



Older and wiser? The impact of CEO age on firm's tax amnesty participation

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ABSTRACT

The objective of this research is to examine the potential impact of CEO age on the involvement of companies in tax amnesty programs among publicly traded companies in Indonesia. With differing opinions on how age affects risk-taking behavior, this study attempts to clarify the issue. The researchers gathered and examined 210 firm-year records to create the main dataset for analysis. To investigate the relationship between CEO age and tax amnesty participation, statistical approaches such as correlation, logistic regression analysis, and propensity score matching (PSM) were utilized as analytical tools. The results show a negative association between the age of the CEO and their readiness to participate in tax amnesty, indicating that older CEOs may view tax amnesty as a dangerous endeavor and be less inclined to take part. This negative association was further supported by an additional analysis of two tax amnesty programs, one from 2016 and the other from 2017. It showed that older CEOs tended to behave in a more risk-averse manner. Because of the possible risks, they are therefore less likely to take part in tax amnesty initiatives. Overall, this study advances knowledge on how CEO age affects business decision-making and sheds light on the factors influencing tax amnesty program participation.

IMPACT STATEMENT

Our research examines the association between the age of CEOs and their firms' participation in tax amnesty programs, within the complex landscape of corporate decision-making. The study, conducted in Indonesia but with implications worldwide, reveals a significant finding: older CEOs are less likely to engage in tax amnesty initiatives. This suggests that older CEOs may perceive tax amnesty as a risky undertaking, leading to a decreased willingness to participate. An analysis of how individuals' age affects their decision to participate in tax amnesty programs contributes to discussions on governance, fiscal responsibility, and transparency. Our study provides clear guidance for policymakers in improving tax policies, regulators in strengthening compliance, and the public in advocating for transparent corporate practices.

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1. Introduction

It is undeniable that tax revenue is essential to maintaining public services and government operations. However, the ongoing problem of corporate tax avoidance remains a cloud over fiscal environments around the world, with Indonesia providing a striking example (Jamilah et al., 2020). It appears that offshore asset transfers are a common tactic used by Indonesian corporate organizations to reduce or avoid their tax liabilities (Soepriyanto et al., 2020). To combat this issue, the Indonesian government introduced a tax amnesty program¹, aimed at incentivizing the repatriation of offshore assets. Indeed, the effectiveness of the tax amnesty program in Indonesia may be influenced by different elements, one of which could be the willingness of firms to participate.

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The firm's decision to participate in a tax amnesty program is influenced by various factors and is not straightforward. Participating in a tax amnesty program can have few downsides and potential costs for a company. One significant concern is the risk of damaging the company's reputation by disclosing previously hidden financial information, which could reveal past attempts at tax evasion (Soepriyanto et al., 2019). This might lead stakeholders to view the company negatively, seeing its participation as an admission of previous non-compliance (Shevlin et al., 2017). Additionally, integrating a tax amnesty program into the company's strategy requires careful decision-making and may divert resources from other strategic priorities to fulfil program obligations, such as bringing back assets (Sayidah & Assagaf, 2019). Moreover, a company's participation in a tax amnesty program may be construed by investors and competitors as indicative of financial distress or poor management, impacting key indicators like stock prices, credit ratings, and overall market reputation (Nuryanah & Gunawan, 2022). On the other hand, firm can potentially benefit from reduced penalties and the opportunity to become compliant with tax regulations while also potentially improving their financial position and reputation (Inasius et al., 2020). This study aims to investigate the factors that influence firms' tax amnesty participation, with a specific focus on CEO age, given previous findings indicating that CEO personal traits also influence firm tax decisions (James, 2020). By considering CEO age an important factor in the decision to participate in tax amnesty, this study poses the following research question: Does CEO age have an effect on firm participation in tax amnesty program in Indonesia?

Prior research suggests that CEO age may have an impact on the firm tax decisions (e.g. Dyreng et al., 2010; James, 2020). They argue that younger CEOs may be more willing to take the risk and participate in a tax management activities due to their longer time horizon and potential for long-term benefits, while older CEOs may be more conservative and hesitant to take such actions. Additionally, younger CEOs may be more open to embracing new strategies and willing to take risks in order to improve the company's financial standing. On the other hand, older CEOs could argue that their experience and cautious approach allow them to avoid risky endeavours, such as participating in tax amnesties, which they see as potentially harmful in the long term. Furthermore, older CEOs might prioritize stability over taking unnecessary risks, especially when it comes to financial matters. Overall, the relationship between CEO age and firm participation in tax amnesty programs is uncertain and requires further investigation.

Examining the association between tax amnesty participation and CEO age stems from practical and theoretical/empirical motivation. From a practical standpoint, understanding the relationship between CEO age and tax amnesty participation can provide valuable insights for both firms and policymakers. In fact, the age of CEOs worldwide is on the rise, with many executives now continuing their careers well into their 60s and 70s. A 2022 report by Spencer Stuart highlighted this trend, showing that the average age of CEOs at the time of appointment has been steadily increasing². In 2021, the average age peaked at around 56 in the S&P 500 index. This upward trajectory has been particularly pronounced during the pandemic, as boards of directors have favored candidates with extensive experience to navigate uncertain times. Interestingly, as many as one in six newly appointed CEOs were aged 60 or above. Given the increasing prevalence of older CEOs and their potential influence on firm decisions, it is important to examine how CEO age relates to firm's tax decision making.

