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FINANCIAL AND NONFINANCIAL DIMENSIONS OF FRAUD RISK: EVIDENCE FROM INDONESIA

Moh Gudono*

Abstract: *Fraud is a serious problem. Major cases, such as the Hambalang case involving PT Adhi Karya, which are often published in the media, occurred because of fraud. Auditors are under pressure when the fraud occurred in the company being audited. Therefore, the accounting profession (IAI) requires auditors identifies fraud risk. This research tested the external validity (generalizability) of prior research model (ie. Mironiuc at al. [2012]) in the area using Indonesian data. The purpose of this research is to test the strength of the factors used in the Mironiuc at al.'s model (2012) in influencing the fraud risk. The research questions are whether financial factors (in particular the structure of asset [ASC] and reporting [FRC]) and non-financial factors (nonfinancial measures, abbreviated NFM) affect the fraud risk. By knowing what factors affect the risk of fraud policies can be issued by the regulator (Bapepam for example) so that an amount of fraud cases can be reduced. In addition, the results of this research can be used as a reference for the auditors in carrying out PSA 04.*

Keyword*: Fraud risk, auditing standards, assets structure component, financial reporting component, nonfinancial measures*

INTRODUCTION

Irregularities (frauds) are well-known in the business world have occurred since hundreds of years ago. Beattie (2011) states that the historical record shows that 2300 years ago a Greek businessman named Hegestratos known for cheating. Other fraud that is very famous in history was carried out by the management of the South Sea in 1717-1720 to manipulate financial data so that many investors were deceived and that finally destroyed the London Stock Exchange (thus the case known as "The South Sea Buble", Gudono, 2012a). The management dysfunctional at the time of the South Sea was worsened by the habit of the stockbrokers in that era to hang arround the coffee shop looking for naïve investors to be deceived (Gudono, 2012a, Bakan, 2010). In the today modern era the increase of sophistication of communications technology, widens the variety of fraud patterns even though its essence is the same, which is to manipulate the information illegally to influence the judgment of decision makers. For example, mode of fraud occurring in Olympus

* Faculty of Economic and Business, Gadjah Mada University, Lecturer at the Faculty of Economics and Business, Universitas Gadjah Mada, Indonesia

Corp. long time ago is cheating which includes the investment aspects, political organization, and manipulation of data simultaneously.

Indonesia is not an exception in the case of fraud. Cheating in Indonesia may be even more severe. The case of frying the shares of Bank Piko (before it merges into Bank Permata), the irregularity in the inventory valuation at PT Indofarma, financial crisis faced by PT Bumi Resources, the involvement of PT Adhi Karya in Hambalang case, and there are still many other cases of corruption in state companies shows that fraud (fraud) in Indonesia is not a trivial problem. This problem is not a trivial matter because not only was rife but can also be harmful to the national economy. This is seen in the case of 1997-2000 monetary crisis some time ago. One of the "hypothesis" that circulated about one of the causes of the financial crisis is that many owners of bank savings lend the public moneys to their own business group. Channeling funds into their own groups is considered high risk because the economic feasibility of the fund lending to their own group is not expected to be evaluated seriously.

For these reasons the author is interested in studying frauds, as an illegal act, not simply as an accounting ploy like earnings management which are often still considered "legal". Although the risk of fraud is a serious problem, in Indonesia there have not been many studies that raised this theme. Writing about cheating tends to be normative as found in the provisions of the PSA 04. The empirical research literature more easily found from international journals, such as the writings of Brazel at al. (2009), Mironiuc at al. (2012) and Bernardi (2009). For example Gallet (2010, in Mironiuc at al. (2012)) conducted research on the causes and dimensions of cheating by listing some research prior research. Brazel at al. (2009) has conducted research to assess the risk of fraud using non-financial measures (nonfinancial measures, abbreviated NFM). Mironiuc at al. (2012) identifies a group of variables that make up the two constructs ASC (assets structure component) and FRC (financial reporting component).

