

CORPORATE FINANCING BEHAVIOUR AND VULNERABILITY IN INDONESIA

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Abstract

The chapter examines the financing behaviour of listed companies in Indonesia, in order to understand the micro evidence of the economic vulnerability based upon firm-level data. The findings show that there is an indication of the gearing effect phenomenon in which debt-equity ratio decreases with profitability. In such a case, firm would have higher probability not only of failing to make a return to equity holders but also failing to meet interest cost obligations. In macro sense, the high probability of firm insolvency would lead economy to the financial fragility which could easily be ended in financial crisis. However, the findings also demonstrate that listed firms in Indonesia were trying to match their debt-maturity with their asset maturity. But this strategic action was taken by big firms. Small firms tend to have limited choices in their financing strategy.

Keywords: debt maturity, corporate governance, financial crisis

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1. Introduction

In summary, the objectives of this chapter are twofold. First, investigate firm-specific and country-specific factors inducing corporate debt and debt-maturity structure in Indonesia. Second, examine whether and how financing policies change following a financial crisis. This chapter considers a balance-sheet approach in the analysis by concerning with the debt-maturity and maturity-matching behaviour of listed companies in Indonesia. Maturity matching is important by which firms should match the maturity structure of their assets with the maturity structure of their liabilities. Furthermore, the concern of this chapter resides in the corporate financing behaviour and financial fragility in the context in which financial liberalization and crisis.

Since financial liberalization and globalization, emerging countries have lifted barriers on capital movement and the impact is that emerging countries received huge capital inflows through banking system and financial market. In other way, firms in emerging countries became active players in global financial markets by which they can access easily debts in foreign currencies and in short-term maturities. Therefore, capital account liberalization enhances opportunities to growth. However, it also leads to financial crisis.

In such a global financial system, the role of the financing policies of the firms becomes central. Many studies show that Asian crisis was rooted in the bad private sector's financing behaviour. Alba, Hernandez, and Klingebiel (1999) show that in the case of Thailand, financial crisis was fundamentally caused by private debt, and that financial liberalization was the main reason for this. Dadush, Dasgupta, and Ratha (2000) point out that half of all new loans from international banks in the period preceding the crisis had maturities of one year or less, and the volume of short-term debt grew fastest in East Asia.

In this chapter, our analysis focuses, especially, on debt maturity and maturity-matching of the firm financing behaviour, in order to understand a firm fragility in Indonesia. More generally, we are also concerned with the debt-equity ratio in order to understand whether firms in Indonesia prefer debt rather than equity in financing their operation, in pre- and post-crisis period. We argue that evidences on the firm-level financing behaviour become a pivotal contribution in understanding of the root of the 1997 financial crisis in Indonesia.

Our analysis could be divided into three sections. First, it provides empirical evidence on the determinants of debt-equity, debt-maturity and internal-external choice of finance. Second, we

analyse macro and institutional specific factors inducing firm financing behaviour due to an assumption that firm financing choice may be influenced directly by macro and institutional factors. Third, we describe the different behaviour of financing choices in pre- and post-crisis period in order to understand whether financial crisis change the firm behaviour.

Many studies show that the 1997 Asian crisis is propagated by weak micro fundamental system, such as the risky financing policies of the firms. Maturity-mismatch hypothesis demonstrates that financial fragility of the country is caused by the financing behaviour of the firms in which debt maturity is high and has no matching with their asset-maturities.

The contribution of this study is to provide analysis of firm financing policies in the context of financial crisis led by financial liberalization in Indonesia. Very limited work has been done to delineate real effect of liberalization on firm level capital structure (Schmukler and Vesperoni, 2001). They further explain that there is a need to establish the link between conscious promotion of financial sector liberalization and its influence on firm level dynamic of capital structure in developing countries. However, instead of studying the impact of financial liberalization on firm capital structure, we are interested in the impact of financial crisis, as a structural break, on the behaviour of financing choices. Therefore, this study is expected to contribute on the debates of the relation between financial sector condition and firm level policies in developing countries.

We intend to describe how the debt-equity, maturity matching and the choice of internal and external finance have being happened in Indonesia during the period of study, namely 1994 - 2004. We use financial ratio data provided by Jakarta Stock Exchange (JSX) and Indonesian Capital Market Directory from ECFIN, a private company, as a basic sample, which contains 244 firms. Panel data analysis is employed in this study.

