

**BONDING MECHANISM OF FREE CASH FLOW TO FINANCIAL
PERFORMANCE**

WORKING PAPER

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First draft: 6 December 2005

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Abstract

Financial crisis in Asia dispersed along the continent and struck Indonesia as well. Many firms in Indonesia suddenly showed financial distress that aggregated by their obligation on debt. Along with financial distress problem, is the problem with decreasing rate of investment opportunity. Agency theory argued that decreasing rate of investment opportunity will lead to expropriation of cash flow and or free cash flow of the firms by managers. Expropriation of cash flow will hurt firm value as well as shareholders wealth. The research focused on sensitivity of free cash flow to financial performance before and during crisis as a bonding mechanism of management self interest behavior. The research argued that as management decrease shareholders wealth, then sensitivity of free cash flow to financial performance will increase during crisis. The paper used factor analysis to compose a composite score for financial performance proxy, ordinary least square for regression analysis, and Wald test to test the sensitivity of free cash flow magnitude to financial performance. The composite score will reduce the lagging process result from the nature of point in time data (financial report) versus period of time data (stock market report). The result showed support for the hypothesis that shareholders will increase their sensitivity to free cash flow during crisis, to bond and monitor the management perquisites activities. The bonding mechanism for free cash flow will tighten and loosen when the investment opportunity sets change by economics shock (financial crisis period). The result also showed significant support for decreasing rate of investment opportunity sets during crisis.

Keywords: performance, free cash flow, agency, investment opportunity

1. Introduction

Conflict of interest between shareholders and managers is the central analysis of agency theory research in which managers have authority of firm operations instead of shareholders who only have cash flow right (Berle and Means, 1932; and Jensen and Meckling, 1976). The analysis argues that managerial authority is a primary determinant of the extent of agency problems between management and shareholders, which has important implications for firm valuation.

The managers who control corporate assets can potentially expropriate shareholders wealth by diverting resources for their personal use or by committing funds to unprofitable projects that provide private benefits. By diverting resources

for private benefit, controlling managers have the opportunity to increase their current wealth or perquisites consumptions without bearing the full cost of their actions.

A firm's value reflects the collective judgment of the shareholders' expectations of its future cash flows. This paper argues that financial crisis in Asia will affect the expropriation of firm value by managers. Financial crisis in Asia dispersed along the continent and struck Indonesia as well. Many firms in Indonesia suddenly showed financial distress that aggregated by their obligation on debt. Along with financial distress problem, is the problem with decreasing rate of investment opportunity. The paper argues based on Agency theory perspective that decreasing rate of investment opportunity in crisis period will lead to expropriate of cash flow and or free cash flow of the firms by managers. Expropriation of cash flow will hurt firm value as well as shareholders wealth. The research focused on sensitivity of free cash flow to financial performance before and during crisis. The research argued that because of hurting shareholders wealth then the sensitivity of free cash flow to financial performance will increase during crisis as a bonding mechanism from shareholders' control mechanism.

2. Theoretical Framework and Hypothesis Development

Jensen and Meckling (1976) argued that separating of ownership and control caused an agency conflict. The conflict occurred between managers versus shareholders, which corrupted firm value. The self-interest behavior is the main issue to be explained by agency theory (Jensen and Meckling 1976). The manager's interests must align with shareholders' interests in order to minimize the agency conflict. Their analysis suggests that the proportion of equity controlled by insiders should influence the firm's policies. Value of the firm will be delicate on account of the agency conflict, and support by Jensen and Meckling (1976) that financial performance of the firm will also be affected by the agency conflict. The research describe financial performance, as the proxy of agency conflict, and refer to the composite value of financial report performance and market performance.

Meanwhile, in the late 90s, Eisenhardt (1989) argue that there are two paradigms of agency conflict, those are: (1) positivist agency theory and (2) principal-agent research. Positivist agency theory explains the conflict between principal and agent while principal-agent research elaborates the conflict between parties in the firm (principal versus principal, principal versus customers, etc). Majority of empirical research in Indonesia based on positivist agency theory rather than principal-agent research (Mahadwartha, 2004).