This research tried to test the external validity (generalize ability) models developed by previous research (especially Mironiuc at al. [2012]) using Indonesia data. The author assumes that in the vacuum of similar research in Indonesia for replication and modification of prior research is justified. The purpose of this research is to test the strength of the factors in the model Mironiuc at al. (2012) in influencing the risk of fraud in Indonesia companies. The research questions that will be answered by this study is whether financial factors (in particular asset structure [ASC] and financial reporting [FRC]) and non-financial factors (nonfinancial measures, abbreviated NFM) affect the risk of fraud. By knowing the influential factors of the fraud risk various policies might be issued by the regulator (Bapepam for example) so that the amount of fraud can be reduced. In addition the results of this research can be used as a reference by the auditors in carrying out the PSA 04.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

ISA 240 (The Auditor's Responsibilities Relating to Fraud in an Audit of Financial Statements) defines fraud as a deliberate act carried out by one or several individuals that involve the use of deceit to benefit illegally and unfairly (IFAC, 2009). Understanding of such fraud is also in line with the definition of fraud written by Singleton et al. (2010) as "intentional and malicious activities performed on customers or investors, of a civil or criminal nature, on or for the company, from within it or from outside, by managers or non managers." PSA 04 (SA 230) requires that auditing is designed to generate sufficient confidence to detect either material errors or fraud in the financial statements. IAPI through PSA 240 establishes the auditor's responsibility to detect fraud and gave examples of procedures that can be performed to detect misstatements as a result of fraud. From a series of such provision it is clear that public accountants may not circumvent the obligation to assess the risk of fraud in the companies examined.

In addition to the external auditors, internal auditors also have a great responsibility to prevent and detect fraud related to the company's assets. The Standard 1200 on "Proficiency and Due Professional Care" states that the internal auditor should have sufficient knowledge to evaluate the risk of fraud and to evaluate what has been done to mitigate the risk. Internal auditors have the strategic position in the fight against fraud because he is "the insider" which according to the research Gallet (2010) the opportunity to commit fraud is owned by the company's internal parties who have a good understanding of information systems in the enterprise. According to research Cressey (1953 in Tuanakotta 2010) the opportunity is one aspect of "fraud triangle" (fraud triangle). Other aspects of the triangle include motivation or pressure and rationalization (Tuanakotta, 2010).

Previous research by Mironiuc at al. (2012) found that some financial ratios such as the ratio of current assets, general liquidity ratios, free cash flows, and financial profitability ratio can be used to describe the probability of fraud. Important contribution of Mironiuc research at al. (2012) is in terms of finding constructs such as the Assets Structure Component (ASC) and the Financial Reporting Component (FRC). However, research Mironiuc et al. (2012) has a weakness because it only include elements of financial data. Brazel at al. (2009) argues that the size of the non-financial (NFM = nonfinancial measures) is useful to validate financial variables. Brazel at al. (2009) conducted a study with an experimental method which uses students as participants experiment by asking the students to act as the staff of the company (auditee) who commit fraud. NFM variables tested in Brazel at al. (2009) developed from some previous research (for example Marquardt and Wiedman [2004], McVay [2006], Bell and Carcello [2000]). In that study some of NFM, such as floor area of warehouse and production space, proved to have a significant impact on the potential for fraud.

This research will modify and expand research approach of Mironiuc at al. (2012) by adding the element of NFM as an independent variable. Given the data taken in this research is Indonesia data then at the same time this research can also be used to test the external validity of the model developed by Mironiuc at al. (2012). The hypothesis tested in this study are as follows.

H1: Factor Financial and Non-financial variables determine the risk of fraud.

Using the hypothesis an additional analysis might be performed to examine the ability of each element of the two constructs (financial factors and variables nonfinancial) in differentiating companies that commit fraud and do not commit fraud.

RESEARCH METHODS

Data Analysis Methods. This research will use a two-stage analysis method (two stages analysis). In the first stage Confirmatory Factor Analysis (or CFA) was conducted to test the following models:

$$F_n = b_1.X_1 + b_2.X_2 + \ldots + b_n.X_n \quad (1)$$

Where

Fn is the three constructs tested, with the value of i = 1, 2, and 3

X1 ... Xn is an element (indicator) forming each construct.

b1 ... bn are coefficients (factor loading) model of CFA

Fi is a symbol for the ASC, FRC, and the NFM. Model (1) is adopted from Mironiuc at al. (2012). Mironiuc at al. (2012) used Principal Component Analysis (PCA) and was basically an exploratory analysis. When the same method is applied then there is no guarantee that there will be two constructs, the ASC and the FRC, which is the same as Mironiuc research at al. (2012). However, the use of CFA can still be done as a sensitivity analysis to see whether the effect as found in previous research persists and is also able to conduct models comparison. To perform CFA AMOS software will be used. Some validation test like the Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity will be used to test the feasibility of the developed model.