2. Debt Behaviour and the Crisis

2.1. Debt Maturity and Maturity Matching

Modigliani and Miller (1958) on his famous statement on the irrelevance of finance on investment decision suggest that the choice between debt and equity or the choice between debt in short and long maturity would not be important in determining firm value.

Meanwhile, alternative view of finance convinced that financing policies do matter on investment decision. Therefore, they give much attention on the choice of the sources of finance in supporting investment activities. Myers (1984) accentuates the important of the financial sources by saying, "We know very little about capital structure and we do not know how firms choose the debt, equity or hybrid securities they issue". The question of which source of fund will be employed by firms for

financing their activities become a puzzle that could not be understood easily.

Meanwhile, there are several theories explaining the financing choice, especially debt maturity choice, such as agency cost hypothesis (Jensen and Meckling 1976; Myers 1977), signalling hypothesis (Flannery 1986; Diamond 1991), contracting-costs hypothesis (Myers 1977), maturity-matching hypothesis (Emery 2001; Morris 1976), and tax hypothesis (Brick and Ravid 1985).

Starting with the seminal work of Jensen and Meckling (1976) and Myers (1977), there was an argument that the suboptimal incentive effects of debt financing can be controlled by a variety of contracting mechanisms, including the use of short-term debt and restrictive covenants. According to these works, the use of these contracting mechanisms is argued to be more important for high growth firms than other choices, since these firms are more likely to face stockholder-bondholder conflicts. Lang, Ofek and Stulz (1995) support this argument.

In Jensen and Meckling (1976), in line with the argument of Berle and Means (1932), we can find the explanation that the separation between ownership and control motivates managers to allocate resources to projects that do not clearly benefit the shareholders, or alternatively they may pursue personal objectives. This argument, which is referred as agency theory, describes that if managers have discretion to choose debt maturity, they will prefer using long-term debt in order to avoid frequent monitoring by the debt market or lenders, and also because managers are concerned with minimize risk in order to prevent the firm getting into financial trouble that can imperil their jobs (Friend and Lang, 1988).

Meanwhile, Stohs and Mauer (1996) predict that a firm lengthens its debt maturity as leverage increases in order to offset the higher probability of liquidity risk and to delay exposure to bankruptcy risk. Therefore, leverage is expected to be positively related to debt maturity. They also argue that larger firms, less risky firms with longer term of asset maturities, prefer to use long-term debts. On the other hand, Myers (1977) suggests that the agency cost of under-investment can be mitigated by reducing leverage, or by shortening debt maturity. Titman and Wessels (1988) provide evidence that smaller firms issue more short-term debt than larger ones. Barclay and Smith (1995) found that larger firms have more long-term debt in their capital structure. Stohs and Mauer (1996) describe that debt maturity is negatively related to firms abnormal earning and directly related to asset maturity.

Guedes and Opler (1996) describe that a firm that finances its project with short-term debt will have risk a serious difficulty if the debt cannot be extended. Despites, a firm that finances its activities with long-term debt can sacrifice profits by needlessly risking mismanagement of resources after cash flows are returned from investment, but before they are due to debt-holders. Mitchell (1991) demonstrates that firms

facing high degree of asymmetric information choose shorter debt to minimize adverse selection costs. Inversely, She finds there is no support to the hypothesis that firms choose the maturity of debts issues to match their asset maturities.

This chapter is paying attention on the maturity-matching hypothesis in which firms try to match the maturity of assets with that of liabilities. Emery (2001) argues that firms avoid the term premium by matching the maturity of their liabilities and assets. Hart and Moore (1994) confirm matching principle by showing that slower asset depreciation means longer debt maturity. Morris (1976) argues that firms try to match the maturity of assets and liabilities because this reduces the risk that incoming cash flows might be insufficient to cover interest payments and capital outlays. Debt with shorter maturity than the maturity of assets is risky because the assets might not have yielded enough profit to repay the debt. Debt with longer maturity than the maturity of the assets is also risky because debt might have to be repaid after the assets have caused to yield income. Consequently, firms try to match the maturities of assets and debt.

