical model.

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Appendix 1. Operational Variable

Variable	Sources	Predicted Sign	Description
Dependent Variable			
Transgp	Ashari et al. (1994), Eckel, (1981)	positive	*dummy variable status income smoothing* from companies that are 0 for *smoothers* and 1 for *non-smoothers* with *gross profit* as income. *Gross profit* is the result of a deduction in *revenue* deducted by the cost of goods or direct costs,
Transop	Ashari et al. (1994), Eckel, (1981)	positive	*dummy variable income smoothing* status from companies that are worth 1 for smoothers and 0 for non-smoothers with *operating profit* as income. *Operating profit* is the result of a deduction in *gross profit* deducted by indirect costs,
Transnp	Ashari et al. (1994),	positive	*dummy variable income smoothing* status from companies that are worth 1 for

	Eckel, (1981)		smoothers and 0 for non-smoothers with *net profit* as income. *Net profit* is the result of a deduction in *operating profit* deducted by depreciation, amortization, interest costs, and taxes,
Independent Variables			
ETI		positive	dummy adoption of ETI which is worth 1 if the company has adopted ETI and is worth 0 if not.
Profit	Ashari et al. (1994), Habib (2005)	positive/negative	profitability ratio, *average net profit margin*, which is the average value of the *net profit* ratio compared to turnover.
Debt	Habib (2005), Savitri (2019)	positive	the debt-equity ratio, which is the total liabilities divided by the total equity,

Size	Ashari et al. (1994), Habib (2005), Dang et al. (2018)	positive	company size, the logarithm *of average revenue*, logarithm value of average turnover in billions of rupiah
Tax	Savitri (2019), Pappadá & Zylberberg (2017)	positive	*average effective tax rate*, which is the average value of the ratio of the tax burden to income before tax (*earning before tax*)
Sektor	Ashari et al. (1994), Habib (2005), Mahmud (2012)		*dummy* variables of the industrial sector are IDXBASIC, IDXCYCLIC, IDXENERGY, IDXHEALTH, for IDXINDUST, IDXINFRA, IDXNONCYC, IDXPROPERT, IDXTRANS

Appendix 2. Descriptive Statitics

Variable	Obs	Mean	Std. Dev.	Min	Max
transgp	301	0.578	0.495	0	1
transop	301	0.661	0.474	0	1
transnp	301	0.638	0.481	0	1
ETI	301	0.478	0.500	0	1
profit	301	0.072	0.077	-0.145	0.293
debt	301	1.185	0.858	-0.872	3.981
tax	301	0.219	0.168	-0.410	0.565
size	301	3.591	0.643	1.522	5.008
sektor	301	4.475	2.599	1	9

Appendix 3. Effect of ETI adoption on corporate transparency

	(1)	(2)	(3)

Variables	(transgp)	(transop)	(transnp)
ETI	2.132**	1.775*	2.045**
	(0.008)	(0.064)	(0.018)
Profit	4.391	6.294	3.979
	(0.501)	(0.483)	(0.579)
Debt	0.857	1.285	1.293
	(0.371)	(0.249)	(0.223)
Tax	0.821	1.058	0.514
	(0.800)	(0.954)	(0.510)
Size	1.182	1.513	1.151

	(0.500)	(0.151)	(0.580)
fixed effect sector	Yes	Yes	Yes
n	301	301	301
chi2	17.12	24.35**	20.89*
aic	576.1	543.7	563.5
bic	636.6	604.2	624.0

Odds ratio * p<0.10, ** p<0.05

Appendix 4. Impact of differences of industry sector on the relationship between ETI adoption and corporate transparency

ETI*Sektor	(1)	(2)	(3)
	transgp	transop	transnp
ETI*IDXBASIC	2.972*	5.209	2.055*
	(0.062)	(0.160)	(0.099)
ETI*IDXCYCLIC	1.354**	1.926*	1.604*
	(0.046)	(0.097)	(0.064)
ETI*IDXENERGY	10.03	19.96	12.67
	(0.241)	(0.353)	(0.303)
ETI*IDXHEALTH	8.538	13.06	11.44
	(0.455)	(0.495)	(0.438)

ETI*IDXINDUSTR	2.009	4.81	4.21
	(0.183)	(0.317)	(0.265)
ETI*IDXINFRA	0.999	1.725	1.182
	(0.117)	(0.238)	(0.194)
ETI*IDXNONCYC	3.478**	7.996	6.437*
	(0.044)	(0.132)	(0.085)
ETI*IDXPROPERT	1.025	1.778	3.859
	(0.122)	(0.215)	(0.203)
ETI*IDXTRANS	0.479	3.545	2.131
	(0.488)	(0.545)	(0.504)

n	301	301	301

Odds value * p<0.10, ** p<0.05