After the construct Fn is known then the next step is to perform logistic regression analysis (logistic regression analysis or LRA) based on the following model:

$$Ln\left[PF/(1-PF)\right] = a + \sum_{i=1}^{n} b_i F_i + \sum_{i=i}^{k} c_i NFM_i \quad (2)$$

Where

Ln [PF / (1-PF) are the odds of potential fraud faced by companies.

Fi are the factors (construct) were produced by the factor analysis done in the first step.

NFMi is a non-financial variable (nonfinancial measures).

bi and ci is the coefficient function in logistic regression analysis.

The significance test of the coefficient variable in a logistic regression analysis will be done by looking at the Wald test score and the fitness test the model using Cox and Snell's pseudo R2 (Gudono, 2012b). Additional test by calculating the hit ratio is optional.

Variables. To prepare constructs financial measures (Fn) which is an independent variable in the model (2) and the dependent variable in the model (1) this study uses several financial indicators as used in research Mironiuc at al. (2012), namely:

1. Commercial profitability ratio
2. Intangible assets
3. General liquidity ratio
4. Current assets
5. Economic profitability ratio
6. Turnover of total assets
7. Term indebtedness ratio
8. Global financial autonomy ratio
9. Free cash flow from total cash
10. Global iondebtedness ratio
11. Financial profitability ratio

In addition to the indicators above some other indicators will be used to measure the NFM, namely (a) the length of time the company has sold shares to the public, (b) the type of industry, (c) the type of public accounting firm (KAP), and (d) whether the chairman of the board of commissioners occupied by independent directors. NFM assessment in this research differs with Brazel at al. (2009) due to the fact that experimented in Brazel at al. (2009) are difficult to obtain in Indonesia, for example, information about the area (square meters) factory object being studied. In addition this study did not use primary data obtained from the experimental method but using secondary data of those companies that have gone public.

To determine the odds of cheating data were taken from companies who get a warning or a penalty (eg discontinuation of trading) from Bapepam or the Indonesia Stock Exchange since certain companies suspected of doing things that are not commendable or activity is not legal (see the definition of fraud on).

Samples Data. Data were taken from the companies whose shares are listed on the Indonesia Stock Exchange during the period of observation from 2009 to 2012. The sampling technique is purposive sampling because the sample selected intentionally between who commit fraud (fraud) and that no cheating (non fraud). Of the two the same group of researchers trying to find a company that is worth (comparable subsamples) in terms of a number of sub-samples, company size (the total value of assets) and type of industry.

RESEARCH FINDINGS

The total number of samples that were initially obtained are sixty-four companies consisting of 15 companies that are not detected commit fraud (fraud) and 49 companies that detected fraud. In determining whether the two companies will eventually be used as part of the sample, namely (1) the company that the sample should have enough data incomplete, particularly with respect to the variables used in this study, at least for a period of one year between 2009 to 2012 and (2) the size of the company, as indicated by the amount of total assets, the company did not commit fraud is relatively the same. In accordance with these criteria, after scrutiny completeness of the data, of the 49 companies that commit fraud 35 of them do not have adequate data. Descriptive statistics processed a sample of 29 companies is as follows (see table 1).

Table 1
Descriptive Statistics

	N	Mean	Std. Deviation
X1	25	-4.130E-05	1.5637E-04
X2	29	2.289E-03	1.2082E-02
X3	29	10.0583	45.6707
X4	29	.5105	.3027
X5	29	1.5287	6.3176
X6	29	1625808.86	3608623.5128
X7	26	.2989	.3347
X8	26	7.5081	33.4270
X9	25	14.4252	54.9745
X10	26	.7258	1.9199
X11	29	-8.3781E-02	.7420
UMUR	29	14.4483	6.9157
F1	26	15.9765	70.5734
F2	25	-.1599	.5936
F3	25	13.2568	50.5216
F4	26	.6114	1.3122
NEW_F5	29	-13.006472	28.86898803
Valid N (listwise)	21		

Some of the variables are categorical, for example, the type of KAP and Kom, and were not included in Table 1 above as measured with a nominal scale.