Matching maturity of assets and liabilities can reduce the agency costs of debt by: (i) helping to re-establish the appropriate investment incentives when new investment is required; (ii) allowing firms to extend their debt maturity without increasing the agency costs of debt; (iii) reducing the severity of asset substitution because tangibility is an inverse proxy for the severity of asset substitution; (iv) controlling for risk and costs of financial distress; and (v) helping firms with their cash flow problem (Myers, 1977; and Antoniou et al., 2005).

Myers (1977) argues that the underinvestment problem can be mitigated by the matching principle. Firms can schedule their debt repayments in accordance with the decline in future value of assets-in-place. Therefore, matching maturity of assets and liabilities can reduce the agency costs of debt. In this case, we expect a positive relationship between debt maturity and asset maturity.

This chapter engages in the financing choice of the firms by focusing on the debt-equity choice, maturity choice or maturity-matching behavior, and internal-external choice of finance.

2.2. Financing Behaviour in Indonesia

There is a common understanding that financing policies of the firms have propagated macro economic vulnerability around Asian countries, including Indonesia. In many previous researches, it is shown that the rapid growth and high investment of firm-level sector in Asian region was financed by high risk leverages, mostly in short-term foreign debts, that corroborates macro economic vulnerability and financial fragility (Pomerleano 1998; Claessens *et al.* 2000; Booth *et al.* 2001; Allayannis *et al.* 2003).

There is also a good deal of anecdotal evidence suggesting that the lack of corporate governance was

significant in generating a deep and long-lasting crisis in the South East Asian economies in the late 1990s (Driffield *et al.* 2005). Meanwhile, Harvey and Roper (1999) argue that the crisis was heightened by the extra risk exposure that Asian managers induced by their leverage policies. They add that corporate managers "bet" their companies by taking greatly increased leverage in the face of declining profitability. In addition, much of the debt was foreign denominated.

In Indonesia, the absent of good corporate governance practices is commonly blamed as one of the most important factor triggering financial fragility, and then financial crisis. Most firms borrow in short-term maturity of debts for financing their long-run projects, so that they had high "maturity mismatch risk". To be worse, most lending was denominated in foreign currencies by which "currency mismatch risk" was born. In such a vulnerable micro economic condition, Indonesia's economy became highly risk from the external shocks. It is therefore evident why the 1997 currency depreciation could destabilize Indonesia's economy, which has had a fairly good macro economic performance.

This chapter deals with the behavior of the firm financing policies by comparing firm with foreign majority ownership and local one. We are also interested in how foreign-owned enterprises (FOE) are different with local ones in their financing behavior. In this chapter, we argue that financing choice of the firms is pivotal strand of corporate governance practices. We define corporate governance, in broader definition, as a constraint mechanism in decision making dealing with the organizational resources⁴. We therefore argue that firm capital structure choice in the financing policies decision is a pivotal element of corporate governance.

Indonesian private-sector big business and finance have been dominated by family-owned business groups, almost all of Chinese ancestry (Mackie, 1990)⁵. Nonetheless, Indonesian business groups' "Chineseness", and their history of relations with the government (politicians and bureaucrats), make this a highly sensitive matter. Anti-Chinese Indonesian violence in spring 1998 accelerated the flight of capital, both human and financial, out of the country (Patrick, 2001).

Meanwhile, credit market is characterized by related-bank credit in which firms can access easily short-term borrowing without enough collateral. Business groups (conglomerates) were allowed to

⁴ We follow the definition of Corporate Governance proposed by, for example, Lazonick and Sullivan (2000); Charreaux (1997). Lazonick and Sullivan (2000) define corporate governance as a decision-making mechanism inducing resource distribution in organization, and Charreaux (1997) describe as an organizational and institutional mechanism that constraint power and influence the discretion of manager.

⁵ Most of them were extraordinarily close to the Soeharto government and his family.

establish the commercial banks to serve the needs of other corporations within the group⁶. It is therefore true that relationship-based system (i.e. business group and conglomeration) accompanied by weak corporate governance in the liberalized capital market without adequate financial supervision becomes a dominant characteristic of the pre-crisis business environment in Indonesia.

