Detection and Prediction of Managerial Fraud in the Financial Performance of Indonesian Banks

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***Abstract*—Focus of this study is to know the influence of ratio financial that used by Federal Deposit Insurance Corporation to possibility of fraud managerial in banks that enrolled in the Indonesian stock exchange and commits iniquity in 2014 that is viewed through the annual report of 2014. This study used regression logistics, three groups of the ratio financial namely performance, growth, and capital tested with data from the financial statement in the period three years before the fraud managerial. The ratio performance and the ratio growth indicate significant influence of its impact of fraud. Extreme ratio performance where it is too high or too low will encourage the possibility of fraud. Rapid growth ratio will also encourage the possibility of fraud cheating. The result of this study, manager, investors, as well as government expected to be more cautious in doing financial analysis ratios. Manager must be able to maintain the stability of financial bank ratios to reduce the risk of fraud. Investors should be more carefully in doing financial analysis ratio to get optimal return in investment. The government should be able to make the regulations to minimize the possibility of fraud.**

***Index Terms*—Detection, prediction, prevention, fraud, financial ratio, performance ratio, growth ratio, capital ratio.**

I. Introduction

Related issues with banks that has become fundamental issues and important is about security. [1] Security is being more important to become as focus particularly the last few years, the number of fraud on banking increase rapidly.[2] Based on research by the Association of Certified Fraud Examiners (ACFE) in 2010 and 2012 found that banking industry and financial service produced 16.6 % and 16,7 % of the overall cases fraud on all industry aspects. Therefore, the prevention of fraud has become the main concern for the banks, consumers, and policy makers. References [3] - [5] said that the reason why companies did fraud or cheating is very various. Motivation to fraud comes from several reasons such as having incentives by doing that fraud, pressure to commits fraud, and many more. Fraud in banks would harmful for banks itself and also for customers. Bank will be charged to restore a financial loss of customers [5], while customers will experience loss his time and got emotional. Customer will spent much time when the fraud happened since he has to detect the fraud, report it to the related bank, do account blocking, reopening account or card and make some efforts to reach back his lost while fraud. On the other hand, fraud managerial will also cause bad image of its bank and make bad emotional of customer. Customers trust to a bank can be reduced or even lost if fraud happened, and this can be impact fatal to the bank that relies on the bond of trust between depositor and bank. The results of recent report by Association of Certified Fraud Examiners (ACFE) in 2012 showed that Fraud spent 5 % of revenue annual of firms involved. Committee of Sponsoring Organizations of Treadway Commission (COSO) reported in 2010 that from sample of 347 firms involved of Fraud cases, Fraud median is 12.1 million USD. For 30 cases Fraud each cases having deviation of 500 million USD or more. The increasing number of fraud or cheating indicates that study which focuses on identification method effective to detect the possibility of cheating is very important[6].

This study is about the detection, predictions, and prevention of cheating through financial ratios analysis by Federal Deposit Insurance Corporation (FDIC) as an indicator. The purpose of this study is to detect, predict, and prevent fraud on banks in Indonesia used a model, where financial ratios are used as an indicator for banks in Indonesia and to test the ability to predict the ratios within three years before the fraud[4].

The purpose of this study, as follow:

1. Analyze the influence of performance ratio to fraud managerial of banking industry.
2. Analyze the influence of growth ratio to fraud managerial of banking industry.
3. Analyze the influence of capital ratio to fraud managerial of banking industry.

II. Literature Review

Fraud managerial is very harmful for all parties, particulary banking sector where public funds are involved then the good name of bank determine its sustainability. So, prevention and detection to fraud managerial is the most fundamental should be done.

Financial report is a lens that provides transparency the operation of a bank and people who manage. Financial report is having the ratio which includes performance, growth, and capital, representing perspective to judge financial report bank. [7] The ratio financial can be used as reference to see financial condition in the future. Moreover, the ratio financial regulator can be used also for monitor process. [8] The main focus of this study is to know the ability of financial ratio which represented by ratio of performance, growth, and capital as an indicator of cheating management.

Previous studies showed various result. Reference [9] was doing study about risk factor of auditor cheating in making external audit decision. The study found auditor noticed the managerial characteristics and control procedures are more crucial than operational characteristic

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and financial such as financial ratio. Auditor considered economy characteristic as the most uneffective method to evaluate risk factor of cheating activities. [10] - [12] were doing study that focused on financial condition and weak financial performance as the motivation to do cheating or fraud managerial. Previous studies concluded that motivatio to do cheating will higher when the institution has financial problem. This because of several reasons, one of them is to cover up an awful financial condition.