Ownership structure becomes a major field of study in agency theory especially for the bonding and monitoring mechanism (Jensen, Solberg and Zorn, 1992; Morck, Shleifer and Vishny, 1988; McConnell and Servaes, 1990; and Holderness, Kroszner, and Sheenan, 1999). Empirical research in Indonesia regarding the issue of ownership and control are Mahadwartha (2002a); Mahadwartha (2002b); Mahadwartha and Hartono (2002); Mahadwartha (2003); Tandelilin (2003); and Mahadwartha (2004). Majority of findings in Indonesia support bonding and monitoring mechanism through debt and dividend policy. Shareholders will bond and monitor management through third party (debtors) and dividend policy. Mahadwartha (2004) used 1995 until 2002 period of analysis, support the argument that investment opportunity before crisis is higher than during crisis. Crisis expropriated opportunity for firms to invest in profitable projects, meanwhile creditors demanded firms to fulfill obligations on debt and other liabilities.

Wei (1999) drawing on a number of different agencies, shows that Indonesia is close to the bottom of the list of Asian countries in terms of corruption. Meanwhile, Johnson, Boone, Breach, and Friedman (2000) find that country with strong legal protection experienced less exchange rate depreciation and stock market declines during Asia crisis than did countries with weaker legal protections. Transparency international, a non government organization (NGO) focused on corruption and transparency, reported that Indonesia is a country with significant amount of corruption (rank 122 in 2003 and 133 in 2004). The findings support the argument from Johnson, Boone, Breach, and Friedman (2000) that Asia countries especially oil producer countries have a weaker legal protection.

The paper focused on expropriation of cash flow by management during crisis, and induces more concern of shareholders to their cash flow right. During crisis management, with regards of decreasing of investment opportunity set (Mahadwartha, 2004), will have more incentive to expropriate cash flow of the firm for their personal use. The investment opportunity set (IOS) argument tested by Mahadwartha (2004) and found statistically significant differences of IOS before and during crisis. His result support the research to continue in testing the sensitivity of free cash flow to financial performance during and before crisis.

In supporting the argument of increase sensitivity of free cash flow to financial performance during crisis than before crisis, the paper also argue that shareholders knows the increasing power of manager to expropriate free cash flow when crisis strike, and they conduct a better monitoring and bonding mechanism. This process will increase the sensitivity of shareholders wealth (proxied by financial performance) to free cash flow of the firm. Thus, the hypothesis can be stated as *the sensitivity of free cash flow to financial performance during crisis is larger than before crisis*.

3. Methods of Analysis

Samples are non-manufacturing firms in Jakarta Stock Exchange (JSX) with period of analysis 1995 to 2002. 158 firms and 1264 observational years were collected and pool data were used to analyze the factor analysis (composite score), ordinary least squares (OLS) regression with White Heteroskedasticity-Consistent Standard Errors and Covariance, and coefficient test (Wald Test). Data collected from JSX, Indonesian Security Market Database Gadjah Mada University (ISMD GMU), and Indonesian Capital Market Directory (ICMD).

3.1. Variables

Performance (PFY): Composite value as the proxy for financial performance is conducted by utilizing factor-analysis approach used in Mahadwartha (2004). Factor analysis will generated composite value of financial performance based on several variables. The composite score will reduce the lagging process result from

the nature of point in time data (financial report) versus period of time data (stock market report). Market report performance proxies are yearly basis stock return adjusted with dividend (t_{-1} and t_{+1}) and proxies for financial report performance are Q modified (Chung and Pruitt, 1994), return on equity (ROE), return on assets (ROA), and earnings per share (EPS):

$$R_{-1} = \frac{P_{-1} - P_{-2} - D_{-1}}{P_{-2}}$$

$$R_{+1} = \frac{P_{+1} - P_0 - D_{+1}}{P_0}$$

$$Q = \frac{(\text{Market value equity} + \text{Preferred stocks} + \text{UT})}{\text{Total assets}}$$

$$\text{UT} = (\text{Debt coverage interest} - \text{Current assets})$$

$$\text{ROE} = \frac{\text{Net Income}}{\text{Book value equity} - \text{Preferred stocks}}$$

$$\text{ROA} = \frac{\text{Net income}}{\text{Total assets}}$$

$$\text{EPS} = \frac{\text{Earnings}}{\text{Outstanding stocks}}$$

Free Cash Flows (FCF): The paper used Hackel, Livnat, and Rai's (1996) measurement of FCFs with discretionary methods divided by total assets.

