



Impact of Strengthening Internal Audit's Roles towards State Budget Loss

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Abstract

This research evaluates the effect of strengthening government internal audit's (APIP) roles on reducing state budget loss in Indonesia. Since 2014, the role of internal audit as a provider of objective quality assurance is strengthened by adding comprehensive consulting activities that are inherent in each cycle of state budget process to make sure that there are no irregularities on managing the stage budget. By using the difference-in-differences (DID) approach, this study analyzes state budget loss data obtained from the Audit Board of Republic of Indonesia (BPK) in 492 cities/districts during 2009-2018. The results show that strengthening internal audit's roles decreased state budget losses in the regions that have a relatively high capital expenditure by 0.435% and it is significant at 1% level. This finding shows the positive effect of adding a consulting role to government internal audit on reducing the state budget losses in Indonesia.

Key words : State Budget Loss, Internal Audit, Capital Expenditure

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INTRODUCTION

Internal audit is a control mechanism for public sector organizations towards good governance (Sawyer, 2005; Cohen & Sayag 2010; Wibisono, 2010; Florea 2013). Internal audit aims to help an organization achieve its goals by means of a structured and disciplined approach (Messier, 2005). Organizations that have an internal audit function will be faster in controlling and detecting accounting fraud (Corem et al., 2008). The accounting fraud occurred because of the space for opportunistic behavior of state financial managers, the misalignment of goals between the community and the government, the opportunity and limited supervision from the public caused by asymmetric information (Eisenhardt, 1989; Richardson, 1998; Scott 2000; Andvig et al., 2001; Dorminey et al., 2012). As a result of accounting fraud and non-compliance, Each year the United Nations records losses of \$2.6 trillion worldwide, equivalent to 5 percent of global Gross Domestic Product (GDP) (UN, 2018). Whilst in Indonesia during 2018, the financial management losses of local governments reached IDR 1.3 trillion and there were at least 6,259 cases of non-compliance with the laws and regulations (BPK, 2019).

Opportunistic acts on abuse of office or authority that have access to state finances can potentially cause state losses (Makawimbang, 2014). Wells, in Prabowo (2014), describes state losses as accounting fraud or accounting errors made intentionally with the purpose of misleading readers/ users of financial statements. The Indonesian Government Internal Auditors Association (AAIPI) explains that fraud is an entire illegal act characterized by concealment or breach of trust.

The amount of government spending on public procurement will increase the chances of rent-seeking activity and a higher potential for opportunistic behavior in government corruption scandals (Goel & Nelson, 1998; Nitzan, 1994; Scully, 1991; Djankov, 2002; Ateljevic & Slaves, 2010). The study of the misuse of capital expenditure in the public sector was also conducted by Mauro, 1998; Tanzi and Davoodi, 1997; where capital (infrastructure) projects in Italy resulted in numerous cases of corruption scandals that negatively impacted the country's economic growth rate. Corruption is most common in the infrastructure sector (Wade, 1982; Rose-Ackerman, 1996; Hopkin & Rodríguez-pose, 2007; Neupane et al., 2015). For this reason, the importance of internal control is needed as a process carried out by management to provide adequate assurance of the achievement of effective and efficient organizational operations, reliable financial reporting, and compliance with laws and regulations (Petrovits et al., 2011).

State losses are also experiencing a volatile trend year after year as seen in figure 1. Although in 2010 there was a sharp decrease in the number of state losses, in later years the downward trend has not stabilized. City officials have a higher average state loss than the county government. This can be seen in the following figure III and IV regarding the trend of state losses before and after the implementation of the policy of strengthening the role of internal audit in areas that have a high capital expenditure to total expenditure ratio. In addition, it also indicates the trend of state losses before and after the implementation of the policy of strengthening the role of internal audit in areas with high spending ratios.

Table 1. Total State Losses In 2009-2018

Years	Loss	Potential Losses	Lack of Accept	Adm Fraud	City Gov's Loss	District Gov's Loss	District
2009	1,246	277	905	1,785	481,013.91	1,854,956.64	183
2010	1,197	313	857	1,774	157,964.92	824,695.84	183
2011	1,609	354	945	2,318	115,859.54	958,060.91	183
2012	2,055	341	889	2,163	129,143.15	107,561.39	183
2013	2,339	373	945	2,115	193.896.58	921,189.02	183
2014	2,462	343	911	2,355	210.138.81	104,529.73	183
2015	2,466	347	916	2,402	180.810.53	1.233.456.26	122
2016	2,525	413	846	2,331	185.448.43	1,071,642.21	122
2017	2,903	426	868	2,361	308.585.09	1,344,447.01	122
2018	2,642	426	933	2.258	236.423.51	817,714.94	122
Total	21,444	3,613	9,015	21,862	2.199.284.47	11,147,071.95	-

Source: Indonesian Audit Board, 2009-2018 (data processed)

Poor performance on public sector is one of the reasons to make major changes in order to realize good governance that leads to clean government. Problems that arise from agency problems, increased levels of corruption, in-effective government and other public sector works, can be addressed by the mechanism of audit surveillance system (Watts et al., 1986; Wallace, 1984; Hogan et al., 2008; Blume & Voigt, 2011).

The mechanism of the surveillance system can be achieved by both, external and internal parties. The external auditor is aimed to assess the final results of government financial management, assess and provide inputs in the presentation of financial statements in accordance with the general accounting principles (reasonable and accurate); and to assess the performance of the government in accordance with the expectations economically, efficiently and effectively (Guy, 2002; Sawyer, 2005; Messier, 2005; Sanger et al., 2016). Meanwhile, internal audit aims to help an organization achieve its goals, strengthen performance through systematic planned evaluation, improve the effectiveness of risk management, control and governance

processes (Perry et al., 1997; Fullerton, 2005; Fund et al., 2008; Albrecht et al., 2012). The entire role performed by internal audits through its objective oversight mechanisms is to oversee managerial activities, limit actions and control agent behavior in accordance with principal interests, reduce the risk that agents will use organizational resources for their own gain, reduce information asymmetric issues and align agent interests with the principal's (Michael & William, 1976; Jensen & Meckling, 1976; Eisenhardt, 1989; Richardson, 1998; Meisser et al., 2006).