From a theoretical and empirical viewpoint, prior research based on Upper Echelon Theory has shown that the personal characteristics of CEOs, such as their attitude towards risk and ethical principles, can impact firm outcomes, including tax choices (Christensen et al., 2015). However, previous studies have mainly concentrated on the influence of CEO age on firm tax management and avoidance strategies. As a result, this study aims to delve into the role of CEO age in tax decision within an environment where the government offers the opportunity for a fresh start through tax amnesty programs.

This study delves into the intricate relationship between firms' tax amnesty decision and CEO personal characteristic, shedding light on the significant impact of CEO age on firms' tax policies. CEO-level characteristics may play a significant role in determining a firm's decision to participate in a tax amnesty program, for at least two reasons. First, participation in a tax amnesty program may serve as an indication of past dishonest tax avoidance practices (Soepriyanto et al., 2019). According to Christensen et al. (2015), tax avoidance is a strategic decision made by firms. As such, the power held by CEOs, as argued by Hambrick & Finkelstein (1987), is a crucial factor in corporate strategic decisions, given that such decisions are often unstructured and opaque. Additionally, Finkelstein (1992) and Christensen et al. (2015)

argue that the ability of the CEO to direct and resolve conflicting arguments becomes a critical factor in making strategic decisions, including the decision to participate in a tax amnesty program. Second, the behaviour of a firm can also be influenced by the experiences, values, and personalities of its executives, as argued by Hambrick & Mason (1984) in the Upper Echelon Theory. It proposes that top executives bring their personal characteristics and experiences to their decision-making processes and that these factors can significantly influence organizational strategy, culture, and performance. Consistent with the theory, research has suggested that CEO age can be linked to risk-taking behaviour, with studies by James (2020), Serfling (2014), Jenter & Lewellen (2015), and Cline & Yore (2016) indicating that age can affect tax planning, investment and financing policies, ultimately increasing company value. Additionally, some scholars argue that a CEO's reaction to career risk may be affected by their age, as seen in works by Holmstrom (1999), Bertrand & Mullainathan (2003) and Chowdhury & Fink (2017). In short, this study explores the influence of CEO age on firms' tax policies, emphasizing its significance in determining a firm's participation in a tax amnesty program. The analysis suggests that CEO-level attributes may impact the decision to engage in such programs due to potential implications for past tax practices and their ability to steer corporate strategic decisions.

Using a sample of 210 firm-year observations of Indonesian listed firms, we find a significant negative association between CEO age and tax amnesty participation. The negative relationship remains robust even after addressing endogeneity concerns. Notably, the study found that the negative relationship is primarily driven by a negative association between CEO age and tax amnesty participation in the year 2017. This result is consistent with the argument that older CEOs are more risk-averse. Moreover, the high cost of tax amnesty in 2017 (i.e. higher penalty rate) may have also contributed to the reduced participation of firms led by older CEOs. Overall, the results suggest that CEO age plays a role in determining firms' decisions to participate in tax amnesty programs.

Consequently, this paper aims to contribute new insights to the current body of research and practical expertise. First, as far as the authors are concerned, this is the first study to examine the association between CEO age and tax amnesty participation. By doing so, this study aims to offer an understanding of how CEO age can influence corporate decision-making in the tax amnesty environment, as prior studies are mostly examining the impact of CEO decision on tax management and tax avoidance strategies. Second, the study provide a broader perspective on CEO age as an important proxy of executive decision making. We found that the older CEO tends to be less willing to participate in tax amnesty programs, which suggests that CEO age can serve as an indicator of risk aversion and conservatism in tax decisions. Third, this study extend the line of research on how CEO characteristics, such as age, can shape firms' tax policies and decision-making. This is important as it sheds light on the role of CEO age in the specific context of tax amnesty participation. Finally, this study also has practical implications for tax policy and revenue collection in Indonesia and neighboring countries with similar social, political, and economic characteristics. As more than 80 percent of state revenue in Indonesia comes from tax collection, understanding factors that influence taxpayer compliance, such as CEO age, is essential for strengthening state revenues.

The subsequent sections of this paper are structured as follows. [Section 2](#) furnishes a comprehensive background on tax amnesty in Indonesia, setting the stage for our study. [Section 3](#) delves into the theoretical framework that underpins our research, while [Section 4](#) offers an extensive literature review and the development of our hypothesis. [Section 5](#) details the research design, encompassing aspects such as sample selection and variable measurement. The empirical analysis, including descriptive statistics and regression analysis, is presented in [Section 6](#). [Section 7](#) is dedicated to the robustness and additional analysis of our findings. Finally, [Section 8](#) engages in a thorough discussion of the implications derived from our results and concludes the paper.

2. Background and research setting

2.1. Tax amnesty program in Indonesia

The government launched the tax amnesty scheme to entice taxpayers to come forward and reveal their previously hidden assets and pay taxes without worrying about fines or legal repercussions. By

giving non-compliance taxpayers the chance to become compliant taxpayers, the program seeks to raise state revenue. Tax amnesty, according to Devano & Siti (2006), is a government program that erases taxes due in exchange for a predetermined ransom payment. It is anticipated that the program will lead to a future increase in taxpayers' voluntary compliance.