Analysis of the data is further divided into two stages. The first analysis performed to determine factors associated with the construct financial variables X1 up to X11. Second, the method of logistic regression was performed to determine whether the size financial and non-financial constructs can be used to predict the tendency of cheating in a public company. The first stage of the analysis, which is a factor analysis on the variables X1..X11, it is known that when the boundary eigenvalue equal to 1 as the rules for determining factor, then there are 5 factors that generated (see Figure 1 scree plot). Eigenvalue fifth consecutive factor is 3.216; 2,187; 1,409; 1,294; and 1,073.

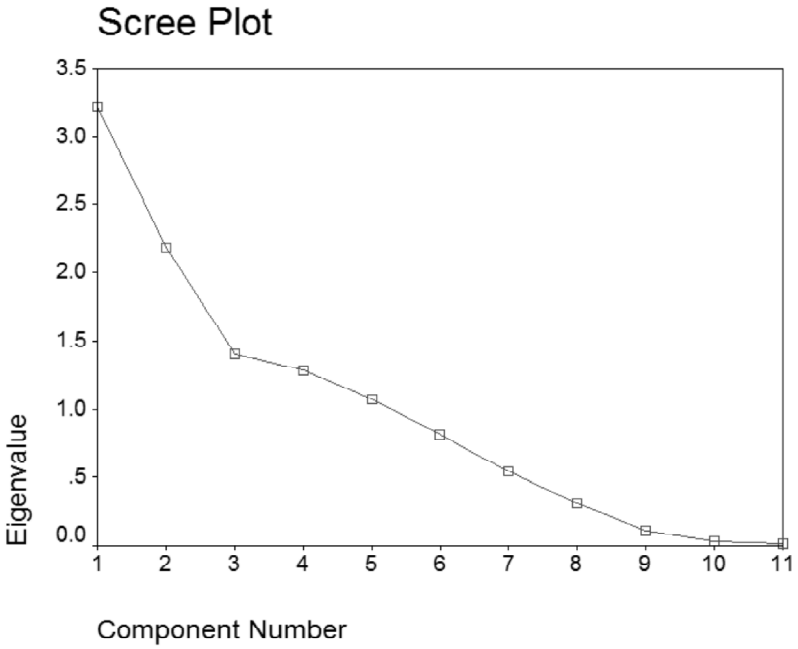

Figure 1: Screen Plot

The relationship between these five factors with each variable seen from the loading factor (factor loadings) as shown in Table 2.

Based on the loading of the factors, especially those that have the biggest score and above 0.50, one can determine which variables are associated with certain factors (components) specific. Table 2 shows that X2, X3 and X8 are associated with the first factors (components), variable X1 and X5 are more associated with the second factor, and variable X9 is associated with the third factor. Further, variables X4, X7 and X10 are associated with the fourth factor. And variables X6

Table 2
The Five Factor Loading Factor

	Component				
	1	2	3	4	5
X1	.117	.953	5.506E-02	1.259E-02	-.188
X2	.946	-2.606E-02	-.214	-4.899E-02	5.985E-02
X3	.928	.165	.205	.160	-8.120E-03
X4	8.214E-02	.146	3.106E-03	.808	.261
X5	.139	.954	8.091E-02	7.177E-02	-4.723E-02
X6	5.033E-02	1.746E-02	8.162E-02	-2.493E-02	-.800
X7	-.237	.213	-.275	-.626	.229
X8	.772	.252	.472	.204	-.112
X9	4.253E-02	.150	.919	9.987E-02	9.488E-02
X10	-.194	.427	-.532	.578	-.102
X11	6.397E-02	-.248	.254	4.189E-02	.741

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

and X11 are associated with the fifth factor. Taking into account the nature of the variables associated with a factor, then the names of factors could then be determined although for some cases this might not be easy. With such arguments, the following are the names assigned to a factor of up to a factor of 5:

Factor 1 = Financial Autonomy

Factor 2 = Profitability

Factor 3 = Free cash flows

Factor 4 = Financial expenses

Factor 5 = Efficiency

Produces five different factors with results of previous research (Mironiuc at al., 2012) which only produces two constructs (components), namely ASC and FRC. The difference is possible due to market conditions and characteristics of companies in Indonesia and the United States could have been different. To indicate whether in such circumstances it can be used a factor analysis, there are two indicators on the relationship between variables, namely KMO and test scores Bertlett, which needs to be checked. The results are shown in Table 3.