However, due to the high cost of external mechanisms, general choice was often given to internal mechanisms (Walsh & Seward, 1990). In contrast, Indonesia implements both mechanisms simultaneously, external supervision is carried out by the BPK, while internal supervision is inherent in the inspectorate of each region. This means the cost incurred by the government becomes very large.

Perry et al., (1997) explains that internal audits within the organization, able to detect symptoms of asset theft or financial statement fraud better because internal auditors will better understand the condition of the organization and its control system. Moeller

(2009) claims that internal auditors are in a better position than external auditors to prevent and detect potential red flags from fraud with the consideration of internal auditors constantly within the organization, better knowing and mastering the activities and systems of the organization and conducting more detailed and repeated reviews of related transactions and documents during the audit phase.

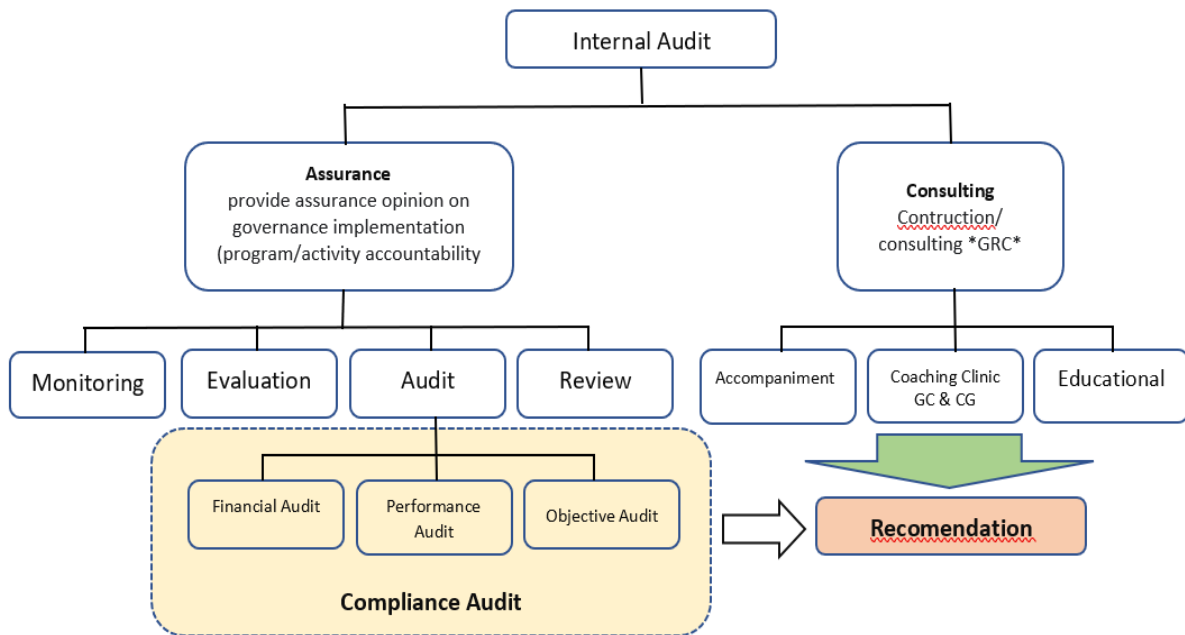
Nevertheless, as part of the management themselves, there may be hesitations and deterrents on the part of the internal audits to assess their own management. Disruption on the internal audit's independencies and objectivities may come in the forms of personal conflicts of interest, restrictions (on access to records, personnel, and property), as well as restrictions towards resources, such as funding.

One of the commitments made by the Indonesian government to demand accountability of public institutions and suppress the country's loss rate is by designing internal control with the direction of PP No. 60 of 2008, which is held thoroughly in the environment of the central and regional governments. The government's strategy includes strengthening surveillance agencies in solving problems and accommodating increasingly complex environmental changes by following several steps of improvement, namely through the Presidential Instruction of the Republic of Indonesia No. 9 of 2014. The main concern in the impres is the acceleration of the effectiveness of the implementation of the government's internal control system in financial management, and to intensify the role of internal surveillance apparatus, as well as other additional oversight by internal audit. APIP's role, in addition to assurance, is further strengthened in terms of its consulting activities. The aims are to provide

value added for the organizations, improve the organizations' operations, and to act as an immune system for prevention and future improvement.

The effectiveness of the internal audit in preventing and detecting fraud depends heavily on the extent of the authority it has. The internal audit role within the old paradigm is still oriented towards errors looking (watchdog) aiming to ensure compliance for provisions, regulations or policies, as well as seeking or detecting problems and fraud that has occurred. Whilst, the role of internal auditors in the new paradigm, as Liu & Lin (2012) explain, should be as an "Immune System", emphasizing prevention and improvement efforts, rather than the detection of irregularities, to maintain the security of the entire social, economic and financial system.