In a predominantly bank-centred environment, firms more prefer to borrow short-term debt at negotiable rates, and roll over the loans usually in every six months with any negotiable conditions. In term of tax system, since 1984 interest paid on borrowings in the form of bank loans and overdrafts and other forms of credit is deductible from corporate income as a business expense. Furthermore, in line with the spirit of financial liberalization, local firms could borrow directly to overseas lenders through the issuance of promissory notes without reporting it to the Indonesian central bank or Bank Indonesia. This is the reason why Indonesian firms had large amounts of foreign-currency debt that were not officially recorded to the monetary authority.

Furthermore, since protection of long-term investment such as insurance system was relatively weak, foreign lenders more prefer to delivery credit in short-term debts. The structural or institutional environment of country therefore becomes a major source of the governance practices of the firms. In this chapter, we focus on the ownership characteristic as one important factor of institutional context of the behavior of the firms.

Meanwhile, before crisis hit in the mid of 1997, discourses on corporate governance in Indonesia were almost absent if not neglected. Crisis has disclosed issues around corporate governance and exposed them as one of the most important problems in recent Indonesia⁷. In the debate, ownership structure and ownership characteristic get to be one of pivotal issues. Many studies disclosed that family and state hold dominantly the ownership structure of the firms around Asian countries⁸. Following Table 3.1 shows the family concentration in several Asian countries. Indonesia has a highest concentrated firm measured

by top 15 families among other countries in Asian region. In Japan with *'keiretsu'* (2.8 percent) and Korea with *'chaebol'* (38.4 percent) business system have a much less concentrated-ownership than in Indonesia with *'konglomerat'* (61 percent) business model. According to Table 3.1 Indonesia and Thailand could be referred as countries with high concentration ownership structure.

Concerning to efficiency of judicial system, Indonesia has a lowest level, whereas for the corruption index, Indonesia is the worst. Concentration of family control is one side. In other side, Indonesia was also a country with high corruption and very low efficiency of judicial system. These characteristic of business environment could be cited as a dominant institutional business context in Indonesia.

Family concentration often is achieved through complex cross shareholding and pyramiding of companies. In any case, the owners appoint and control the two-tiered Board of Commissioners and Board of Directors, and top management, and are involved in all key business decisions (Simanjuntak, 2001 and Husnan, 1999).

Influenced by Dutch legal system, Indonesia has a “dual-tiered system” of corporate governance. It means that there is a separation between managers and directors or commissioners. Commissioner is representation of shareholders. Pre-crisis corporate governance system was characterized as an absence of supervision to the manager decision. Commissioners did not work. The relation between board of directors (commissioner board), managers and owners (shareholders) would contribute to the corporate governance system. In this case, corporate governance system is identified by the financing policies of the firms.

We examine the financing choice of the firms by three important proxies, namely debt-equity ration, debt-maturity and internal-external choice of finance. The behavior of corporate finance is, however, a resultant of simultaneous factors. In this research we consider several specific firm and macro economic factors as variable controlling directly the capital structure choice. However, political influence should also be important factor, but it is not examined in our study. This following Figure 3.1 show the relation of several variable examined in this research.

⁶ See study of Claessens *et al* (1998)

⁷ In the aftermath of the 1997 crisis, there were several organisations which are concerned with corporate governance, such as NCGC (*National Committee on Good Governance*) which produces the independent commissioners and audit committee's code of conduct, IICG (*Indonesian Institute for Corporate Governance*) which launches the 'Corporate Governance Perception Index' (CGPI) for listed-companies in Jakarta Stock Exchange (JSX), FCGI (*Forum on Corporate Governance in Indonesia*) which designs the tools of assessment for companies' CG practices, IICD (*Indonesian Institute of Corporate Directorship*) which has a major activity on CG training, and many others.

⁸ See for example, Claessens, et.al., 1998b. Who Control East Asian Corporations?, *mimeo*, The World Bank, Washington DC.