Table 3 shows that despite the KMO score is below 0.5 nevertheless the result of Bartlett test showed a significant result at alpha <0,01. This suggests that factor analysis can be used and thus results in Table 2 above can be used for the next stage. The inadequate scores KMO is likely due to the limited number of samples.

In the second stage those factors that have been identified in table 2 above were used together with non-financial variables to predict fraud. Before the logistic

Table 3
Scores Kaiser-Meyer-Olkin (KMO) and Bartlett Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.382
Bartlett's Test of Sphericity	Approx. Chi-Square	143.753
	df	55
	Sig.	.000

regression analysis was done, values of factors (constructs) were calculated as the sum of multiplication between loadings and their associated variables. In this way, there are five equations to calculate the construct as shown below.

F1 = 0,946.X2 + 0,928.X3

F2 = 0,953.X1 + 0,954.X5

F3 = 0,919.X9

F4 = 0,808.X4 - 0,626.X7 + 0,578.X10

F5 = -0.8. X6 + 0,741.X11

The results of the association are then used in the logistic regression analysis. There are three logistic regression models that were tested. The first model displays only the nonfinancial variables. The second model displays only financial variables. The third model contains the variables combined financial and non-financial. The results are shown in Table 4 below.

In the first model it appears that the variable age (= long time have registered to go public in BEI / JSX) and the type of industry to have a significant effect on the tendency (probability) of fraud. This finding suggest that in the early moments of a company' entered into the capital markets it will likely comply with capital market regulations. In addition, fraud levels seem to be different among industries. This indicates that the risk factors vary.

In the second model , F2 (= profitability) is the only variables that have a significant effect. It is logical that the more healthy (profitable) the company is the less likely the company commits fraud. Non-compliance with the rules of the capital market tends to happen in companies that suffered losses. The interesting thing about the results of the two models is that, while in the second model there is only one variable that has significant influence but hit-ratio level is higher than the first model (95.2 vs. 72.4). Other indicators, such as -2Log, Negelkerke R-square, and Chi-Square are consistent with the conclusion that the second model is more fit than the first model. Is this a sign that the financial indicators have the ability to explain the dependent variable more? To answer the question direct comparison

between both groups of variables were done by using those groups of variables in the same model.

The third model contains both groups of variables, the financial and non-financial variables. Results obtained are rather unexpected since no significant effect was found. There is a possibility that both groups was used, one group of variables would "undercut" (suppressed) the effect of the other groups. One other possibility is because the sample size is limited then the degree of freedom (df) becomes inadequate (due to the number of independent variables multiply while the amount of data is only 29). To clarify this matter an additional analysis that can reduce the number of independent variables (reducing the number of factors / financial variables) would be beneficial.

Table 4
Results of Logistic Regression Analysis

	Model (1)		*Model (2)*		*Model (3)*	
Variabel	*koef.*	*Sig.*	*Koef.*	*Sig.*	*Koef***	*Sig.*
F1			0,750	0,713	20,693	0,996
F2			-74,269	0,085*	-1000,108	0,995
F3			-2,627	0,233	-12,683	0,999
F4			-3,034	0,304	6,145	1,000
NF5			-0,075	0,256	-0,152	1,000
Umur	0,154	0,045*			1,984	0,999
BigFour	-2,149	0,148			-104,049	0,998
Industri	-0,229	0,05*			-4,088	0,998
Kom	-1,124	0,353			-48,273	1
Konstan	-0,395	0,738			-	-
Hit ratio	72,4%		95,2%		100%	
-2Log	28,999		6,898		0	
Negelkerke R-square	0,427		0,867		1	
Chi-square	11,78		21,784		29,112	

Additional Analysis

Although the above studies using financial variables (X1 to X11) are the same as the variables used in the study Mironiuc et al (2012), the procedure and the variable groups that was eventually used in the analysis are different from that used in the research Mironiuc *et al.* Additional analysis is done to mimic entire variables finally used in Mironiuc at al. (2012), namely X2, X3, X4, X9, and X11 only. Unfortunately, simplification of eleven to five variables are not described in detail in Mironiuc *et al.* (2012). Results of additional analyzes factor analysis are shown in Table 5.