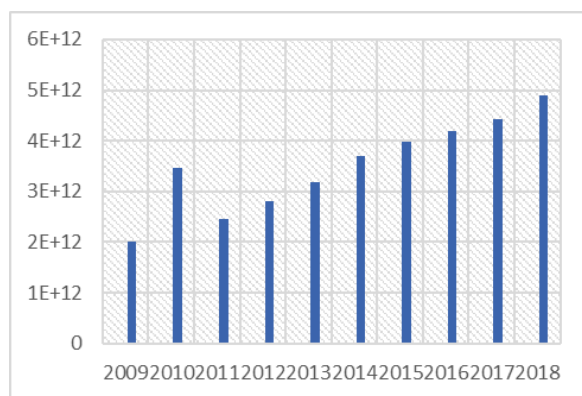
The Institute of Internal Auditor (IIA) (1999) provides a new definition for the internal audit, as an independent activity in setting objectives and designing consulting activities that are value added, to improve the operation of the organization by "controlling" and "accompanying" to reach its purpose. Thus, internal auditing helps the organization in achieving its goals by making a systematic approach in assessing and evaluating the effectiveness of the risk management through control and good governance processes. Further provisions regarding consulting roles in Indonesia are regulated by the Indonesian Association of Government Internal Auditors (AAIPI), which has a duty to formulate, establish and develop the auditor codes of conduct, standards and peer review guidelines. Internal supervision can be achieved through two main roles of internal auditors, namely objective assurance and consulting activities that aim to provide added value and strengthen the quality of government agencies in achieving the objectives.



Source: AAPI 2018

Figure 1. Internal Supervision After the Strengthened Role

The strengthened role of the internal audit will certainly be followed by an increase in monitoring costs issued to the auditor's operations in carrying out the new role. Figure 2 below explains the amount of monitoring cost used in internal audit mechanisms in Indonesia. It can be seen that the trend of cost continues to increase every year as the audit role also increased.



Source: Ministry of Finance (2009-2018), processed data

Figure 2. Graph on the Monitoring Cost of District and City Governments

To date, research that discusses specifically the direct impact of implementing the policy of strengthening the role of internal audits on losses in the public sector is still very limited. Many previous studies have discussed the number of cases of state corruption, bribery or administrative violations, but without calculating the amount of state losses when the value is considerable. Therefore, this research aims at identifying the impact of the implementation of the policy of strengthening the role of internal audit in reducing the amount of state losses in Indonesia. In general, accounting fraud is a direct attempt for corruption (Wilopo, 2006; Soepardi, 2007). The question that this research proposed to answer is to what extent the implementation of the policy to strengthens the role of internal audit in Indonesia is able to reduce state losses, especially in areas with high capital expenditure, to the total expenditure ratio.

Previous studies have explained that the mechanism of the audit supervisory system can overcome problems that arise from agency problems, the level of corruption, is able to

increase the effectiveness of government and other public sector problems (Watts et al., 1986; Wallace, 1984; Hogan et al., 2008; Blume & Voigt, 2011). However, research on the direct impact of implementing policies to strengthen the role of internal audit on state losses in Indonesia is still very limited. Many previous studies are more interested in discussing the number of cases of state losses that are directly related to corruption/bribery or cases of administrative violations. Even though the value of the losses caused is quite large and material, therefore this study aims to identify the impact of implementing policies to strengthen the role of internal audit in reducing the total value of state losses in Indonesia. The research question to be answered in this study is the extent to which the implementation of policies to strengthen the role of internal audit in reducing state losses in Indonesia.

Some studies that use the same approach, among others is the case study conducted by Koeswoyo (2016) in West Java, are rather skeptical on the internal audit's abilities to reduce the number of corruption cases resulted to state losses in Indonesia. The results of the study instead indicate the commitment of the regional heads in strengthening the competence of internal audit and moderating the skepticisms on internal audit; and thus, it can be influential in reducing the state's loss due to corruption. This is also in contrast to Olken (2007), who concludes that internal audits can influence future local government corrupt decisions. Top-down monitoring is substantially able to reduce losses from government projects, reduce delays in work's implementation, increase competition among bidders, and improve efficiency. Olken's research focuses only on state losses from procuring goods through e-procurement in villages that obtain the World Bank funds through the

KDP program (Sub-District Development Project). Nonetheless, it cannot be generalized to all levels of local governments, especially in view of the differences in characteristics and complexity of bureaucracy.

Thaer A. Abu Tabar (2016), in analyzing the functions and roles of internal audits in the public sector, shows that internal audits play an important role and are considered to have the ability to control the actions and attitudes of employees in managing the state finances (public sector). This study uses descriptive qualitative approach from randomly conducted 65 respondents from all institutions in Jordan. However, the selection criteria of the samples were not explained in more detail and so, the results can be rather subjective. Perry et al. (1997) explains that internal audits are able to detect symptoms of assets theft fraud or financial report fraud, because internal auditors within the company can understand better the condition of the organization and its control system. Nevertheless, this research was conducted on private sector, and so it is necessary to conduct testing in the public sector to see if this condition also applies in the public sector. Liu & Lin (2012) found that the role of government audits in China was able to detect bad behavior and misconduct in public sector's financial management. In addition to detective control, this study also suggests that internal audit as the corrective control in post-audit improvement efforts (monitoring the findings of audit results) can decrease the number of corruptions in China. This argument claims that sanctions, penalties and settlement as rectification effort imposed by internal audits may prevent misconducts in China's provinces; and this research brings about changes in the role of internal audit in China.