Table 3.1. Family Concentration

Country	Average Number of Firms per Family	% of total market capitalization that families control			
		Top 1 Family	Top 5 Families	Top 10 Families	Top 15 Families
Hong Kong	2.36	6.5	26.2	32.1	34.4
Indonesia	4.09	16.6	40.7	57.7	61.7
Japan	1.04	0.5	1.8	2.4	2.8
Korea	2.07	11.4	29.7	26.8	38.4
Malaysia	1.97	7.4	17.3	24.8	28.3
The Philippines	2.68	17.1	42.8	52.5	55.1
Singapore	1.26	6.4	19.5	26.6	29.9
Taiwan	1.17	4.0	14.5	18.4	20.1
Thailand	1.68	9.4	32.2	46.2	53.3

Source: Claessens, Djankov, Lang (1999)

Table 3.2. Institutional Factors

Country	Concentration of Family Control (Top 15)	Efficiency of Judicial System	Rule of Law	Corruption
Hong Kong	34.4	10.00	8.22	8.25
Indonesia	61.7	2.50	3.98	2.15
Japan	2.8	10.00	8.98	8.52
Korea	38.4	6.00	5.35	5.30
Malaysia	28.3	9.00	6.78	7.38
The Philippines	55.1	4.75	2.73	2.92
Singapore	29.9	10.00	8.57	8.22
Taiwan	20.1	6.75	8.52	6.85
Thailand	53.5	3.25	6.25	5.18

Source: Claessens, Djankov, Lang (1999)

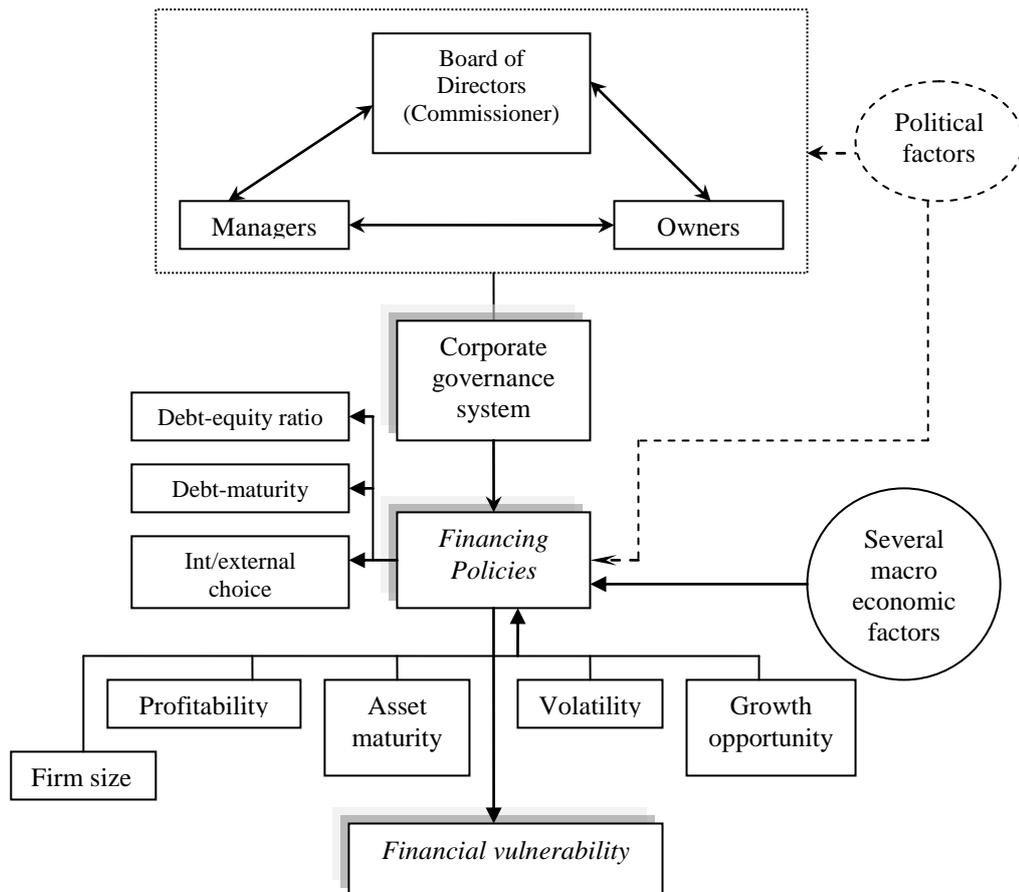


Figure 3.1. Governance System and Vulnerability

Note: dashed line represents indirect effect, solid line for direct effect and dashed-dot line as a critical zone of corporate decision making or the central mechanism in governance system

Source: author

3. Data and Methodology

3.1. Data

Data used in this study is mainly sourced from Jakarta Stock Exchange's (JSX) database and also the Indonesian Capital Market Directory, provided by ECFIN, a private company. The accounting data covers the period 1994-2004 containing firm ratio data with at least 4 consecutive years. In this study, we exclude the financial sector, since the debt structure of banks and investment institutions is not comparable to those of firms in other sectors. It is about 244 firms for the period 1994 – 2004. Since this chapter is concerned with the different period of time, we divide study into two principal different periods: pre-crisis period (1994 – 1996), and post-crisis period (1999 – 2004).

