The Financial Crisis Impact on Firm Performance, Financial Decision and Corporate Governance of Indonesia Listed Firms

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Abstract. The purpose of this study is to investigate the impact of global financial crisis on firm performance, financial decision and corporate governance of the Indonesian listed firms. The financial data are retrieved from Reuters Data stream and annual reports for 212 firms over the period 2003-2013. Hence, the data is a balanced panel data with 2332 observations. The impacts of the financial crises on the research variables are tested using a special two-way cell-means (ANOVA) model of each of the research variables by Time-Period, and Sectors. The factor Time-Period (TP) has three levels, namely before, during and after crises, respectively and the factor Sector has two levels; Manufacturing and Service sectors respectively. The findings of cell-mean parameter show that market performance (TOBINS_Q) is lower during crisis period compared to before and after crisis period, indicating the mean parameters are significantly greater than its mean during the crisis period for both sectors. Meanwhile, accounting performance (ROA) appears to have lower mean parameter during crisis period compared to after crisis. However, based on the coefficient of firm performance, the impact of financial crisis is more on the market performance and less on the accounting performance. The findings also show that investment is lower during crisis period compared to before and after crisis period, while leverage is lower during crisis compared to before crisis period for both sectors. Interestingly, the results show that financial crisis had no impact on dividend per share, while free cash flow and corporate governance are less impacted by the financial crisis. This study extends the current understanding of firm performance, financial decision and corporate governance by providing new empirical evidence of the impact of financial crisis by sector.

Keywords: Firm performance, financial decision, corporate governance.

1 INTRODUCTION

The global financial crises occurred at the end of 2007 had caused economic crises with no exceptions to developed and developing countries, that have changed the shape of the world economy. The crisis changed the global economy generally, and it especially affected the financial market in developing countries. Specifically, the financial crisis most affected the stock market performance in emerging economies, such as Indonesia and Malaysia and others [1]. In Indonesia, the impact of the global financial crisis was seen in the economic decline in some sectors; the crisis fall-out at the end of 2008 caused the rate of interbank loans to increase. Besides, the growth of Indonesian companies for all sectors had declined during the crisis, in which the most sectors impacted by the crisis are manufacturing, plantation, mining (oil and gas), constructions and trade sectors.

The uniqueness of Indonesia during financial crisis 2009 was recorded relatively high and positive economic growth compared to its neighbouring countries such as Singapore, Malaysia, Thailand and Philippines which has the highest decline in the economic growth [2]. Even though it showed positive growth, the global financial crisis caused weakening exports and tightened up the financial market and global liquidity. Hence the exports-oriented companies falling and in turn influencing the consumption and investment, so definitely the crisis affected Indonesian companies in all sectors, while the manufacturing sectors have suffered the most from the crisis in terms of retrenchments [3].

Even though the worldwide economy has been recovered from the crisis, it should reconsider how the Indonesian listed companies increase their capability to cope with the declining the firm performance, financial decision such as investment, financing and dividend policy during the financial crisis [4] [5]. Past studies documented that firms faced financial constraints and it is difficult to access the external fund to finance their investment, thus investment will tend to decline during the crisis period. Hence, firm with higher cash could mitigate declined the investment, and thus it can alleviate underinvestment problem when the cost of external finance is higher. In this case, the internal fund is considered the most important for financing investment as compared to the external funds [6]. However, the firms rely extensively used bank-credit during the crisis. Accordingly, revealed that investment declined during financial crisis caused by the change of investment opportunities, for financially constrained firms with firm low cash reserves or high net short-term debt prove to be the greatest decline [4].

On the other hand, regard to dividend policy and corporate governance, it appears that Indonesian firms has concentrated ownership structure with family firm as the most dominant business structure that pays lower dividend [7], even though the number of dividend payers is increased amidst the growing number of listed firms, in which the mean of dividend payout ratio was 32 percent for the period 2008 to 2012 [8].

Even though there are many competing explanations that have been offered, only few studies that focused on the financial crisis impact on firm performance, financial decision behavior and corporate governance in different manner [5] [4] [9]. Moreover, those studies do not focus on time variations (before, during and after) financial crisis by sector. Hence, this study is motivated by the issue to investigate the extent of financial crisis impact on firm performance, financial decision, free cash flow and corporate governance of Indonesia listed firms by sector and time-period

2 LITERATURE REVIEW

The financial crisis affects Indonesian companies in all sectors, and especially manufacturing firms is most suffered. There are few studies that focused on the financial crisis impact on firm performance, investment, capital structure, dividend policy and corporate governance have been documented [4] [5] [10] and others. Dolenc et.al [11] examined the effects of the global financial crisis on ROE, found that the global financial affect ROE negatively. Also, Akbar et.al [5] and Zeitun et.al [12] found financial crisis has a negative impact on accounting performance.