Tax amnesty, according to Nuryanah & Gunawan (2022), is a policy that allows taxpayers who were previously noncompliant to repay taxes on unreported income without worrying about fines or legal repercussions. According to this definition, tax amnesty is a government policy that gives taxpayers the chance to settle their tax debts and become compliant without having to worry about face penalties from the government. Value-added tax and income tax obligations may be covered via tax amnesty.

Indrawati (2016), as the Minister of Finance, highlights that tax amnesty is an effective way to increase state revenue. The program encourages taxpayers to report their assets, pay the tax amnesty ransom, and calculate, pay, and report taxes. The implementation of tax amnesty is aimed at promoting honesty and compliance among taxpayers, particularly those with assets outside the country. In general, tax amnesty is a remission program that provides relief to taxpayers from sanctions arising from their past tax arrangements.

The tax amnesty program in Indonesia serves two primary purposes, as outlined by Darussalam (2015). Firstly, it is intended to generate additional tax revenue in the short term. The implementation of tax amnesty is often justified by stagnant or declining tax revenues. Secondly, the program aims to improve tax compliance in the future. The legal framework for the tax amnesty program in Indonesia consists of several acts, including Law Number 11 of 2016 concerning Tax Amnesty, Regulation of the Minister of Finance Number 118/PMK.03/2016 concerning the implementation of Law no. 11 of 2016 concerning Tax Amnesty, Circular of the Director-General of Taxes Number 30/PJ/2016 concerning Tax Amnesty Implementation Guidelines, and Director General of Taxes Regulation Number 07/PJ/2016 concerning Documents and Technical Guidelines for Filling Documents in the Context of Tax Amnesty Implementation. Individual taxpayers, corporate taxpayers, micro, small, and medium enterprises (MSMEs), as well as individuals or entities that have not been taxpayers, are eligible to participate in the tax amnesty program. The program is divided into three periods: the first period is from the passing of the Tax Amnesty Law until 30 September 2016 (Period 1), the second period is from 1 October 2016 until 31 December 2016 (Period 2), and the third period is from 1 January 2017 to 31 March 2017 (Period 3).

According to Article 11, Paragraph 5 of Law no. 11 of 2016 concerning Tax Amnesty, taxpayers who have obtained a Certificate of Following the Tax Amnesty from the Regional Office of the Directorate General of Taxes will be eligible for several Tax Amnesty facilities. These facilities include the abolition of payable taxes that have not been issued a tax assessment, exemption from tax administration sanctions, and exemption from criminal sanctions related to taxation for the tax obligations during the tax period, part of the Tax Year, and the Tax Year up to the end of the last Tax Year. Additionally, taxpayers will also be free from tax audits, preliminary evidence examinations, and taxation crime investigations related to the same tax obligations. Furthermore, if taxpayers are undergoing a tax audit, preliminary evidence examination, or taxation crime investigation related to the same tax obligations, which were previously postponed, they may request termination of such processes. These Tax Amnesty facilities aim to provide non-compliant taxpayers with an opportunity to pay their tax obligations without fear of administrative or criminal sanctions while increasing state revenue and taxpayer compliance.

2.2. Results and number of taxpayers of the amnesty tax program in Indonesia

The Indonesian tax amnesty program, which was initiated by President Joko Widodo and based on Law Number 11 of 2016, came to a close on March 31, 2017, after running for several months. The program was successful in generating IDR 134.99 trillion in revenue, which was broken down into IDR 114.23 trillion paid in ransom, IDR 19.02 trillion paid for tax arrears, and IDR 1.75 trillion paid as preliminary evidence. Participants in the program disclosed assets worth IDR 3,697.94 trillion domestically, IDR 1,036.37 trillion internationally, and repatriated IDR 146.69 trillion. A total of 972,530 taxpayers participated in the program, and it attracted 52,757 new taxpayers.

3. Theoretical framework

3.1. *The theoretical foundation of tax amnesty implementation*

According to Peacock & Wiseman (1961), the government's increasing expenditure leads to a rise in tax collection, but there is a limit to how much tax the society can tolerate. As tax revenue rises, the taxpayers become increasingly unwilling to pay higher taxes and may resort to avoiding taxes through various means. This presents a challenge for the government, especially in developing countries like Indonesia, where tax evasion and avoidance are common. Therefore, the Indonesian government implemented a tax amnesty program to bring back the assets that were hidden outside of the country and increase the tax revenue. The tax amnesty program was an attempt to incentivize taxpayers to disclose their hidden assets and repatriate them to Indonesia without fear of legal repercussions. In this way, the tax amnesty program aimed to increase the government's tax revenue and reduce tax evasion and avoidance.

Alm & Beck (1993) and Baer & Le Borgne (2008) have argued that the success of tax amnesty depends on certain follow-up measures such as increased enforcement efforts and improvements in taxpayer services. Tax amnesty can enhance tax compliance by encouraging more individual taxpayers to file their tax returns and be included in the tax rolls. However, it may have a negative impact by being perceived as an unfair tax break for tax evaders. Furthermore, individuals may delay participating in the current tax amnesty program if they expect that tax amnesty will be repeated in the future. The frequent use of tax amnesty may indicate a high level of noncompliance, and that compliance conditions are lenient.