$$\text{FCF} = \frac{\text{TFCF} + \text{DOCO} + \text{DCEX}}{\text{Total Assets}}$$

$$\text{TFCF} = (\text{OCR} - \text{OCO}) - \text{CEX}$$

$$\text{OCR} = \text{operating cash inflows}$$

$$\text{OCO} = \text{operating cash outflows}$$

$$\text{CEX} = \text{capital expenditures}$$

$$\text{DOCO} = (\text{OCO growth} - \text{sales growth}) * (0,2 * \text{OCO})$$

$$\text{DCEX} = (\text{CEX growth} - \text{cost of goods sold growth}) * \text{CEX}$$

$$\text{OCO growth} = (\text{OCO}_t - \text{OCO}_{t-1}) / \text{OCO}_{t-1}$$

$$\text{Sales growth} = (\text{Sales}_t - \text{Sales}_{t-1}) / \text{Sales}_{t-1}$$

$$\text{CEX growth} = (\text{CEX}_t - \text{CEX}_{t-1}) / \text{CEX}_{t-1}$$

$$\text{Cost of goods sold growth (COGS)} = (\text{COGS}_t - \text{COGS}_{t-1}) / \text{COGS}_{t-1}$$

Crisis Period (DC): dummy crisis uses 1997 cut-off period or 1995 – 1997 as before crisis (DC = 0) and 1998 – 2002 as crisis period (DC=1).

3.2. Statistical Test

The analysis utilizes the Ordinary Least Square (OLS) and Wald-test to examine the differences of coefficients among parameters (Greene, 2000: 153). Test of heteroscedasticity using White's will be conduct to increase the robustness of OLS model. Statistical model is as follow:

$$PFY = \alpha_i + \gamma_{11}DC + \gamma_{12}FCF + \gamma_{13}DCFCF + \varepsilon_1$$

Note:

α , and γ are coefisient of parameter; ε is residual

4. Results

Table 1 showed the result from data fit test. Bartlett and Kaiser-Meyer-Olkin test shows Chi-square of 1,234.544 and KMO of 0.685 which indicates that the model is statistically fit (rule of thumb 0.5). It is supported by Chi-square Goodnees of Fit test of 1253.45. The model statistically appropriate to compose a composite score.

Table 1: Kaiser-Meyer-Olkin (KMO) and Bartlett test

1264 observations from 158 non manufacturing firms listed in Jakarta Stock Exchange

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.685
Bartlett's Test of Sphericity	Approx. Chi-Square	1253.45 ***
Df		15

Composite value derived from factor analysis will be used as endogenous variable and the proxy for financial performance of the firm. Factor analysis derived only one component weight for each variables (Table 2).

Table 2: Component Score Coefficient Matrix

6 variables as proxies for market and financial performance

Variable	Component Weight
R ₋₁	0.04604
R ₊₁	0.05832
Q	-0.16378
ROE	0.36781
ROA	0.39566
EPS	0.35886

Score factor for each observation as proxy for performance derived from equation:

$$PFY_i = 0.04604 * R_{-1i} + 0.05832 * R_{+1i} + -0.16378 * Q_i + 0.36781 * ROE_i + 0.39566 * ROA_i + 0.35886 * EPS_i$$

4.1. Descriptive Statistics

Table 3 shows a decrease in financial performance when crisis strike Indonesian firms, meanwhile free cash flow (FCF) increase during crisis. The research tested sample mean before and during crisis, and found statistically significant differences of variables before and during crisis.

Table 3. Descriptive Statistics Performance and Free Cash Flow

1995 – 1997 = before crisis (DC = 0) and 1998 – 2002 = during crisis (DC = 1). There are total 1264 observations from 158 firms listed in Jakarta Stock Exchange.

Variable	DC	N	Mean	F	t
PFY	0	474	0.11290	82.90217 ***	3.120 ***
	1	790	-0.06774		
FCF	0	474	-0.06980	15.37442 ***	-13.825 ***
	1	790	0.03680		

***) 1%; **) 5%; and *) 10% significant level

Preliminary result suggests an increase in FCF occur when most of Indonesian firms have less investment opportunity (Table 6) and give the managers the opportunity to expropriate shareholders wealth. The expropriation of FCF decreased financial performance of the firm as predicted by agency theory. The test indicates that both variables show agency conflict based on agency theory perspective. Agency theory argues that increase level of FCF will increase performance in the absent of agency conflict. The F test for equality of variances shows significant for both variable and also t test for equality of means.