This research was conducted in 492 district/ city governments, removing 17 districts from the sample due to the new autonomous regions formed after 2009, which was the starting year of this study. Thus, the sample

used are 492 regions, based on 398 districts and 94 cities in Indonesia. This research is limited to state losses on local government financial statements from 2009 to 2018 disclosed in the IHPS BPK (Badan Pengawasan Keuangan dan Pembangunan/ Financial Supervision and Development Agency) in 492 districts/ cities in Indonesia. The state loss in referred here is the loss due to non-compliance with the provisions of legislation on the management of regional finances, based on the examination of regional financial statements and DTT examination. Potential data or indications of state losses are not included for legal reason. The state loss presented in this study does not include the state losses corruption and bribery cases handled by the Judiciary/ District Attorney and the Corruption Eradication Commission (KPK), due to lack of access. This study uses data on Performance Report (*Laporan Kinerja/ LK*) of the BPKP, from 2009 to 2018, on the implementation of internal control system and the number of internal auditors in each region. Furthermore, the study also uses data on the financial statistics of the district/ city governments, years 2009 – 2018, from the Directorate General of Financial Balance within the Ministry of Finance. These are data on district/ city government spending budgets, capital expenditure budgets in district/ city agencies, and supervisory spending attached to inspectorates in district/ city regulations.

METHOD

This study uses a difference-in-differences (DID) approach to look at the variations' effects before and after the strengthening of the internal audit's role on state losses in local government financial statements, in comparison between the

treatment and the control groups. The aim is to measure the net effect of the strengthened role on internal audit. This approach requires records on the situation within the two time periods, namely before and after treatment, by referring to the difference in the impact on treatment group in comparison to the control group. Thus, the DID approach is used as a policy evaluation tool (Gultom, 2019; Card & Krueger, 1994; Bertrand et al., 2004; Miyawaki et al., 2017).

Nonetheless, the main challenge in using the DID approach for this study is the fact that the policy of strengthening the role of internal audit is a national policy that has been implemented throughout Indonesia. Hence, there are no areas that do not implement the policy of strengthening the role of internal audit that can serve as a control group. Thus, in order to obtain variations in the effect of the policy, this study followed Lucas & Mbiti (2015) by comparing areas with greater impact against areas with less impact. In this case, the assumption is that areas with high capital expenditure ratio are analyzed as treatment groups, and areas with low capital expenditure ratios are analyzed as control groups.

The following DID regression model explains that the variable amount of state losses in region i within the year period of t , is a function of the Internal Audit dummy, Capital Expenditure dummy, Internal Audit and Capital Expenditure Interactions dummy, as well as control variables.

The DID basic equation model is:

$$\text{State Losses}_{it} = \beta_0 + \beta_1 \text{Internal Audit}_{it} + \beta_2 \text{Capital Expenditure}_{it} + \beta_3 \text{Internal Audit}_{it} \times \text{Capital Expenditure}_{it} + \text{Control} + \sum_{k=5}^n \beta_k \gamma_i + \delta t + \varepsilon_{it} \quad (1)$$

Where the State Losses_{it} is the amount of state losses (IDR) within the log (Ln) set by the BPK based on the budget year for the region i in the period t . The $\text{Internal Audit}_{it}$ is a dummy implementation of the policy for the region i in

the period t , with 1 represents the year of implementation and the subsequent years after, and 0 is the opposite. The Capital Expenditure $_{it}$ is a dummy area i in the t period, which has a relatively high capital expenditure ratio based on the budget year for the region i and in the period t . The Control is the number of Internal Audit $_{it}$ for area i in year t . The Monitoring Cost $_{it}$ is attached to the district/ city inspectorate on the total audited budget for the area i in year t . Dummy External Audit $_{it}$ is the opinion on the audit results for the financial statements for region i in year t . The Dummy is for under-developed regions in year t , and Dummy for Cities/ Regencies in year t . The γ_i is the fixed effects; the δt is the year effects, and the ϵ_{it} is the error term for any state loss set by the BPK in region i and t period. The inclusion of the fixed effects and year effects are to ensure that the main explanation coefficient of β_3 can measure the variations of the policy's effects between the areas with high capital expenditure ratios and the areas with low capital expenditure ratios, on the state loss' year. Moreover, this study uses standard cluster error estimation method to address the problems of heteroscedasticity and auto-correlation (Wooldridge, 2010).

The key point in the DID method is to find interaction between Internal Audit and Capital Expenditure – to see the effect or impact, before and after the implementation of the policy, in areas with high capital expenditure ratio towards the state losses in that particular area. Hence, the focus of the DID analysis is to see the coefficient on the interaction between the internal audit variable and the Capital Expenditure variable. As can be seen in the equation (1), that the coefficient on the variables' interaction between the Internal Audit and the Capital Expenditure (β_3) is the treatment effect. This is the difference in state losses before and after the policy within the treatment group,

reduced by the difference in state losses before and after the policy within the control group.

Nevertheless, prior to identifying the impact of the policy towards state losses by using the DID method, it is necessary to make verification through the common pre-treatment trend assumption – by testing the similarity of state loss trends within the treatment and control groups, before the implementation of the policy. When this has been proven, then the difference in the state loss trends after the policy's implementation, between the treatment and control groups, can be claimed as the result of the policy's implementation. Thus, the common pre-treatment trend assumption becomes the initial point of the DID approach (Gultom, 2019; Muralidharan & Prakash, 2013). The regression equation's basic model is as follow:

$$\text{State Loss}_{it} = \beta_0 + \beta_1 \text{ time rescale} + \beta_2 \text{ time rescale} \times \text{capital expenditure}_{it} + \gamma_i + \delta t + \epsilon_{it} \quad (2)$$

The State Loss $_{it}$ is the amount of state losses set by the BPK based on the budget year for the region i in the period t . The time rescale is the variable time rescale dummy on each region; where 0 is for the first year of the policy's implementation; -1, -2, -3, etc., are for the years prior of the policy's implementation on each region; and 1, 2, 3, etc., are for the years after. The Capital Expenditure $_{it}$ is the dummy for the areas with high capital ratio based on the budget year in region i and period t . The co-efficient β_2 on the common pre-treatment trend represents the different trends between regions with high capital expenditure ratio (treatment group), and low ratio capital expenditure ratio (control group). Thus, the nil Hypothesis ($\beta_2=0$) represents similar trends in corruption case numbers, within the treatment and control groups, before the implementation of the policy.