Based on the discussion about studies that has been done before, and then the first hypothesis in this study is:

H1: There is Correlation between Performance Ratio with Fraud Managerial

Rapid growth had been identified as a risk factor of cheating management. When asset's growth of capital ratio is decreasing, it is as an indicator of moral hazard between management and their insurance. References [13], [14] stated that banks that grow rapidly will have higher motivation to have fraud managerial, mainly in trend being turn around to worse and decrease development. It may cause fraud managerial of internal or external expectation that growth keep continue and have an impact to increased pressure of manager and lead of cheating occur.

Growth Monitoring System (GMS) developed by Federal Deposit Insurance Corporation (FDIC) in the middle of 1980, is simple warning model to detect early failure of banking cyclus in rapidprogress stage. This model developed to know that rapid progress of total assets or loan able to detect malicious behavior of bank that should be noticed by supervisor. Growth risk relating may arise in two things, namely loans and bank management. It may cause risk of higher loan and disregression management such as simplify standard insurance, relying on unstable and unsave fund resources or internal weak control to facilitate rapid growth.

A study by Office of the Comptroller of the Currency (OCC) on 1988 got that rapid growth found in failed banks around 42% from all cases was studied. Agresive business behaviour by management cause less adherent to loan procedures and increase loan. OCC concluded this also make tendency to rapid growth. This also a risk strategy that may cause vulnerability and failure banks.

Based on the above explanation, second concluded as follow:

H2: There is influence between growth ratio with fraud managerial

The ability of banks meet a credit need of customer cosistently dependent on stability equity capital. [15] Control to bank who has undercapitalization or lack of capital is very important as well as capital decreasing position. The bank will have limit movement or even bankrupt. [16] It showed that low capital ratio will threaten bank's existency, cause the cheating and bank sustainability. Furthermore, the result of study conducted by [17] stated that bank who have low capital have bigger chance to have failure.

Based on the above explanation, third hypotheses concluded as follow:

H3: There is influence between capital ratio with fraud managerial

III. Methodology

Sample in this study used purposive sampling method based on the specific criteria. Object in this study has criteria as below:

1. All banks registered on Indonesian Stock Exchange (BEI)
2. All banks have internal faud in their annual report of year 2013
3. All banks have financial report for year 2013, 2012, and 2011 if they did fraud managerial (cheating) and if they do not fraud managerial, just provide financial report for year 2014 only

Methodology in certain study should be appropriate with the problem of the study. Quantitative method is the most suitable in this study because the purpose of this study is to identify prediction method to detect fraud managerial [7]. Logistic Regression used to described data and its correlation between binary dependent variable to others dependent variable.

- Definition of Variable Operational
- Dependent Variable

Dependent variable used in this study is fraud. Certain bank stated has fraud when in 1 perion (1 year) on 2013, did fraud once. It can be seen from annual report which involve internal fraud for 1 period (1 year)

- Independent Variable

Independent variable used in this study is performance ratio, growth ratio, and capital ratio. Each variable has own measurement as follow (see Table I):

TABLE I: Variable and Measurement

Variable	Dimention	Indicator
Performance Ratio	1. ASTEMPM	Total Assets/Number of Employees
	2. EEFFR	(NonInterest Expenses-Amortized Intangible Asset Expenses)/(Net Interest Income+Non Interest Income)
	3. IDDIVNIR	Cash Dividend/Net Income
	4. INATRESR	Loss Allowance/Loans
	5. INTEXPY	Annualized total interest expense on deposits and borrowed funds/Total Earning Assets
	6. INTINCY	Total Interest Income/Total Earning Assets
	7. NIMY	(Total Interest Income-Total Interest Expense)/Total Earnings Assets
	8.NOIJY	Net operating income to assets
	9. NONIIY	Noninterest income to earning assets
	10. NONIXY	Noninterest expense to earning asset
	11. ROA	Net Income/Total Assets
	12. ROE	Net Income/Common Stock Equity
	13. ROEEINJR	Retained earnings/total equity
Growth Ratio	1. ASTEMPM	Total Assets/Number of Employees
	2. EQV	Equity capital to assets
	3.ROLLPS5TA	(loans and leases+securities with maturity >1 year)/Total Assets
Variable	**Dimention**	**Indicator**
Capital Ratio	1. EQV	Equity capital to assets
	2.RBC1AAJ	Total Debts/Total Equity
Fraud		0 for bank that have fraud in their financial report, and 1 for bank do the fraud in their financial report