3.2. Simple Model

For regression we use a simple model for panel data. Definition of each variable, both independent and dependent variables, are described below (Table 3.3). We use ordinary least square (OLS), fixed-effect and random-effect model for analyzing the panel data of firm-level financial ratio.

The equation for multivariate analysis is written as follows.

$$Y_{it} = \beta_0 + \beta_1(Size)_{it} + \beta_2(Pfit)_{it} + \beta_3(AsstMat)_{it} + \beta_4(Vola)_{it} + \beta_5(M/B)_{it} + \beta_6 X_t^{macro} + \nu_t + \varepsilon_{it} \quad (1)$$

where:

α is intercept; i is 1 to 244 firms; t is 1 to 11 years. β_1 to β_6 are coefficients to be estimated, ν_t is time-specific effect; and ε_{it} is white-noise. Dependent and independent variables are describes in table 1 as follows.

Table 3.3. Definition of variables

Dependent Variables

1	<i>Debt-equity ratio</i>	Total debt deflated by total equity
2	<i>Debt-maturity</i>	Long-term debt deflated by total debt
3	<i>Internal-external financing choice</i>	Retained earning deflated total debt

Independent Variables

Firm Specific Factors

1	<i>Size</i>	Natural logarithm of total assets in constant (2000) local price (Rupiah)
2	<i>Profitability</i>	Earning before interest and tax deflated by total assets
3	<i>Asset Maturity</i>	Ratio of fixed assets to total assets

Continued

4	<i>Volatility</i>	Natural logarithm of the standard deviation of the first difference in earning before interest and tax.
5	<i>Growth Opportunity (M/B)</i>	Market value of equity deflated by book value of equity

Macro & Institutional Factors

1	<i>Inflation</i>	$\frac{WPI_t - WPI_{t-1}}{WPI_{t-1}}$, where WPI is wholesales price index
2	<i>Capital Market Development</i>	$\frac{Stockvalue}{GDP_N}$
3	<i>Real GDP growth</i>	$\frac{Y_t - Y_{t-1}}{Y_{t-1}}$ where Y is nominal gross domestic product
4	<i>Ownership dummy</i>	1 for firms with more than 50% of foreign ownership participation and 0 otherwise

4. Findings and Discussion

4.1. Factors Determining Financing Policies Behavior in Indonesia

We estimate the relation between dependent variables, namely debt-equity ratio, debt-maturity, internal – external choice of finance and two groups of

explanatory variables, namely firm specific factors and macro factors. In firm specific factors, we include asset maturity, size, profitability, volatility and growth opportunity of the firm. Asset maturity represents the ratio of fixed-asset to total asset. Size is measured by logarithm of total assets. Firm profitability is proxied by the ratio of earning before interest and tax (EBIT) and total asset. Meanwhile, volatility is logarithm of

the deviation of the first difference in earning before interest, tax and depreciation. And opportunity of growth is measured by the ratio of market value of equity and book value of equity.

We also include ownership dummy to measure the ownership effect on the behavior of firm financing. We differentiate firms into those with majority foreign ownership and otherwise. Then, ownership dummy is constructed as 1 for firms with more than 50 percent foreign ownership participation and 0 for otherwise. The issue of ownership is central in corporate governance field, since it should

influence directly the strategic decision making of managerial teams, such as capital structure choice.

Despite firm specific factors, this chapter also considers some macro variables as important factors influencing firm financing behavior. We include inflation, real GDP, and the ratio of market capitalization to nominal GDP. The latter variable is included to measure the degree of domestic financial development such employed by Demirguç-Kunt and Levine (1999).