Before conducting the regression test, in response to the alleged influence of the primary explanatory variable/ variables of interest

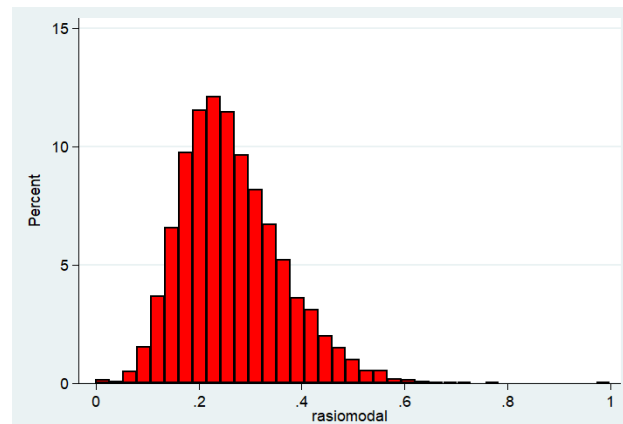
towards the fixed variable, it is necessary to understand the variable's types. Dependent variable or fixed variable in this study are state losses on regional financial statements from 2009 to 2018, in 492 district/ city governments. To correspond the data, the reported state losses is compared with the financial statement's fiscal year during which the loss occurs. The variables are determined by the logarithm (Ln) of the number of state losses within the year of occurrence.

In accordance to the purpose of the study, there are several primary explanatory variables/ variables of interest used in this study. The first explanatory variable on the DID regression is the dummy for the Internal Audit, which explains the starting year of the policy, from 2009 to 2018; with the value of 0 to represents the year before the policy's implementation, value 1 for the first year of the policy's implementation (2014), and subsequently the years after.

The second explanatory variable is the dummy Capital Expenditure, which describes district/ city with a relatively high capital expenditure ratio. This variable, following Lucas & Mbiti (2015), tries to categorize districts/ cities into treatment and control groups, by considering the policy's effect. Thus, the treatment group is the areas which supposed to have greater impacts from the policy's implementation, that is areas with high capital expenditure ratio. For comparison is the control group, which is the areas that supposed to have a lesser impact from the policy, that is the areas with low capital expenditure ratios.

Afterwards, from the level of the distribution of capital expenditure ratio data, it is revealed that it has not been evenly distributed. The skewness data or the asymmetry of the distribution, i.e., the frequency distribution curve is more right leaning. Once the skewness data has been

identified, the determination of areas with high capital expenditure ratio is classified based on the capital expenditures' percentages. This is illustrated in table 2.



Source: processed data, 2020

Figure 3. Average Capital Expenditure Ratio Distribution Data

Table 2. High Capital Expenditure Ratio Group Statistics

Description	Capital Expenditure Ratio		Number of districts/cities in treatment group (n= 4,920 Observations)
	Lower Limit (%)	Upper Limit (%)	
Highest 20% group	0.343	1	1.001
Highest 40% group	0.278	0.343	1.980
Highest 60% group	0.231	0.278	2.960
Highest 80% group	0.183	0.230	3.940

Source: processed data

The next explanatory variable is the interaction variables between the internal audit strengthening role dummy and the capital expenditure ratio dummy. This is done in order to realize the effect of policy on the areas within the treatment and control groups.

The first control variable in this study is the number of Auditors, who are the civil servants functioned as internal auditors on each local government entities. As this study discusses the state losses that occur within the government institutions, thus, the civil servants who act as internal auditors are seen as subjects that can detect, prevent and reduce the risk of losses to the local governments. The assumption in this study is that the addition or reduction of the number of internal auditors correspond directly to the amount of state losses. The more the supervisors, the less the risk of negligence and non-compliances with the legislation.

The second control variable is the monitoring cost or the district/ city government's supervisory budget, attached to the district's/ city's Inspectorate. This supervisory budget *is an agency cost* to ensure efficiency and efficacy of work (Jensen & Meckling, 1976; Jensen & Smith, 1984; Eisenhardt, 1989).

The third control variable is the external audit; to describes the opinions for the statement that an audit on financial statement, although it is a "cost" for an illegal act, but capable of limiting the level of manipulation on financial information (Ball, 2001). Opinion variables are categorized in values 1 to 4, i.e., 1 for Unreasonable Opinion; 2 for No Opinion; 3 for Reasonable Opinion with Exception; and 4 for Reasonable Opinion Without Exception. It is assumed that the better the opinion received in a region, the more reliable the internal control system will be. Moreover, compliance with the laws and legislations (e.g., financial reports), means minimizing opportunities for corruption (Yuniasih, 2019).

The fourth control variable is the dummy for under-developed areas. These are districts/ cities whose regions and communities are less developed compared to other regions on the national scale, as

stipulated through the presidential regulation on the determination of the under-developed areas. These data are five-yearly data, where 1 is for the Relieved Under-developed Area, and 0 for the Under-developed Area.

The fifth control variable is the district/ city dummy, where 1 is for the District Administration Area, and 0 for the City Administration Area.

RESULTS AND DISCUSSION

This section discusses the results of the research conducted with the common pre-treatment test assumption, which is the initial assumption of the use of the DID method. Afterwards, is the analysis of the regression equation to evaluate the effect of the policy on strengthening the internal audit on state losses. And lastly, robustness check which aims to see the consistency of the equation regression and equation testing to see the impact of strengthening the role of internal audit on state losses.