Investment is a transaction that increases the amount of real aggregate wealth in the economy, generally by buying new real fixed assets for production purposes. The value of firm is determined by investment decision [13], despite in perfect capital market, investment decision is independent of capital structure, in which external funds serve as a perfect replacement for internal capital [14]. In response to the financial crisis and investment of Indonesia companies, it is revealed that the crisis is related to demand shock and financing constraints. The crisis might condense firms which are more likely to abandon investment decision. Past studies has shown that investment declined over these crisis periods [4] [5]. In the meantime, Bo [15] also found that the financial crisis affected the corporate investment negatively, whereas state controlled firms were less. Moreover, financial distress also affects investment in a different manner, depending on investment opportunities available in the firms [16]. On the other hand, the real effect of financial constraints during crisis has affected the chief financial officers (CFOs) to cut more investment in the US, Europe and Asia [17]. Moreover, the companies rely extensively on the credit provided by the bank during the crisis [18].

Capital structure is one of the most important financial decisions, whether to finance its investment by debt or equity. Firms with a higher leverage ratio indicate that firms suffer from agency costs, which is the cost due to the conflict of interest among the agents [19]. Higher leverage will subject firms to certain risks, especially when managers do not manage them wisely, leading to the increase in costs. The effect of financial crisis on capital structure has been developed in past studies [4] [5] [20], the results shown that the crisis has negatively affected the capital structure of the firms. Then they suggested that the level of leverage decreased due to costly external financing and credit supply shock. Furthermore, Akbar et.al [5] suggested that the flow of credit to these firms was reduced during the financial crisis period in UK private firms.

Studies on financial crisis and dividend policy still limited. Akbar et.al [5] examined the effect of financial crisis on dividend payout, found that financial crisis is positive and adversely affect dividends payout. This implies that the private firms did not scale back shareholders distributions during crisis period. Moreover, Pathan et.al [21] examined financial constraints and dividend policy for US listed firms during period 1989 to 2012, founds that constrained firms show worse stock market reaction to new equity issue announcement following dividend increase. Conversely, constrained firms increase dividends during the financial crisis period. Besides, Floyd et.al [22] pointed out the staying power dividend payout follows the free cash flow explanation for industrial firms.

The free cash flow defines how much cash is available in corporations after financing new investment in positive net present value [23]. Excessive free cash flow may cause managers to over-invest by undertaking new investment with negative NPV value, instead of distributing cash dividends to shareholder [19] [23]. The agency conflict between owners and managers

can mitigate through raised debt and dividend payments. However, cash holding as a hedging effect depends on the corporate governance system and risk awareness.

The characteristic of corporate governance in Indonesia is unique, where high concentrate ownership structure and companies escorted by family members. Moreover, In Indonesia, the corporate governance system adopts the two-tier board system, i.e. Board of directors (BOD) and Board of commissioners (BOC), in which the BOC's role is to take care of shareholders' interests and is to control the BOD. The global financial crisis is predicted to have an impact on corporate governance. The financial crisis has awakened investors to the fact that they need protection for their investment. Moreover, there are various empirical researches that have highlighted the global financial crisis impact on corporate governance [24] [25]. Accordingly, small board is better compared to large board in terms of the efficiency and effective decision making [26].

According to the above explanations, further elaborates the sets of hypotheses which are representatives of the objectives of this study, namely, to identify the impacts of the global financial crisis on the firm performance, investment, leverage, dividend policy, free cash flow and corporate governance with the general hypotheses as follows:

$H1$:   *The global financial crisis (time-period) has impacts on the research variables by sectors.*

Thus, the sub-hypotheses for H1 are constructed as follows:

H_{11}:   *The mean of each research variables during crisis are lower than before the crisis for manufacturing sectors.*

H_{12}:   *The mean of each research variables during crisis are lower than after the crisis period for manufacturing sectors.*

H_{13}:   *The mean of each research variables during crisis are lower than before the crisis period for the service sectors.*

H_{14}:   *The mean of each research variables during crisis are lower than after the crisis period for the service sectors.*

H_{15}:   *The effect of Time-Period (TP) on the research variables depend on SECTOR.*