3.2. *Upper Echelon theory in organizational decision-making*

Upper echelon theory is a management theory that suggests that organizational outcomes are influenced by the characteristics of top executives, such as their values, experiences, and demographics (Wang et al., 2016). The theory suggests that a CEO's traits show themselves in the strategic decisions of the company, which in turn influence the company's performance going forward. According to this theory, a company's actions mirror the decisions made by its CEO. As a result, the firm's financial resources and the many methods it employs serve as indicators of its strategic actions. Amin et al. (2023) for example, argue that CEOs with a background in business, economics, finance, or management, as well as female CEOs, tend to be less risk-takers than male CEOs, based on their initial observations from the upper echelons theory. Within the framework of the theory, a CEO's age, which is a measure of their lifetime experience, takes on importance as a critical indicator of CEO competency. According to Hambrick & Mason (1984), businesses led by younger CEOs typically take on more risk, which manifests itself in larger or more ambitious strategic initiatives. Younger CEOs are drawn to the possibility of significant financial rewards since they have had less opportunity to accumulate wealth and experience during their lives. This motivation drives them to launch audacious strategic plans meant to amass wealth for both the firm and the individual (Yim, 2013). On the other hand, more experienced CEOs tend to take more calculated strategic measures. Because their cognitive frameworks have had more time to develop and harden, they are less prone to or able to assimilate and integrate new knowledge quickly. In addition, their extended exposure to wealth growth cultivates a propensity to preserve this financial security in anticipation of old age. As a result, senior executives tend to be more loyal to the status quo and less willing to take chances (Serfling, 2014).

4. Literature review and hypothesis development

4.1. *CEO role in tax decisions*

At first look, it may appear difficult to ascertain the extent of CEOs' influence on company tax choices, considering that they are usually not experts in taxation. However, while they may not understand the intricacies of tax strategies, CEOs are likely to comprehend the competitive nature of their industry and the importance of expanding their business to generate operational economies of scale (Dyrenge et al., 2010). Therefore, it is reasonable to suggest that CEOs could have an impact on the firm's operational and financial strategies. Dyrenge et al. (2010) apply the upper echelons theory to tax

avoidance and find that managerial fixed effects are significantly correlated with a firm's tax avoidance. The upper echelons theory posits that an organization's outcomes can be viewed as a reflection of the cognitive bases, values, and other characteristics of the organization's key top managers (Hambrick & Mason, 1984; Hambrick, 2007). It suggests that managerial personal characteristics, including age, tenure, experience, and gender, play a role in shaping cognitive thinking, thereby influencing organizational outcomes. In relation to age, this theory argues that older managers are generally less innovative and more inclined to maintain the status quo of the firm, while younger managers are more adaptable to new initiatives. In sum, a CEO can influence corporate strategic decision, including tax avoidance by setting the 'tone at the top' regarding the firm's tax activities (Dyrenge et al., 2010).

CEOs are known to have a significant impact on their firm's tax behavior, and their personal abilities and characteristics can influence the level and type of tax avoidance undertaken (Francis et al., 2013). Studies show that more able managers engage in less corporate tax avoidance as they exert greater effort in normal business operations than in tax avoidance activities (Francis et al., 2013). CEOs with high personal integrity, as indicated by past military service experience, are less likely to engage in corporate tax avoidance (Law & Mills, 2017). Chyz (2013) found that the presence of suspect executives, those who manipulate stock option exercise backdating, is positively associated with proxies for corporate tax sheltering. Building on the aforementioned arguments, it is worth noting that the significance of the CEO's role extends to tax amnesty participation as well.

4.2. Hypothesis development: CEO age and tax amnesty participation

CEO age is a potential factor that may influence tax amnesty program participation for at least two reasons. Firstly, tax amnesty provides a relief for individuals who may have engaged in dishonest behavior in the past, and participation in the program may serve as evidence of such behavior. According to Soepriyanto et al. (2020), non-compliant taxpayers are given the opportunity to disclose their past actions and pay a penalty. Therefore, it can be argued that tax amnesty participation is more likely among individuals who have engaged in tax avoidance in the past. Christensen et al. (2015) suggest that tax avoidance is a strategic decision made by firms, and the CEO's power to make strategic decisions may influence their participation in tax amnesty. Hambrick & Finkelstein (1987) argue that the CEO's power to make unstructured and opaque strategic decisions is a crucial factor in corporate strategic decision-making. Additionally, Finkelstein (1992) suggests that the CEO's ability to resolve conflicting arguments is a key factor in strategic decisions.

Secondly, the behavior of a company may be explained by the experiences, values, and personalities of its executives, according to Upper Echelon Theory by Hambrick & Mason (1984). CEO risk preference may also be reflected in the risk-related behavior of their companies. Previous research has shown that CEO age is related to their risk-taking behavior. Serfling (2014) found a negative relationship between CEO age and stock return volatility and research and development (R&D) activities, suggesting that older CEOs tend to be less risk-taking than younger ones. Yuwono (2019) also found that CEO age has a significant negative effect on tax avoidance activities. Harymawan et al. (2023) find evidence that more masculine-faced CEO in Indonesia leads to higher corporate tax avoidance. Xynas (2011) further suggests that younger CEOs tend to be more active in corporate acquisitions. Barker & Mueller (2002) argue that older CEOs have risk-averse characteristics, which may result from their myopia. In contrast, Scharfstein & Stein (1990) suggest that younger CEOs may be more risk-averse due to career concerns. They argue that bad decisions early in their careers may result in higher market pressure for younger CEOs, which leads them to become more conservative and risk-averse. Armstrong et al. (2015) also suggest that younger CEOs are more afraid to take risks due to their lack of experience. Finally, Minnick & Noga (2010) found that CEO age has a significant negative effect on tax aggressiveness, indicating that older CEOs may be more likely to participate in tax amnesty. Therefore, CEO age may be a critical factor in tax amnesty participation. To address this issue, we formulate the following hypothesis (in an alternative form):

H_A: CEO age has a significant effect on tax amnesty program participation in Indonesia.