Table 5
Loading of Each component (factor)

	Component	
	1	*2*
X2	–5.676E-02	.634
X3	.957	–8.603E-02
X4	.625	.270
X9	.971	–9.552E-02
X11	9.726E-02	.750

By using criteria eigenvalue of each factor of at least 1, then the factor analysis yielded two factors, each with a value of 2,262 Aigen (component / factor 1) and 1, 053 (component / factor 2). The visual proximity of each variable with two components (factors) illustrated in Figure 2 below.

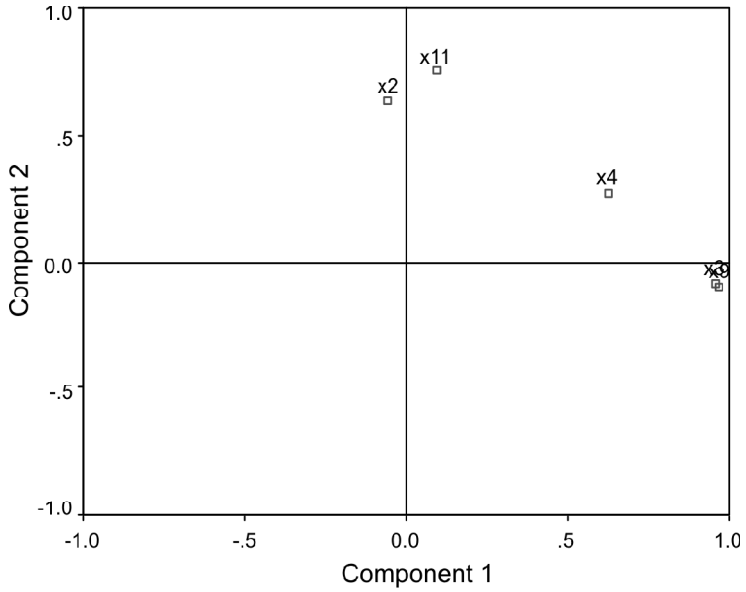

Figure 2: Position Proximity Each Variable With Each Component

In Figure 2 it seems clear that the X2 and X11 closer to Factor 2, while the X3, X4 and X9 closer by a factor of 1. This result looks different than the results contained in Mironiuc et al. (2012), especially concerning the X2 and X9. Therefore, the name of the financial constructs used in Mironiuc et al. (2012) also (ASC and FRC) can not necessarily be used in this research.

As with the steps in the previous analysis, both factors are combined with the non-financial variables into a logistic regression model (see model 2). The results

are shown in Table 6 below. Although these results are different from the conclusions contained in the research Mironiuc *et al.* (2012), the results reinforce the results of the model (1) in Table 4 in this research.

Table 6
Logistic Regression Analysis Results Supplement

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	UMUR	.178	.103	3.005	1	.083	1.195
	BIGFOUR	-3.100	2.011	2.376	1	.123	.045
	INDUSTRI	-.290	.142	4.199	1	.040	.748
	KOM	-1.726	1.539	1.258	1	.262	.178
	Fak1	-.038	.493	.006	1	.939	.963
	Fak2	-.759	.549	1.916	1	.166	.468
	Constant	-.119	1.437	.007	1	.934	.888

a. Variable(s) entered on step 1: UMUR, BIGFOUR, INDUSTRI, KOM, FAK1, FAK2

Results presented in Table 6 show that the fraud could be explained by the tendency of the age (length of time has gone public, with alpha = 10%) and industry (with alpha = 5%). While both financial factors (Fak1 and Fak2) does not have significant influence. The percentage of the forecast accuracy (hit-ratio) model in Table 6 above was 76%. To further assure outcomes associated with Fak1 and Fak2, the author modified the model to include only variable Fak1 and fak2 (same as in Mironiuc at al, 2012). The results remain consistent that Fak1 and Fak2 do not have a significant effect.

CONCLUSION

This study sought to uncover the influence of factors ASC, FRC, and NFM against the risk of fraud. Researchers hope that the results of testing this hypothesis would be useful to examine the external validity of research Mironiuc at al. (2012) and also a member of empirical evidence on the strength of two construct Mironiuc research at al. (2012), the ASC and FRC, when compared with the NFM. Practitioners (auditor) will get a benefit from this research as it will be able to identify fraud risk more systematically as required by PSA 04 (SA 230).

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