Data analysis method used in this study is Logistic Regression with based formula as below:

$$\log\frac{pr(fraud)}{1-pr(fraud)} = logit\, pr(fraud) = \beta_0 + \beta_1 x_1 + \ldots + \beta_k x_k$$

Pr is probability or the possibility of fraud,
β is constanta, and x is independent variable.

IV. Findings

Based on calculating the data and its interpretation, here are some outcomes as below:

A. *Performance Ratio to Fraud*

Performance Ratio in this study calculated with 13 ratios. Analysis result with Logistic Regression method found that EEFFR, NIMY, and ROE has effect to fraud occur. EEFFR has sig 0.28, NIMY has isg 0.41 and ROE has sig 0.002. Based on the sig point, it can be concluded those ratios have significant effect to fraud. EEFFR has 5.843 coeffiecient, NIMY 57.174 coefficient and ROE 46.533 coefficient (table 2). Thos three ratios have positive effect to fraud, meant higher ratio will improve the possibility of fraud. Based on that result, it can be assumed that performance ratio has effect to fraud.

EEFFR is the ratio between other operating costs that reduced amortization an intangible asset with net interest income and operational income. If EEFFR ratio higher, it showes worse efficiency because higher ratio indicates bank's load is higher than income. EEFFER ratio is having the positive coefficients of 5.843 (Table II). This means the greater the ratio EEFFR indicating worse ratio performance will encourage the possibility of fraud. This result in line with research conducted by [18], which concluded lower performance will increase the possibility of fraud.

NIMY is the ratio between nett interest incomes with total of productive assets. Higher ratio shows better performance because it indicates that bank reached higher nett interest incomes than productive coefficients NIMY is 57.174 mean higher ratio will create higher fraud (Table II). Also, better performance ratio will encourage the possibility of fraud. In contrast, [18] on his research stated that lower performance ratio will encourage the possibility of fraud.

ROE is the ratio between nett income to common stock equity. Higher ratio shows higher income to share holder of certain company. Means, higher ratio shows better ratio. Coefficients ROE is 46.533 (Table II). It indicates that higher ratio will encourage the possibility of fraud. Also, higher performance will encourage the possibility of fraud. In contrast, [18] on his research stated that lower performance will encourage the possibility of fraud.

Based on the above analysis, it can be seen that performance ratio has significant influence to the possibility of fraud. It can be bond with *fraud triangle* that stated fraud occurs because of 3 things: pressure, opportunity, dan rationalization. Better performance ratio will encourage the possibility of fraud associated with pressure to keep a good performance. While for worse performance case will encourage the possibility of fraud, pressure to improve performance ratio, it may one of the reason of fraud. Opportunity, it can be also seen as the basic reason of fraud, particulary to better performance ratio. Opportunity to do fraud even more to get personal advantage will happen when company performance is geeting higher and the chance to get personal income rise.

Drastic increase is risky to decrease performance. Compare with drastic increase of performance, decrease performance would be impressed drastic too. It effected to the worse economic condition. This is very risky to the cheating to keep the performance itself. Worse performance is dangerous to the bank. Because it showed less effort of bank in allocating resources and get profit. Weak condition will create of fraud or other cheatings in order to improve performance. 2. *Growth Ratio of Fraud*

Growth ratio in this study was measured by 3 ratios. Result of Logistic Regression analysis, ROLLPS5TA is significant variable. ROLLPS5TA has 0.19 sig. it implied ROLLPS5TA has significant effect to fraud. Coefficient ROLLPS5TA is -25.386 coeffisient that implied ROLLPS5TA has negative effect to the possinility of fraud (Table II).

ROLLPS5TA is the ratio between credit and rent cost and long assets cost of its total assets. Smaller ratio indicates higher assets growth and higher growth ratio. From Table II coefficient ROLLPS5TA is -25.386 that higher ratio will decrease the possibility if fraud. Also, it indicates the higher growth to the possibility of fraud. This is in line with research by [18] that stated rapid or high growth will encourage the possibility of fraud.