In summary, CEO age is an important factor that may influence tax amnesty program participation for various reasons, such as past tax avoidance behavior and CEO risk preference. However, the relationship between CEO age and participation in tax amnesty is still debated, and further research is necessary to determine the relationship between the two variables.

5. Research design

We discuss our baseline model in Section 5.1. Section 5.2 shows the construction of our sample. We present descriptive statistics of our sample firms in Section 5.3.

5.1. Regression model

We estimate the following logistic regression model to examine the relationship between CEO age and tax amnesty participation:

$$TAXAMNESTY_{j,t} = \alpha + \beta_1 CEOAGE_{j,t} + \beta_2 Controls_{j,t2-t} + e_{j,t} \quad (1)$$

TAXAMNESTY is a dummy variable coded one if a firm participated in Indonesia tax amnesty program during the amnesty period (2016-2017), following Shevlin et al. (2017) and Soepriyanto et al. (2021). *CEOAGE* is the age of CEO in year *t*, and *Controls* is a vector of control variables in year *t*. The age of CEO is collected from disclosure provided in firm's annual report, while participation from tax amnesty is collected from the disclosure in firm's financial statement regarding asset declaration due to tax amnesty involvement. A finding that shows a significant negative value for β_1 is supporting our hypothesis.

The study utilized a set of control variables, which were based on firm tax behavior and its correlated factors. In particular, the control variables that were included in the analysis were those that are related to tax avoidance behavior, such as *SIZE*, *ROA*, and *R&DEXP*, which were consistent with previous studies by Dyreng et al. (2010) and Koester et al. (2016). *SIZE*, as the natural logarithm of total assets; *ROA*, as the ratio of net income to total assets; and *R&DEXP*, as the research and development expense. The proportion of independent board members, *BOARDS*, was also included as studies suggest that it can provide a good disciplining mechanism (Klein, 2002; Park & Shin, 2004; and Davidson et al., 2005). In addition, CEO-specific characteristics, such as CEO popularity, were controlled as per the upper echelon theory proposed by Hambrick & Mason (1984). The study utilized the google trend search volume index to measure CEO popularity, *CEOPOPULAR*, following the approach of Duan et al. (2018). To address the possibility that tax amnesty participating firms had avoidance behavior in the years prior to the program, the study also included cash effective tax rate, *CETR*, which is the ratio of cash tax paid to pre-tax income. Finally, the study included two measures, *FSCORE* and *FOG*, which are related to accounting irregularities and the readability of annual reports, respectively, as they are believed to be associated with tax avoidance behavior and misreporting (Blaylock et al., 2012; Inger et al., 2018; Soepriyanto et al., 2021). Additionally, we wish to acknowledge that a certain section of the paper underwent editorial and grammatical review with the aid of an Artificial Intelligence (AI) tool, specifically a Large Language Model (LLM) known as ChatGPT. This assistance significantly contributed to improving the clarity and coherence of the manuscript.

5.2. Sample

Listed Indonesian firms in the Indonesian Stock Exchange with available data in the period from 2014 to 2017 were collected for this study. The reason for selecting data from 2014 was due to the use of the average of $t-2 - t$ for control variables. The sample selection process included several filtering criteria and presented in Table 1. First, firms in the financial services industry were excluded due to differences in accounting practices. Second, firms that reported financial statements in foreign currency were also eliminated to reduce currency translation risks. Third, delisted/suspended firms, were excluded. Fourth, firms with missing financial and CEO data were also eliminated. The final sample included 210 firm-year observations for testing the hypothesis. The majority of samples comes from business services

Table 1. Sample selection and distribution.

Panel A: Sample Selection		Firm-year
Total firm-year in IDX database (2016–2017)		1,050
Less: Financial institution firms and newly listed firms		(480)
Firm-year available for sample selection		570
Less: firm-year with foreign currencies		(28)
Less: firm-year with suspension/delisted/trading issues		(12)
Less: firm-year with incomplete financial data		(126)
Less: firm-year missing required CEO data		(114)
Firm-year with requisite data		210
Unique Firms		105
Panel B: Distribution of Firm-Year Observations by Year		
Year	Firm-year	%
2016	104	49.52
2017	106	50.48
	210	100%
Panel C: Distribution of Firm Observations, by Industry		
Industry	Firm-year	%
Business services	48	22.86
Manufacturing	36	17.14
Construction	22	10.48
Retail	18	8.57
Mining	16	7.62
Agriculture	10	4.76
Computers	8	3.81
Remaining industries (12 industries)	52	24.76
	210	100%

Table 2. Summary statistics.