The common pre-treatment test was conducted against each of the capital expenditure ratio within the treatment group, i.e., the highest 20%, the highest 40%, the highest 60%, and the highest 80% groups. The similarity of trends before the policy, means the difference in trends after the policy within the treatment group can be claimed as an effect or impact of the policy's implementation. The assumption in the common pre-treatment test becomes the basic assumption of the DID method. The result of the common pre-treatment test is obtained by regression equation (2), which is presented in the following table.

The results of the common pre-treatment test on each treatment group looks co-efficient (β_2) in Time rescale and Capital Expenditure interactions. Although, statistically, indistinguishable from zero (insignificant at level 5%), with coefficients -0.00249, -0.0148,

0.000472, and -0.0375. Therefore, the null hypothesis of the common pre-treatment test cannot be rejected. These results show the similarity of state loss trends in areas with high capital expenditure ratios and areas with low capital expenditure ratios, prior to the implementation of the policy. These similar trends in the period before the implementation of the policy, means that when different trends occur between the treatment and control groups, after the policy's implementations, can be rightly claimed as the result of the policy's implementations within the areas with high capital expenditure ratio.

The regression results are also supported by the following pre-treatment graph, which shows the pre-treatment trend within the treatment and control groups.

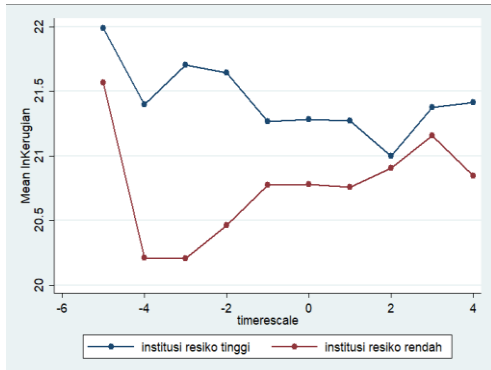
The blue color line indicates the treatment group, while the red color indicates the control group. The vertical axis on the chart uses the time rescale variable, where the value of 0 represents the first year of the policy's implementation and subsequently the years after, in each district and city, within the High and Low Capital Expenditure Ratios. The graph for the city/ district treatment group on the highest 20% to 80% Capital Expenditure Ratios show the trend during the pre-treatment period (time-rescale <0 prior to the implementation of the policy). There is no difference in trends for average state losses between the high capital expenditure risk ratio and the low capital expenditure risk ratio. However, the graph shows different trends in state losses, after the implementation of the policy, between the treatment and control groups (time rescale > 0).

Table 3. Test Results Tabulation for Basic Model Common Pre-Treatment Trend with State Losses Fixed Variables

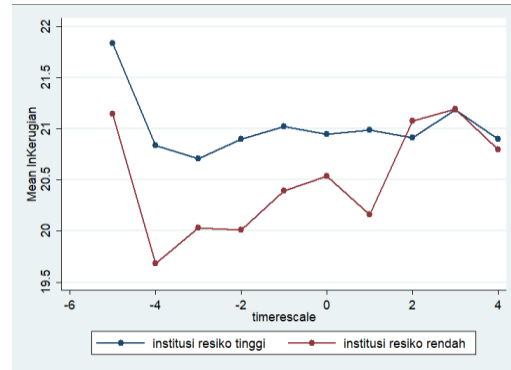
VARIABLES	(1)	(2)	(3)	(4)
	Areas with Capital Expenditure Ratio			
	20% Highest	40% Highest	60% Highest	80% Highest
Timerescale	-0.198*** (0.0275)	-0.191*** (0.0306)	-0.199*** (0.0312)	-0.169*** (0.0364)
Timerescale X high risk	-0.00249 (0.0321)	-0.0148 (0.0292)	0.000472 (0.0277)	-0.0375 (0.0327)
Constant	20.78*** (0.0799)	20.78*** (0.0799)	20.78*** (0.0797)	20.78*** (0.0799)
Observations	2,088	2,088	2,088	2,088
R-squared	0.148	0.148	0.148	0.148
Number of id	490	490	490	490

Note: Cluster standard errors by District/ City in parentheses, Significant level *** p<0.01, ** p<0.05, * p<0.1.

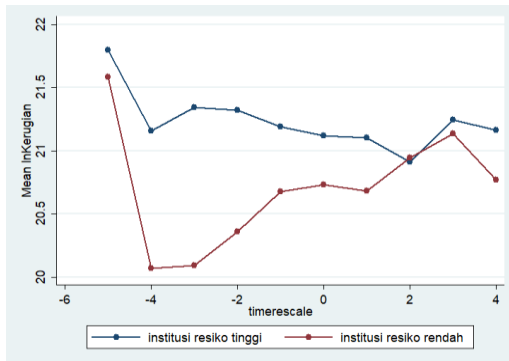
Source: processed data, 2020



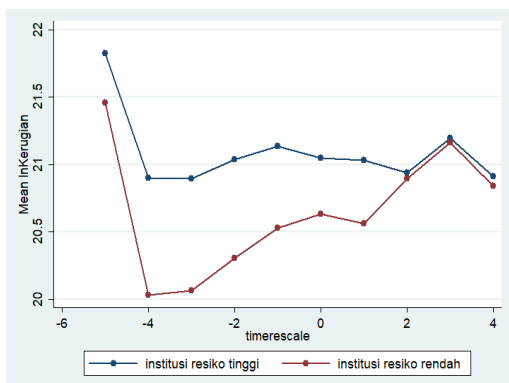
Source: Central Bureau of Statistics. Processed, 2020
Figure 4. Common Pre-Treatment Trend Results on State Losses in Treatment Group for the Highest 20% Capital Expenditure Ratio



Source: Central Bureau of Statistics. Processed, 2020
Figure 7. Common Pre-Treatment Trend Results on State Losses in Treatment Group for the Highest 80% Capital Expenditure Ratio



Source: Central Bureau of Statistics. Processed, 2020
Figure 5. Common Pre-Treatment Trend Results on State Losses in Treatment Group for the Highest 40% Capital Expenditure Ratio



Source: Central Bureau of Statistics. Processed, 2020
Figure 6. Common Pre-Treatment Trend Results on State Losses in Treatment Group for the Highest 60% Capital Expenditure Ratio

Based on the results of the pre-treatment test, the research on the impact of strengthening the internal audit's role on state losses can be further analyzed using DID regression, as in the equation (1). The aim is to see the impact of the policy's implementation within the treatment and control groups. The estimation results can be found in the following table.