Table 3.4. Descriptive statistic for key variables (1994 – 2004)

	Mean	Median	Std Dev	Min	Max	Skewness	Kurtosis	Observation
Debt-equity ratio	0,6702	0,5939	0,5553	-0,9128	9,5033	5,6711	64,6959	2425
Debt maturity	0,2993	0,2119	0,3047	-0,2327	4,7485	2,2322	23,4291	2424
Internal-external finance	0,1559	0,1157	3,5974	-150,0812	34,9117	-29,7711	1267,9800	2421
Asset maturity	0,3863	0,3557	0,2975	0,0002	7,4128	7,8699	158,9109	2424
Size	22,5052	22,4817	1,4169	17,4572	26,1059	-0,1832	2,9956	2426
Profitability	0,0141	0,0366	0,2067	-2,6181	2,2396	-2,2859	30,3808	2391
Volatility	19,2273	19,3222	1,9742	12,0205	24,0573	-0,4223	3,2404	2144
Growth opportunity	1,0060	0,7416	3,4651	-74,5800	23,9278	-7,5833	164,4704	2123

Table 3.5. Factors Determining Debt-Equity Ratio

	Dependent variables: Debt-equity ratio		
	<i>Pooled OLS</i>	<i>Fixed-Effect</i>	<i>Random-Effect</i>
<i>Asset Maturity</i>	-0,0096 (0,0363)	-0,0763 (0,0396)	*** (0,0335)
<i>Size</i>	-0,0527 *** (0,0103)	-0,1601 *** (0,0242)	*** (0,0112)
<i>Profitability</i>	-1,1319 *** (0,0532)	-0,5964 *** (0,0619)	*** (0,0488)
Continued			
<i>Volatility</i>	0,0970 *** (0,0074)	0,0305 *** (0,0099)	*** (0,0070)
<i>Growth Opportunity</i>	-0,0114 *** (0,0031)	-0,0095 *** (0,0034)	*** (0,0027)
FOE Dummy	-0,0631 ** (0,0303)	-0,0003 (0,0861)	** (0,0370)
Inflation	-0,1008 *** (0,0398)	0,0440 (0,0443)	*** (0,0348)
Real GDP	0,0260 ** (0,0132)	0,0313 ** (0,0145)	*** (0,0115)
Capital Market Development	0,0423 (0,0688)	0,2574 *** (0,0769)	*** (0,0603)
constant	0,0433	3,6799 ***	*** 0,5574

	(0,1772)	(0,5398)	(0,2135)
Number of Observation	2084	2084	2084
R-Squared	0,3068	0,223	0,2853
F-test		2,75 ***	
Breusch and Pagan Lagrangian multiplier test			121,6 ***
Hausman specification test		127,77 ***	

*, **, *** denote significance at the 10, 5 and 1 percent levels, respectively, Standard deviation is reported in parentheses

Table 3.4 shows summary statistics of the firm-level data. Internal-external finance variable is one which has highest deviation of data. Growth opportunity and asset maturity are also variables with high deviation. As firms in relatively unstable countries, mean volatility is relatively high (19.227), and mean for firm profitability is relatively low (0.0141). Meanwhile, the mean ratio of debt into equity is also high (0.6702) in all period of study.

Claessens et al. (2001) show data of the median ratio of debt to equity during 1988 – 1996 among countries. Indonesia has 1.951 percent debt-to-equity ratio, which is higher than Malaysia (0.908) and the Philippines (1.129), but lower than Thailand (2.008). According to this study, firms in Korea were the most highly leveraged, followed by Thailand and Indonesia. Furthermore, it is also shown that most companies in East Asian countries ranked below those in European and Latin American countries in their share of long-term debt (Claessens, et al. 2000). In other words, firms in East Asian countries were more exposed to the short-term debts, than firms in both, European and Latin American countries. Pomerleano (1998) shows that the debt-equity ratio in Asian firms, particularly Thai and Korean, were substantially larger than those in Latin American firms.

During period of crisis (1997 – 1998)⁹, debt-equity ratio augmented and reached the peak in 1998. Meanwhile, profitability dropped significantly in the period of crisis, especially in 1998. At that time, exchange rate depreciates sharply from 4,950 IDR/1 USD in December 1997 to 15,000 IDR/1 USD in June 1998. At the same time, to cope with the high currency depreciation, monetary authority in Indonesia or Bank Indonesia hiked interest rate into 70.44 % on August 1998. In such a huge crisis, most firms in Indonesia were technically collapse¹⁰.