	N	Mean	Median	Std. Dev	Min	P25	P75	Max
TAXAMNESTY	210	0.162	0.000	0.369	0	0.000	0.000	1
CEOAGE	210	55.36	54.00	8.97	31	50.00	61.00	87
SIZE	210	24.26	24.23	1.59	19.99	23.20	25.56	28.61
ROA	210	0.079	0.062	0.071	0	0.032	0.099	0.40
R&D EXP	210	0.001	0.000	0.003	0	0.000	0.000	0.04
BOARDS	210	0.263	0.250	0.070	0.141	0.213	0.310	0.500
FSCORE	210	-0.463	-0.593	0.382	-0.882	-0.710	-0.323	1.453
READABILITY	210	12.41	12.22	1.08	10.42	11.73	13.06	19.65
CETR	210	0.315	0.266	0.187	0	0.213	0.390	1
POPULARCEO	210	0.370	0.385	0.229	0	0.202	0.508	0.863

This table reports the descriptive statistics for the sample of 210 firm-year observations for the period 2016–2017. The Appendix provides a detailed description of the variables.

and manufacturing firms. While the sample size might seem modest at first glance, it is important to note that the dataset covers a diverse range of firms across different industries and sectors in Indonesia. To enhance the representativeness of our findings, we have taken into consideration the variation in firm size, profitability, and other relevant characteristics in our analysis as depicted in the descriptive statistics of this study.

5.3. Descriptive statistics

The statistical characteristics of the sample used in the study are provided in Table 2. Results indicate that 16.2% of the sample participated during tax amnesty period of 2016 to 2017. In terms of CEO characteristics, the mean and median age of CEOs (*CEOAGE*) in the sample are 55.3 and 54.0, respectively. The average profitability (*ROA*) and firm size (*SIZE*) of the firms in the sample are 7.9% (6.2%) and 24.26 (24.23), respectively. The mean (median) proportion of independent boards (*BOARDS*) is 26.3% (25%). Additionally, the average CEO popularity (*CEOPOPULARITY*) index is 0.370 (median = 0.385), while the average accounting irregularities measure (*FSCORE*) is -0.463. Furthermore, the average cash effective tax rate (*CETR*) of the sample is 31.5%. As shown in Table 2, the average readability measure (*FOG*) is 12.41, indicating that the annual reports of the Indonesian firms in the sample are easy to comprehend at a high school level.

The Pearson and Spearman correlation matrix for the variables used in the study was provided in Table 3 to check for multicollinearity. The results of the matrix analysis indicate that there is no indication of multicollinearity being a problem for the estimation of the test model.

Table 3. Correlation matrix.

	1	2	3	4	5	6	7	8	9	10
1.TAXAMNESTY										
2.CEOAGE	-0.13*									
3.SIZE	-0.02	0.01								
4.ROA	-0.02	-0.11	0.13							
5.R&D EXP	-0.11	-0.01	-0.01	0.28*						
6.BOARDS	0.04	-0.12	-0.16*	0.06	0.01					
7.FSCORE	-0.06	-0.07	0.18*	-0.04	-0.11	0.01				
8.READABILITY	-0.01	-0.03	-0.09	0.13	-0.12	0.09	-0.09			
9.CETR	-0.01	0.11	0.01	-0.23*	-0.06	-0.01	0.04	0.07		
10.POPULARCEO	-0.08	-0.18*	0.15*	0.02	0.02	-0.14*	0.05	-0.09	-0.05	

*Indicates a statistical significance at the 5-percent level.

This table reports the correlation matrix for the sample of 210 firm-year observations for the period of 2016–2017. The Spearman correlation is presented above the diagonal, while Pearson correlation is presented below the diagonal. The Appendix provides a detailed description of the variables.

Table 4. CEO age and tax amnesty.

	TAXAMNESTY	
	1	2
CEOAGE	-0.044** (0.022)	-0.058** (0.023)
SIZE		0.042 (0.135)
ROA		-0.207 (3.192)
R&D EXP		-1,737 (1.160)
BOARDS		0.244 (2.758)
FSCORE		-0.775 (0.611)
FOG		-0.087 (0.208)
CETR		0.363 (1.084)
POPULARCEO		-1.219 (0.921)
Constant	0.770 (1.199)	1.658 (4.638)
Chi-Square	4.20	18.78
Pseudo R-square	0.0226	0.1010
N	210	210

This table shows the logit regression results for the impact of CEO Age on the tax amnesty program participation. The results presented are estimated using the test and all control variables. Column 1 shows the result when we use the Age of CEO in year t . Column 2 presents the result when we use the moving average of CEO Age from $t-2$ to t . We winsorize continuous variables at the 1 and 99 percent levels. We present the standard errors in parentheses. We provide definitions of the variables in the Appendix. *, **, and ***, indicate a statistical significance at the 10, 5, and 1 percent levels, respectively.

6. Empirical results and discussion

In the following section, the relationship between CEO age and tax amnesty participation is examined. To address potential firm self-selection bias, the baseline regression results are presented in [Section 6.1](#), followed by the results after controlling for firm characteristics, alternative measurement of CEO age and additional tests in [Section 7](#).

6.1. Baseline results

This research conducts a regression analysis of the CEO age measure (*CEOAGE*) on the tax amnesty participation measure (*TAXAMNESTY*) to examine the relationship between CEO age and tax amnesty participation. The findings are presented in [Table 4](#), where column 1 displays the result without including any control variables, and column 2 shows the result with all control variables in the regression model. The study finds that older CEOs are less likely to participate in the tax amnesty program, as the coefficient of *CEOAGE* is negatively significant in both column 1 (-0.044) and column 2 (-0.058) at the 5% level. This may indicate that older CEOs are more risk-averse and prefer not to disclose more information to the public and invest in Indonesia. This suggests that older CEOs may perceive the tax amnesty program as a non-risk-free activity, leading to lower participation rates. This finding is consistent with the notion that older CEOs tend to be more risk-averse than younger CEOs, which has been suggested by previous studies (e.g. James, 2020). The results also lend support to the notion that CEO can influence tax decision by setting the ‘tone at the top’ regarding the firm’s tax amnesty activities. The control variables, such as profitability, firm size, board independence, CEO popularity, and accounting irregularities, are not significantly related to tax amnesty participation at the conventional level.