The above table shows the results of the estimations made with equations (1), that there is empirical evidence of the effect of the implementation of the policy of strengthening the role of internal audits on state losses in areas that have high capital expenditure ratios.

The high capital ratio tested in this study were the highest capital ratio groups of 20%, 40%, 60%, and 80%. The highest group of 20% consists of districts/ cities with capital ratios of 0.343 and above, and there are 1,001 districts/ cities. The highest group of 40% are those with capital ratios of 0.278 and above, 1,980 districts/ cities. The highest group of 60% for those with capital ratios of 0.231 and above, 2,960 districts/ cities. And, the highest group of 80% are the districts/ cities with capital ratios of 0.183 and above, 3,940 districts/ cities.

The coefficient interaction (β_3 Internal Audit x Capital Expenditure) on the highest 20%, 40%, and 60% groups are in the negative and significant at the level of 1% (-0.435 in the column 2, -0.475 in the column 4, and -0.370 in the column 6). This means that the impact of the policy's implementation is none other than a constant reduced on state losses for the areas with capital expenditure ratio groups of 20%, 40% and 60%. The co-efficient interactions variable (β_3) on both, the basic and the control models, show negative values. Based on the estimation results, the best model in this study was the model in column (2), which is in the highest 20% group. This is due to its complete specification (using control variable), has a better level of significance (1%), with a coefficient value of -0.435, and on the areas with the highest capital expenditure ratio. It highlights the success of the policy's implementation to reduce the average state losses in areas with high capital expenditure ratio of 0.435%, which is IDR 6.72 Billion more than the areas with low capital expenditure ratios.

Meanwhile, the testing on the highest 80% group, the co-efficient interactions (β_3) appears insignificant, both in the basic equations model in columns (7), and in the added control variables in column (8). This indicates inconsequentiality for the policy's implementation towards state losses within this group. This is due to its low capital expenditure ratios, which is below 0.183, from the total expenditure. This is the case where most of the local government's budget is depleted and absorbed by the routine spending, employee's spending, or apparatus' operations.

These findings show that the policy of strengthening internal audit's role has a greater effect in reducing state losses within the areas of high capital expenditure ratios, compared to areas of low capital expenditure ratios. This is due to non-compliance with the provisions of the legislation conducted by the financial managers. Thus, supporting the previous studies on the positive effects of strengthening the role of the internal audit for good governance. The government's commitment to improve governance through internal audit's strengthened role could prevent opportunistic behaviors within the state finances managements.

This result is in accordance with the previous research conclusions, that internal audits are able to bridge the relationship between principals and agents (Michael J and William M, 1976; Jensen and Meckling, 1976; Eisenhardt, 1989; Richardson, 1998; Meisser et al., 2006). Also, auditors are experts in governance, risk management and internal control; they can improve the organization's operations and reduce the likelihood of negative things, including financial statement fraud. Hence, transparency in public sectors will increase and the leaks in government spending can be prevented (Schelker and Eichenberger, 2010; Blume and Voigt, 2011; Fund et al., 2008). Moreover, as Wallace (1985) remarks, auditing is the way to reduce losses from the manager's selfish behavior resulted from asymmetry of information. Thus, internal government audits can detect irregularities and abuses in government spending; whilst post-audit improvement efforts through sanctions, punishments and penalties can reduce potential corruption (Liu and Lin, 2012). And to conclude with Becker and Stigler (1974), the right combination of supervision and punishment can control perversion/ corruption tendencies.

The use of control variables was carried out to ensure the consistency of the research results on the main explanatory variables. After being given the control variable, the independent variable still has a significant effect on the dependent variable. The results also show that the monitoring cost control variable has a negative correlation with state losses, although the correlation is only significant at the 10% level but is in accordance with the assumption that the budget attached to the district/city inspectorate provides legitimacy that the agent has worked well and acted to maximize the welfare of the principal. (Michael J and William M (1976). Intensifying and strengthening the role of internal audit comprehensively and inherent in every financial management cycle will increase the cost of supervision, therefore the cost of supervision must be regulated not to exceed the benefits received. The government must consider the quality of internal audit in detecting violations (DeAngelo, 1981).

The next control variable, External audit, has a correlation value of -0.898 and is significant at the 1% level with state losses. This result is consistent with previous research which states that audits conducted by the central government to local governments through an external audit mechanism are primarily aimed at detective control of deviations and future corrections/improvements, as well as tools to encourage government transparency and accountability (Olken, 2007; Backman, 1999 in Osifo, 2012; Wei et al., 2010; Bobonis et al., 2016; Avis et al., 2018). The authority of BPK RI as an external audit, has a wider role in detecting deviations in government spending on expenditure audits and investigative audits. The next control variable, the Dummy of the Regency Region, has a correlation value of -

0.413 and is significant at the 1% level with state losses. These results indicate that the policy of strengthening internal audit supervision in reducing state losses is more effective in regencies than cities.

The next control variable, the Dummy of Under-developed Districts, has a correlation value of -0.413 and is significant at the 1% level with state losses. These results indicate that the policy of strengthening internal audit supervision in reducing state losses is more effective in regencies than cities.