Rapid growth signed by increasing of total assets can be as the indicator that bank supplies more credit over, it actually also indicates more failure credit bank. Additionaly, more credit indicates decrease credit banks. It is very dangerous even a total credit is greater because of credit supply there is a possibility failure of payment also greater. Another possibility is banks invest to new business differ from business activity of banks. It is very risky, it influence of fraud is geeting higher.

B. *Capital Ratio of Fraud*

Capital ratio in this study measured by 2 ratios. The result of logistic Regression analysis found that there is no variable which has significant effect to the possibility of fraud. This result is difference from previous study by [18] that found bank and with low capital ratio have the possibility to fraud higher.

Strong capital ratio can be seen by equity propossion modal of company or bank. Data in this study showed consistent of capital proposition to approximately with all banks which cheating or not cheating. Consistence of modal proposition was caused by its regulation of Indonesian Banking (BI) about capital provider obligation. As weel, consistence caused by assets gwoth capital ratio or propotional liability to its capital.

TABLE II: Variables in Model

Variable	B	Sig	Description
Efficiency Ratio (EEFFR)	5,843	0,028	Significant
Net Interest Margin (NIMY)	57,174	0,041	Significant
Return on Equity (ROE)	46,533	0,002	Significant
Loans, Lease, and Long-Term Securities to Total Assets (ROLLPS5TA)	-25,368	0,019	Significant

V. Conclusion

This study was conducted with objective of knowing the influence of performance ratio, growth ratio, and capital ratio to the possibility of fraud. This study used 25 banks were enrolled in the Indonesian stock exchange (BEI) by having information on the occurrence of fraud to the annual report in 2013. The research was done by calculating of financial ratios are within 3 years before fraud (2013, 2012, and 2011). Based on the results of the analysis, obtained a conclusion as follows:

1) Performance ratio measured by *asstes per employee* (ASTEMPM), *efficiency ratio* (EEFFR), *dividend payout ratio* (IDDIVNIR), *loss allowance to loans* (INATRESR), *cost of funding assets* (INTEXPY), *yield on earning assets* (INTINCY), *net interest margin* (NIMY), *net operating income to assets* (NOIJY), *noninterest income to earning assets* (NONIIY), *noninterest expense to earning assets* (NONIXY), *return on assets* (ROA), *return on equity* (ROE),dan *retained earnings to equity* (ROEEINJR) showed EEFFR, NIMY, and ROE has significant influence of fraud. While, ASTEMPM, IDDIVNIR, INATRESR, INTEXPY, INTINCY, NOIJY, NONIIY, ROA, and ROEEINJR has no significant influence to fraud. EEFFR has positive effect to fraud that indicated if performance ratio is getting lower will encourage the possibility of fraud. NIMY has positive effect to fraud that indicated if performance ratio is getting higher will encourage the possibility of fraud. ROE has positive effect to fraus that indicated if performance ratio is getting higher will encourage the possibility of fraud. In conclude, those EEFFR, NIMY, and ROE has an effect to fraud.
2) Growth ratio was measured by *assets per employee* (ASTEMPM), *equity capital to total assets* (EQV), and *loans, lease, and long-term securities to total assets* (ROLLPS5TA) showed that ASTEMPM and EQV has no influence to fraud, while ROLLPS5TA influences to fraud. ROLLPS5TA has negative influence to fraud that indicated if growth ratio is getting faster will encourage the possibility of fraud. Therefore, growth ratio measured by ROLLPS5TA which influence to fraud.
3) Growth ratio was measured by *equity capital to total assets* (EQV), and *total debts to total equity* (RBC1AAJ) showed tha tthere is no ratio which significantly influence to fraud. It indicated capital ratio is not influence to fraud.