7. Robustness and additional analysis

7.1. Robustness check

This study employed the propensity score matching (PSM) method (Rosenbaum & Rubin, 1983) to address the potential issue of self-selection bias resulting from firm-related characteristics. The sample was divided into two groups each year using the median value of CEO age as the cut-off. A dummy variable was then created, assigning a value of one to firms in the above-median group (treatment group) and 0 otherwise (control group). A logit regression with all control variables from the baseline regression was used to estimate the probability of being assigned to the treatment or control group. The specifications were then used within a caliper of 0.01 without replacement, resulting in 71 propensity score-matched pairs (142 firm-year observations) for a matching sample.

Panel A of Table 5 presents the characteristics of the treatment and control groups, and it is shown that the firm characteristics for all control variables are not statistically different between the two groups. The tax amnesty measure of control firms is also higher than that of treatment firms, indicating that firms with older CEOs are less likely to participate in the tax amnesty program. In Panel B of Table 5, the regression result using the matched sample shows that the relationship between *CEOAGE* and *TAXAMNESTY* is negative (-0.104) and significant at the 5% level, which is consistent with the baseline results.

7.2. Alternative measure of CEO age

In this section, the authors replace the primary CEO age measure with the average CEO age from year $t-2$ to t (*CEOAGEAVG*). The purpose of this replacement is to investigate the potential impact of executive risk preferences that may influence tax amnesty participation in the years leading up to the program. The results of this analysis are presented in Table 6, where it is shown that *CEOAGEAVG* is negatively related to *TAXAMNESTY* at a coefficient of -0.036. However, this relationship is not statistically significant at the conventional level. This result suggests that executive risk preferences may not have a significant effect on tax amnesty participation in the years prior to the program.

Table 5. Propensity score matching regression – CEO age.

Panel A: Descriptive statistics for the matched sample			
	Treatment Firms	Control Firms	t-test
Dependent Variables			
<i>TAXAMNESTY</i>	0.056	0.296	3.92***
Control Variables			
<i>SIZE</i>	24.33	24.24	0.35
<i>ROA</i>	0.079	0.072	0.62
<i>R&D EXP</i>	0.001	0.001	-0.42
<i>BOARDS</i>	0.260	0.268	-0.66
<i>FSCORE</i>	-0.502	-0.553	1.07
<i>FOG</i>	12.33	12.32	0.05
<i>CETR</i>	0.309	0.314	-0.13
<i>POPULARCEO</i>	0.364	0.362	0.06
Panel B: PSM Regression Analysis			
		<i>TAXAMNESTY</i>	
<i>CEOAGE</i>		-0.104*** (0.031)	
<i>SIZE</i>		0.010 (0.169)	
<i>ROA</i>		3.455 (3.848)	
<i>R&D EXP</i>		-2,479 (2, 111)	
<i>BOARDS</i>		-4.091 (3.793)	
<i>FSCORE</i>		0.167 (0.964)	
<i>FOG</i>		0.147 (0.267)	
<i>CETR</i>		0.137 (1.461)	
<i>POPULARCEO</i>		-1.527 (1.181)	
Constant		3.626 (5.800)	
Chi-square		23.53	
Pseudo R-square		0.1780	
N		142	

Table 6. CEO age and tax amnesty – average of CEO age.

	TAXAMNESTY
AVGCEOAGE	-0.036 (0.025)
SIZE	0.037 (0.133)
ROA	-0.234 (3.192)
R&D EXP	-1.621 (1, 100)
BOARDS	0.456 (2.744)
FSCORE	-0.777 (0.611)
FOG	-0.105 (0.202)
CETR	0.254 (1.061)
POPULARCEO	-1.092 (0.925)
Constant	0.787 (4.518)
Chi-Square	14.48
Pseudo R-square	0.0778
N	210

This table shows the logit regression results for the impact of CEO Age on the tax amnesty program participation. The results presented are estimated using the test and all control variables. We show the result when we use the moving average of CEO Age from t-2 to t. We winsorize continuous variables at the 1 and 99 percent levels. We present the standard errors in parentheses. We provide definitions of the variables in the Appendix. *, **, and ***, indicate a statistical significance at the 10, 5, and 1 percent levels, respectively.

Table 7. Additional analysis.

	TAXAMNESTY	
	2016	2017
CEOAGE	-0.019 (0.021)	-0.045* (0.027)
SIZE	-0.129 (0.125)	-0.051 (0.151)
ROA	-2.347 (3.401)	-0.535 (3.705)
R&D EXP	-129.9 (149.0)	-135.6 (150.7)
BOARDS	-2.225 (2.685)	0.236 (3.290)
FSCORE	0.353 (0.478)	-0.669 (0.708)
FOG	0.161 (0.174)	-0.264 (0.239)
CETR	1.380 (0.966)	-1.242 (1.378)
POPULARCEO	-0.381 (0.829)	0.012 (0.997)
Constant	1.250 (4.095)	4.906 (5.228)
Chi-Square	9.12	7.62
Pseudo R-square	0.0474	0.0525
N	210	210

This table shows the logit regression results for the impact of CEO Age on the tax amnesty program participation. Specifically, we show the relationship between CEO Age and participation of tax amnesty program in year 2016 and 2017. We winsorize continuous variables at the 1 and 99 percent levels. We present the standard errors in parentheses. We provide definitions of the variables in the Appendix. *, **, and ***, indicate a statistical significance at the 10, 5, and 1 percent levels, respectively.