4.2. Analysis of Regression and Wald Test

Table 4 showed Ordinary Least Square (OLS) regression with White Heteroskedasticity-Consistent Standard Errors and Covariance. The regression result showed significant support for preliminary descriptive analysis. Crisis period negatively affect the performance of Indonesian firms (-0.341756) and supported by descriptive analysis. During crisis almost all firms in Indonesia especially listed firms have a financial problems. Financial distress sunked financial performance and hurt shareholders wealth.

Table 4: Ordinary Least Square Regression

1264 observations from 158 firms listed in Jakarta Stock Exchange. DC = dummy crisis period, FCF = free cash flow, and DCFCF = interaction between crisis and free cash flow. OLS regression also tested using White Heteroskedasticity-Consistent Standard Errors and Covariance

Variable	Coefficient	Standard Error	t
α	0.181689	0.034049	5.336040 ***
γ_1 DC	-0.341756	0.055075	-6.205339 ***
γ_2 FCF	0.985406	0.212913	4.628198 ***
γ_3 DCFCF	1.523497	0.450419	3.382398 ***

***) 1%; **) 5%; and *) 10% significant level

Free cash flow has a positive impact on performance (0.985406) as predicted by Agency theory. Higher FCF will lead to higher performance and increase shareholders wealth. Interaction coefficient showed a positive value, and supports the hypothesis that the sensitivity of FCF to performance during crisis is higher than before crisis. Table 5 showed test result regarding interaction effect using Wald test of coefficient. The null hypothesis for Wald test is $H_0: \gamma_2 = \gamma_2 + \gamma_3$.

Table 5: Sensitivity test of FCF to performance

Wald test used to test the differences between coefficient interaction and FCF; $\gamma_2 = \gamma_2 + \gamma_3$

Test Statistic	Value	df
F-statistic	11.44061	(1, 1260) ***

***) 1%; **) 5%; and *) 10% significant level

The Wald test result showed a support for hypothesis that sensitivity of FCF to performance during crisis is higher than before crisis. Knowing the investment opportunity decrease during crisis, shareholders suggest that FCF should be increase and probability for managers to expropriate it should also be increases significantly. In Table 6 the decreasing investment opportunity sets (IOS) supported by significant differences between before and during crisis of IOS.

Table 6: Investment Opportunity Sets before and during crisis

Proxy of IOS is Investment to Sales (I/S) with 1264 observations from 158 firms listed in Jakarta Stock Exchange.

Variable	DC	N	Mean	F	t
IOS	0	474	0.261085	104.7142 ***	10.34505 ***
	1	790	0.063774		

***) 1%; **) 5%; and *) 10% significant level

5. Conclusion and Discussion

Expropriation of FCF will decrease shareholders wealth and dismissed the opportunity for higher performance in the future. As equity analysis argues that future value have a significant impact on value of the firm rather than current or past value. Divert resources for private benefit, managers have the opportunity to increase their current wealth or perquisites consumptions without bearing the full cost of their actions.

The result supported the argument that financial crisis in Asia will affect the expropriation of firm value by managers. As a result of increasing probability of FCF expropriation, the sensitivity of FCF to performance significantly increases. The result also support that based on Agency theory perspective the decreasing rate of investment opportunity will lead to expropriate of free cash flow by managers. Expropriation of free cash flow will hurt firm value as well as shareholders wealth. By increase the sensitivity of FCF to performance, shareholders increase their bonding to managers perquisites on FCF.

The ultimate financial management challenge is to use free cash flows to invest in new business opportunities that build shareholder value. Every investment a firm makes, be it a standalone piece of equipment, a new plant, an acquisition or the business itself, should be evaluated accordingly. It is important that growth improve free cash flows, which has to take into account additional investments in working capital and capital expenditures required to support the growth. Managing for free cash flows and shareholder value creation are management's fundamental responsibility to increase shareholder value. This requires increasing the net present value of the future stream of cash flows by investing in profitable project therefore increase the investment opportunity sets.

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