A. Implication

The result of this study found that there is significant influence between performance ratio and growth ratio to fraud. Managerial implication in this study as follow:

1) Bank and manager
Bank manager needs to control growth speed and its bank performance. Growth is seen as the positive. However, based on the result of the study and analysis, too fast growth will be negative because of too fast growth associated to higher risk. Company performance is also necessary to be controled by bank manager. Performance should be stable since drastic increase and decrease will encourage to fraud. Manager should keep ratio and expense from income, ratio and nett interest income to productive assets, and nett income to common stock equity. Stability ratio is very crucial mainly to the possibility of fraud and maximize resource allocation without increase its bank risk.
2) Investor
Investor should be more carefully to analyse financial banks ratio mainly to performance ratio and growth ratio. Investor should not be completely absorbed and awe to high performance ratio or high growth ratio, while investor should take his attention to its detail of performance ratio and growth ratio. Example, bank that rapidly grow needs to observe why the bank able to grow too fast. Does this rapid grow indicate bank condition is better or worse as indication of increased risk.
3) Government
Government should make regulations mainly to minimum ratios that should be fulfilled. Government also should find a way to make bank more transparent especially about internal fraud. Government should be able to make detailed regulations to internal fraud, like staff who did fraud and what fraud his did, etc. Therefore, cheating or fraud will be more obvious and specific and prevent or anticipate to the same fraud. Also, prevention and anticipation will be conducted more effective too.

References

[1] L. Kanniainen, "Alternatives for banks to offer secure mobile payments," *International Journal of Bank Marketing*, vol. 28, no. 5, pp. 433-44, 2010.

[2] D. G. Banks, "The fight against fraud," *Internal Auditor*, vol. 62, no. 1, pp. 62-68, 2005.

[3] R. J. Sullivan, "The changing nature of U.S. card payment fraud: Industry and public policy options," *Economic Review*, vol. 95, no. 2, pp. 101-33, 2010.

[4] Abaoub and K. E. dan Homrani, "Prediction, prevention and detection of fraud in bank's financial statements an empirical study of the Tunisian context," *Indian Journal of Research*, vol. 2, no. 2, pp. 87-91, 2013.

[5] T. Gates and K. Jacob, "Payments fraud: Perception versus reality – a conference summary," *Economic Perspectives*, vol. 33 no. 1, pp. 7-15, 2009.

[6] Dalnial, H. Kamaluddin, A. Sanusi, Z. M. dan Khairuddin, and K. S, "Detecting fraudulent financial reporting through financial statement analysis", *Journal of Advanced Management Science*, vol. 2, no. 1, pp. 36-48, 2014.

[7] M. J. McAteer. (2009). Financial ratios as predictors of financial fraud in community banks: The analytic model of management fraud. [Online]. Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1430984

[8] E. I. Altman, *Corporate Financial Distress: A Complete Guide to Predicting*, Avoiding, *and Dealing with Bankruptcy*, New York: John Wiley & Sons, 1983.

[9] B. A. Apostolou, J. M. Hassell, S. A. Webber, and G. E. Summers, "The relative importance of management fraud risk factors," *Behavioral Research in Accounting*, vol. 13, no. 1, pp. 1-24, 2001.

[10] J. V. Carcello and Z. V. Palmrose, "Author litigation and modified reporting on bankrupt clients," *J Accountancy Res*, pp. 1–30, 1994.

[11] P. M. Dechow, R. G. Sloan, and A. P. Sweeney, "Causes and consequences of earnings manipulation: An analysis of firms subject to enforcement actions by the SEC," *Contemporary Accounting Research*, pp. 1-36, 1996.

[12] T. Lys and R. Watts, "Lawsuits against auditors," *Journal of Accountancy Resources*, pp. 65–93, 1994.

[13] T. B. King, D. A. Nuxoll, and T. J. Yeager, “Are the causes of bank distress changing? Can researchers keep up?” *Center for Financial Research Working Paper Series*, no. 3, 2005.
[14] Harrington and Cynthia, “Analysis ratios for detecting financial statements fraud,” *Fraud Magazine*, March/April 2005.
[15] Federal Deposit Insurance Corporation. (2012a). FDIC community banking study. [Online]. Available: https://www.fdic.gov/regulations/resources/cbi/report/cbi-full.pdf
[16] Federal Deposit Insurance Corporation. (2012b). Community bank efficiency and economies of scale. [Online]. Available: https://www.fdic.gov/regulations/resources/cbi/report/cbi-eff.pdf
[17] D. C. Wheelock and P. W. Wilson, “Why do banks disappear? The determinants of U.S. bank failures and acquisitions,” *The Review of Economics and Statistics*, vol. 82, no. 1, pp. 127-138, 2000.
[18] Boumediene and S. Lofti, “Detection and prediction of managerial fraud in the financial statements of Tunisian banks,” *Global Conference on Business and Finance Proceedings*, no 1, pp. 421-426, 2014.

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