3 METHODOLOGY

This study employ yearly of 212 listed firms for the period from 2003 to 2013. The financial data are retrieved from Thomson's Datastream and annual reports. Hence, this study has an annual observation of over than 11 years period per company, producing a balanced panel data of 2332 observations. This study used numerical variables to measures dependent variables; the firm performance measures based on two perspectives, namely accounting-based measure and market-based measure (ROA and TOBIN'S Q) [27]. Moreover, financial decision measured by investment, leverage, dividend per share (DPS) and free cash flow (FCF). Lastly, because of Indonesian companies adopted two-tier board system, then this study using board size (B_SIZE) and board of independent commissioners (B_ICOM). The independent variable are generate or define a nominal dichotomous variable, namely SECTOR with two levels: Manufacturing and Services, and three levels of ordinal variable TIME-PERIOD (TP): before crisis, during crisis and after crisis. ROA is defined as the ratio of net profit divided by total assets. TOBINS_Q is the ratio of market value of equity plus book value of the total debt divided by the book value of total assets each firm and years.

Meanwhile, investment is calculated as log natural of total asset at the time/year t divided by total assets in the previous year (t-1). This measure has been employed by. This study defines leverage as the ratio of total debt to total asset. Dividend per share is the total amount of dividends paid to the total of share outstanding. The FCF is measured as the operating FCF minus interest and dividends payment scaled to book value of total assets, in order to eliminate any size effect.

The simplest way to study the impact of the global crisis on firm performance, financial decision, free cash flow and corporate governance is to study the means differences of each research variable between the three levels of the time-period (TP). Therefore, we have to study and test the hypotheses on the differences of each research variable between two or more cells or groups generated by the two factors, SECTOR and TIME-PERIOD (TP), using a two-way cell-means (ANOVA) model. Thus, the two independent samples t-tests are inappropriate to be applied. Then, at least the means and variances differences of each research variable over the three time-periods can show the degree of impacts of the global financial crisis by sectors. There are several alternatives of the two-way cell-means models presented in Agung [28]. Thus, the model applied in this study has a specific equation as follows:

$$Y \quad C \quad @Expand(Sector,@Drop(2))$$
$$@Expand(Sector)*@Exp \ and(TP,@Drop(2)) \tag{1}$$

Additionally, its statistical results using Eviews will present the following equation.

$$Y_{it} = \ C(1)+C(2)*DS1+C(3)*DS1*DTP1+C(4)*DS1*DTP3$$
$$+C(5)*DS2*DTP11+C(6)*DS2*DTP3+[CX=R] \tag{2}$$

where *Yit* can be ROA, TOBIN'S Q, Investment, Leverage, Dividend per share (DPS), free cash flow (FCF), and two corporate governance; board size (B_SIZE) and Board of independent commissioners (B_ICOM) of firm i at time t, $C(1) = \beta 0$ is the cross-section random variable, DS1 and DS2 are the dummy variables of (Sector=1) and (Sector=2), respectively, DTP1 and DTP3 are the dummy variables of (TP=1) and (TP=3), and the term [CX=R] indicates the error term of the cross-section random effect model. Therefore, in this study, the following six cell-means applied. Moreover, note that the dummy variable of the level (TP=2) is not used in the model, since it will be used as the reference group.

In addition, for the testing hypothesis, Table 1 presents the mean parameters of Y by SECTORS and TP based on the cell-mean model (2), for all numerical research variables, where TP=2 is selected as the reference group, for the Manufacturing and Service sectors.

Table 1. Parameters of the two-way ANOVA model (2) for each research variable by time-period (TP) and Sector

	TP=1	TP=2	TP=3	TP(1-2)	TP(3-2)
1. Manufacturing	C(1)+C(2)+C(3)	C(1)+C(2)	C(1)+C(2)+C(4)	C(3)	C(4)
2. Service	C(1)+C(5)	C(1)	C(1)+C(6)	C(5)	C(6)
Difference-in-Differences (DID)				C(3)-C(5)	C(4)-C(6)

4 RESULTS AND DISCUSSION

The testing hypotheses on the impact of financial crisis on the firm performance (ROA and TOBINS_Q), financial decision (INVESTMENT, LEVERAGE, DPS, FCF) and corporate governance (B_SIZE and B_ICOM) by SECTOR and TP=time-period (before, during and after the global financial crisis) based on the two-way cell-mean (ANOVA) model (3.2) are summarized and presented in Table 2. Column (1) presents the F-statistic for testing the joint effects of SECTOR and TP on each of the research variables, or the impacts of financial crisis on each of the research variables by SECTOR. The results show that the impacts of financial crisis (TP) by SECTOR on all of the research variables are significant, except for B_SIZE. Column (2) to (5) present the t-statistic for testing the four one-sided sub-hypotheses on the means of differences of each variable between pairs of the time-periods (TP=1 & TP=2) and (TP=2 & TP=3). In column (6) presents the F-statistic for testing the fifth sub-hypothesis $H_{15.}$