Robustness checks are carried out to provide confidence and to see the consistency of research results on the impact of strengthening the role of internal audit on state losses. In this study, the basic model uses a high capital expenditure ratio with a different threshold value each year, so that the areas included in the treatment group and the control group will be different, depending on the threshold value formed in that year. To test the consistency of the estimation results from equation (1), in this study as a robustness check is to use the continuous variable from the capital expenditure ratio and change the percentage of treatment group selection at the level of 20% to 80%. This is done so that the downward trend in the number of state losses can be better captured by the model.

The estimation results show that the implementation of strengthening the role of internal audit in regions that have a high capital expenditure ratio, whether measured by the continuous variable higher than 20%, 40% and so on (Column 2 and so on in Tables) can reduce state losses. So these results are consistent with the main results of the study. Strengthening the role of internal audit is needed to prevent and detect opportunistic behavior that causes state losses in areas with high capital expenditure ratios. This study still chooses the estimation results from the model

in column 1 of Table. Based on the results of this robustness check, it is evident that the results of research on the impact of strengthening the role of internal audit,

especially in areas that have a relatively higher risk of capital expenditure ratio, can reduce state losses.

Table 4. the Impacts of Strengthening Internal Audit's Role on State Losses

Dependent Variable: State Losses	Research model in the highest 20% group		Research model in the highest 40% group		Research model in the highest 60% group		Research model in the highest 80% group	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Basic model	With control variable	Basic model	With control variable	Basic model	With control variable	Basic model	With control variable
Internal Auditor	0.242*** (0.0553)	0.405*** (0.0607)	0.339*** (0.0619)	0.481*** (0.0657)	0.363*** (0.0712)	0.506*** (0.0742)	-0.00242*** (0.000377)	-0.00104*** (0.000396)
Capital Expenditure	0.630*** (0.0990)	0.496*** (0.0966)	0.698*** (0.0840)	0.596*** (0.0813)	0.532*** (0.0789)	0.466*** (0.0765)	0.00172 (0.00106)	0.000975 (0.00106)
Internal Auditor X Capital Expenditure	-0.601*** (0.110)	-0.435*** (0.108)	-0.607*** (0.0910)	-0.475*** (0.0884)	-0.471*** (0.0906)	-0.370*** (0.0881)	-0.00169 (0.00121)	-0.000678 (0.00120)
Number of Auditors		-0.0694* (0.0417)		-0.0688* (0.0412)		-0.0738* (0.0413)		-0.000849* (0.000510)
Monitoring Cost		-13.70* (7.720)		-12.53* (7.663)		-13.55* (7.684)		-0.0567* (0.0649)
External Audit		-0.898*** (0.0893)		-0.880*** (0.0901)		-0.914*** (0.0874)		-0.00732*** (0.00139)
Dummy for Under-developed Districts		-0.0826 (0.102)		-0.0810 (0.103)		-0.0812 (0.103)		0.00155 (0.00176)
Constant	20.70*** (0.0338)	22.03*** (0.123)	20.57*** (0.0423)	21.84*** (0.129)	20.55*** (0.0497)	21.81*** (0.137)	0.00501*** (0.000270)	0.0102*** (0.00126)
Observations	4,433	4,421	4,433	4,421	4,433	4,421	4,898	4,875
R-squared	0.015	0.046	0.024	0.053	0.016	0.048	0.017	0.045
Number of id	492	492	492	492	492	492	492	492

Notes:

The single terms of x1 and x2 (Internal Auditor and Capital Expenditure) are included in the regression, but not reported.

Cluster standard errors based on districts/ cities in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Columns 1, 3, 5, 7, and 9 are basic equation models, while columns 2, 4, 6, 8, and 10 are the equation models with control variables.

Source: Processed Data, 2019

CONCLUSION

The result of this study shows that strengthening the internal audit's role can reduce state losses in areas with high capital expenditure ratios by 0.435%, and significant at the level of 1%. This confirms that, on average, this policy can reduce the country's losses by 0.435%, the equivalent of IDR 6.72 billion when compared to areas with low

capital ratios. And, therefore, these findings maintained the previous studies' claim on the positive effect of the internal audit – the capacity to realize good governance that leads to clean governance (Perry et al., 1997; Fullerton, 2005; Fund et al., 2008; and Albrecht et al., 2012). This proves that by strengthening the role of internal audit, it can substantially reduce state losses that arise as a result of agency problems.

This study also finds that the effect of improving the supervisory system that is more comprehensive and inherent throughout the cycle of the state financial management process through the mechanism of the role of consulting by internal audit, will increase monitoring costs. This needs to be considered by the government to regulate monitoring costs so that they do not exceed the benefits received or comparable outputs by considering the quality of internal audit in detecting violations (Angelo, 1981). The results of the study show that those who get the most benefit from implementing the role of internal audit are regions that have a high ratio of capital expenditures, given that capital expenditures are very vulnerable to errors and actions that are not in accordance with the rules in the implementation of local government financial management.

It is recommended that the government continue its efforts on strengthening the role of internal audit, by taking into accounts the capabilities of internal auditors, especially in areas with high capital expenditure ratios, due to the fact that these areas have a greater risk for financial mis-management from the local governments. Hence, strengthening the audit system can be a solution to address the problem of state losses. Nevertheless, this research also recommends the government to consider an appropriate monitoring cost – which is an agency cost that is measurable, calculable and comparable to the benefits that will be received.

The limitation in this study is the restricted source of data on state losses (mainly based from IHPS BPK). Hence, for further research are the state loss data from the corruption and bribery cases as handled by the Judiciary and the Corruption

Eradication Commission (KPK). Future research also needs to consider the Internal Audit Capability Model (IACM) Level for the public sector or Capability Maturity of internal audit to measuring the capacity and effectiveness of public sector internal oversight.

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