7.3. Additional analysis

In order to examine whether the negative relationship between CEO age and tax amnesty participation can be attributed to older CEOs' risk aversion, the authors investigate whether this relationship is more evident in the 2017 tax amnesty program. This is because the 2017 program is more costly (i.e. higher ransom rate) than the 2016 program, and thus the risk associated with participation may be greater. To test this hypothesis, the authors include dummy variables for each year's participation in the tax amnesty and run a regression analysis. The results, shown in Table 7, support the authors' expectation: the negative relationship between CEO age and tax amnesty participation is more significant in 2017 than in 2016, suggesting that older CEOs may be more risk averse when faced with higher costs of participation in tax amnesty programs.

8. Summary and conclusion

The Indonesian government introduced the tax amnesty program in 2016 to encourage taxpayers to disclose their past tax liabilities in exchange for exemption from tax liabilities and reduced penalty fees. The program lasted for ten months from July 2016 to April 2017 and was implemented nationwide. The tax amnesty program was successful in boosting the government's tax revenue during the period. Previous studies have suggested that CEO age is an important factor that influences a company's strategic decisions and risk-taking behavior. Hambrick & Mason (1984) argue that the behavior of a firm can be explained by the executives' experiences, values, and personalities. As such, it is important to examine how CEO age affects the participation of firms in the tax amnesty program in Indonesia.

This study finds that CEO age has a negative relationship with tax amnesty participation. This suggests that older CEOs may perceive the tax amnesty program as a non-risk-free activity, leading to lower participation rates. This finding is consistent with the notion that older CEOs tend to be more risk-averse than younger CEOs, which has been suggested by previous studies. Supplementary tests were conducted to validate their outcomes, such as addressing endogeneity concerns, and confirmed that their results remained robust. Moreover, the study also finds a more pronounced negative relationship between CEO age and tax amnesty participation for the 2017 tax amnesty program when compared to the 2016 program. This could be due to the fact that the 2017 program was more expensive and associated with higher risks than the 2016 program.

Overall the results of our study have effectively address the main research questions. The findings demonstrate a negative association between CEO age and firms' participation in tax amnesty programs among Indonesian listed companies. This relationship sheds light on the influence of CEO age on corporate decision-making and provides insights into the factors that drive participation in tax amnesty programs. By exploring the impact of CEO age on tax amnesty participation, our research contributes to filling the existing gap in the literature on the role of CEOs in tax-related decisions. Regarding the implications of our research, the results suggest that older CEOs may perceive tax amnesty as a risky undertaking, leading to lower participation rates. This highlights the importance of considering CEO characteristics, such as age, when designing tax amnesty programs and understanding the potential implications on firms' participation. Policymakers and tax authorities can use these insights to tailor tax amnesty initiatives to encourage greater participation and compliance.

While this study provides valuable insights into the relationship between CEO age and tax amnesty participation in Indonesia, there are several potential limitations that should be considered. First, the study was conducted in the Indonesian context and may not be generalizable to other countries with different tax amnesty programs or cultural contexts. Second, the study relies on self-reported data from tax amnesty participants, which may be subject to social desirability bias or other reporting errors. Finally, the study used secondary data sources and did not collect primary data through surveys or interviews, which may limit the ability to capture a comprehensive range of factors influencing tax amnesty participation.

Based on the findings of this study, future research could further explore the role of other CEO characteristics, such as education level, tenure, and personality traits, in influencing a firm's tax amnesty participation. Additionally, future research could also examine the impact of tax amnesty programs on firm performance and long-term tax compliance behavior. These areas of research could provide valuable insights for policymakers and tax authorities in designing and implementing effective tax amnesty programs that encourage taxpayer compliance and generate long-term benefits for the government.

Notes

1. During President Joko Widodo's tenure, two tax amnesty programs were introduced. The first program took place from 2016 to 2017 and resulted in the collection of an impressive sum of US\$300 billions of asset disclosure and more than US\$9 billion in penalties, making it the most successful tax amnesty initiative to date. The second program, implemented in 2022, was more limited in scope, specifically targeting taxpayers who had not participated in the initial tax amnesty. This study primarily focuses on the analysis of the first tax amnesty program, which was widely recognized as a major tax pardon during that period.
2. <https://www.spencerstuart.com/research-and-insight/2022-ceo-transitions>, published February 2023, accessed April 7, 2023.

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Authors' contributions

Gatot Soepriyanto was involved in the conception and design of the paper, revising it critically for intellectual content and the final approval of the version to be published. Arfian Erma Zudana and Meiryani were involved in analysis and interpretation of the data and drafting of the paper. All authors agree to be accountable for all aspects of the work.

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Data availability statement

We obtained the data from Indonesia Stock Exchange website, firm's annual report and relevant public information. The authors performed further calculations. The data and necessary code are available upon request (in a good faith and fair use).

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