In Table 4.1, the results show that the mean of ROA during crisis is indeed greater than before crisis for both the manufacturing and service sectors. This implies that the mean parameters of ROA for the period after crisis is significantly greater than its mean parameter during the crisis period at 1 percent level of significance. This results support the alternative sub-hypothesis H_{12} and H_{14} respectively. It can be concluded that the level of ROA during crisis is higher compared to before crisis and to have lower than after crisis period for both sectors. These findings are in line with the study carried out by Dolenc et.al [11], who found that the firm performance was lower during the crisis period. Similarly with and Akbar et.al [5] founds that financial crisis has a negative impact on firm performance (ROA).

While comparing to market performance, the mean parameters of TOBINS_Q before and after the crisis (TP1 & TP3) are greater than its mean during crisis period (TP2). TOBINS_Q is indeed lower during crisis period compared to the other periods. This means the data support the sub-hypothesis H11 and H_{12} respectively. Similar results with the service sectors, which show that the means parameters of TOBINS_Q before and after the crisis are also greater than its mean during the crisis period. Thus, the data support the alternative sub-hypotheses H_{13} and H_{14} because of the fact that TOBINS_Q is lower during the crisis period for both manufacturing and service sectors. This implies that the financial crisis affects the market performance significantly. This finding is in line with past studies [1] who suggested that financial crisis affected stock market performance. This finding is also consistent with Zeitun and Saleh [12] who found that Tobin's Q is significantly affected by the financial crisis.

The results of the means differences of investment before and after crisis are greater than its means during crisis for manufacturing sectors. These results suggest that the level of investment before and after crisis is significantly higher than its mean parameter during crisis. Hence, it can be concluded that the data supports the sub-hypotheses H_{11} and H_{12} specifically for manufacturing sector. Similar results are found for service sectors, however, only the sub-Hypothesis H14 is accepted, in which the mean parameter of investment after crisis is significantly greater than during the crisis. Hence, the data support the theoretical prediction that investment is lower during crisis period than after crisis period. These results suggest that financial crisis impacted investment for both sectors and it seems to be significantly higher after the crisis period. This finding is in line with (Duchin [4]; Akbar et.al [5]; Gupta et.al [25] who reported that investment declines during the financial crisis. Campello [17] also proposed that investment is reduced during the crisis period caused by the credit crisis in 2008. Then, Dolenc [11] also pointed out that the financial crisis affects the investment significantly, which suggests that the investment of private companies declined during the crisis period.

Table 2. Summary of the testing hypotheses on the cell-means parameters of all research variables based on two-ways ANOVA models

VARIABLE		SECTOR=1 (Manufacturing)		SECTOR =2 (Service)		SECTOR*TP
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Coefficient t-Statistic	F-test (Joint ffect)	$\mu(11) > \mu(12)$ C(3) > 0	$\mu(13) > \mu(12)$ C(4) > 0	$\mu(21) > \mu(22)$ C(5) > 0	$\mu(23) > \mu(22)$ C(6) > 0	DID F-Stat./Df
ROA	17.0390***	-0.0173 -2.743	0.0209 (3.1969)***	-0.0093 -0.8173	0.0378 (3.2156)***	0.8517 (2, 2326)
TOBINS_Q	17.0519***	0.0765 (2.7833)***	0.2075 (7.2882)***	0.0966 (1.9512)**	0.2106 (4.1111)***	0.0971 (2, 2326)
INVESTMENT	7.9916***	0.0227 (1.5176)*	0.0733 (4.7419)***	0.0063 0.2329	0.0728 (2.6151)***	0.2601 (2, 2326)
LEVERAGE	27.7402***	0.0254 (2.9784)***	-0.0392 -4.4521	0.0489 (3.1905)***	-0.0316 -1.9925	1.1457 (2, 2326)
DPS	11.8171***	-0.0135 -0.8738	0.073 (4.5762)***	-0.0041 -0.1492	0.021 0.7308	3.0895 (2, 2326)**
FCF	5.45031***	-0.0104 -1.1426	0.0111 1.1823	-0.0305 -1.8588	0.0259 (1.5273)*	2.7181 (2, 2326)***
B_SIZE	0.6302	0.063 0.5116	-0.0231 -0.1817	0.184 0.8306	-0.045 -0.1962	0.2768 (2, 2326)
B_ICOM	26.1371***	-0.046 -6.6024	-0.0047 -0.652	-0.0398 -3.1734	0.0364 (2.7990)***	5.8937 (2, 2326)***

Notes: The *t* and *F* statistics in parentheses with ***, **, * denotes significant at 1, 5 and 10 percent level, respectively. Sector=1 is manufacturing sectors and Sector=2 is service sectors. TP=1 is before crisis, TP=2 is during crisis and TP=3 is after crisis. $\mu(ij)$ is the mean parameter of Y for Sector=i and TP=j. DID is difference-in-differences of the mean parameters. C(1) to C(6) are the model parameters. Investment measured by natural logarithm of growth total assets, leverage measured by total debt to total assets, DPS is Dividend per share, FCF is Free Cash Flow, B_SIZE is total number of Board of directors, B_ICOM is total number of Board of independent commissioners over total number of BOC.

Moreover, the mean parameter of leverage before crisis is significantly higher than its mean during crisis for manufacturing and service sectors. This result reveals that leverage is lower during the crisis period compared to before crisis. Thus, the data only support the sub-hypothesis H11 and H13. These findings suggest that the financial crisis has an impact to the financial leverage of Indonesian listed companies, where the leverage appears to be lower during the crisis period compared to before crisis. Nevertheless, it seems to decrease after the crisis period where the decreasing mean parameters of leverage after the crisis period serves as the result of the financial crisis impact. It could be that the Indonesian firms find it difficult to access external finance and limited credit from bank sector during these periods. This result is consistent with prior studies, for instance [4] [5] who suggested that financial crisis has an impact on firm leverage.

In addition, the interesting finding is the mean difference of dividend per share (DPS) is indeed higher after crisis for both sectors. However, only for manufacturing sectors has the mean parameters of DPS after crisis are significantly greater than its mean parameter during

the crisis period. In other hand, DPS is higher during the crisis period compared to before crisis period. Therefore, the data support the sub-hypothesis H_{12} only. This finding is in line with the previous studies, who found that financial crisis has a positive and significant impact on dividend. Similar study conducted by found that the mean comparison of the dividend payout ratio is higher during the crisis compared to pre and post-crisis periods. The finding also suggests that the financial crisis is positive and significantly impacts the dividend payout ratio. Moreover, the mean difference of the free cash flow (FCF) is less significant, its shows the parameter of FCF is significantly higher than its mean parameter during crisis for service sectors only. In other words, FCF during crisis is lower than after crisis. Hence, the data only supports the fourth sub-hypothesis H_{14}. Lastly, the mean differences of corporate governance, which is B_SIZE and B_ICOM, seem to have less impact of financial crisis for both sectors. The results show that only the mean parameter of B_ICOM is significant after crisis period, this indicates that the mean parameter of B_ICOM is greater than its mean parameters during crisis. It can be said that the data accepted sub-hypothesis H_{14}.

Furthermore, the results of the interaction effect of time-period and sector on the research variable presented in Table 4.1 column (6), show that the data supports the sub-hypothesis H_{15} for only three out of the eight research variables, namely the variables DPS, FCF, and B_ICOM. In other words, the impact of financial crisis (TP) on DPS, FCF, and B_ICOM are significantly depends on SECTOR, or the *Difference-in-Differences (DID)* of the means of DPS, FCF, and B_ICOM by SECTOR and TP are significant.

5 CONCLUSION

This paper investigates the extent of the global financial crisis impact on firm performance, financial decision and corporate governance in a sample of 212 non-financial Indonesian listed firms over the period 2003 to 2013 which this study has an annual observation of over than 11 years period per company, producing a balanced panel data of 2332 units for the data analysis. The regressions of two-way cell mean results provide strong support to the firms to increase their capability to cope with the declining the firm performance, investment and leverage during financial crisis. Thus, the finding of the testing hypotheses on the cell-mean parameters of research variables reveals that the mean parameters of market performance (TOBINS_Q), investment and leverage are statistically significant mean differences. This indicates that those are lower during the crisis period compared to before crisis. Meanwhile, ROA, TOBINS_Q, investment and DPS appear to have significant mean differences impact, indicating that these mean parameters after crisis period are greater than during the crisis period, or it can be said those are lower during the crisis period compared to after crisis period, conditional for manufacturing sectors. Comparing to the service sector, the results show that TOBINS_Q and leverage only have significant mean differences between before and during crisis period. Moreover, firm performance seems to have significant mean differences between during and after crisis period, indicating that the mean parameters of ROA and TOBINS_Q are statistically higher than the mean parameters during the crisis period, which is similar to manufacturing sector. Furthermore, investment, FCF and B_ICOM were indicated to have significant mean differences, suggesting that those mean parameters were lower during the crisis period. This study extends the current understanding of firm performance, financial decision and corporate governance by providing new empirical evidence of the impact of financial crisis by sector.

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