Table 3.5, 3.6, and 3.7 present the baseline of econometric results of the pooled OLS estimates, Fixed-Effect and Random-Effect estimates. The

Ordinary Least Square (OLS) provides the basic multivariate correlation embedded in the data. This technique is criticized since the estimations do not control for unobservable characteristics that could be biasing the estimated coefficients. Fixed-Effects estimation procedure corrects some discrepancies by controlling some of these unobservable characteristics. However, Fixed-Effects (FE) estimation neglects all the cross-sectional variation. And for this issue, Random-Effect (RE) estimates are considered to fulfill the tasks.

For selection procedures, we use three tests, namely F-test for choose whether OLS is better than FE or otherwise, Breusch and Pagan Lagrangian multiplier (LM) test for choosing the option between OLS and RE, and Hausman test to choose whether FE or RE has better estimations.

As shown in the below of Table 3.5 for the estimation of debt-equity ratio, F-test rejects the null hypothesis for OLS, so it prefers to FE estimation. LM test also rejects the null hypothesis, which means that, in this case, RE is, *a priori*, better than OLS. Then, we still have two options, FE and RE. By Hausman test, we are shown that FE is better than RE, since the null hypothesis is rejected. Accordingly, for the estimation of debt-equity ratio, we prefer to use the results of FE estimates in our analysis.

As Table 3.5 shows, in total period of study (1994 – 2004), debt-equity ratio is negatively related to asset maturity. It means that for firms with higher debt, it should have less fixed-asset. In other words, we can say that higher debt-equity ratio means less asset-maturity. It may be that firms listed in Jakarta Stock Exchange (JSX), in general, do not use their debts to finance the investment activities in fixed asset, but it may that firms access debt for financing current inventories for supporting their production activities. It also could mean that the demand of credit from non-tradable sector firms is higher than those of tradable sector.

Table 3.5 describes that debt-equity ratio is negatively related to firm size. Since we employ logarithm of total asset (in constant price) as a proxy for firm size, we can say that firms with higher debts are those with small assets. Or small firms usually have bigger debts. It indicates the firm vulnerability, since small firms should be weaker than big firms in their capacity to repay debts, especially if the great fluctuation is present. Some theories predict that firm size should be increased with debts. Fama and Jensen

⁹ Generally, after July 1999 Indonesia can be considered as a country in post crisis-period. It is debatable, but at least it could be argued that since 1999 macro economic conditions were relatively stable, in term of inflation, exchange rate and interest rate. In July 1999, for example, due to the strengthening of economic condition, Bank Indonesia down-graded the interest rate into 13.8 %.

¹⁰ Some studies show the collapse of corporate sector due to crisis in East Asian region, such as Schmukler and Vesperoni (2001), Claessens et al. (2000).

(1983a) argue that larger firms tend to provide more information to lenders than smaller firms. Therefore, larger firms tend to have a higher capacity to borrow than smaller ones. In our case, it is inversely happened where size is negatively related to debts.

There is also a negative relation between debt-equity and firm profitability. This sign shows that firms having high debt are those having small profitability. It also means that unprofitable firms tend to borrow in excessive number. Rajan and Zingales (1995) argue that creditors prefer to give loans to firms with high current cash flow. Long and Malitz (1985) find also the positive relation between profitability and leverage. Wald (1999) even claims that profitability has the largest single effects on debt (assets) ratios.

In Table 3.5, it is also demonstrated that firm volatility, measured by logarithm of the standard deviation of the first difference in earning before interest and tax (EBIT), is positively related to debt-equity ratio. This evidence shows that firms with high volatile returns tend to have high debts. Volatility or business risk is a proxy for the probability of financial

distress and it is generally expected to negatively relate with leverage.

Growth opportunity, which is market-to-book value ratio, is negatively related to debt. Firms with low opportunity to growth have high level of debts. Myers (1997) argues that high growth firms may hold more real options for future investment than low growth firms. Firms with high growth opportunity may not issue debt in the first place and leverage is expected to negatively relate with growth opportunities.

Related to ownership issue, our finding shows that firm with majority foreign ownership is negatively related to debt-equity ratio. This means that firm with foreign ownership parties prefer to use equity rather than debt to finance their operation.

Macro factors, as expected, control the estimates. Real GDP is positively associated with debt-equity ratio. As predicted in many studies, in positive economic growth debt-level will be high. It is also supported by the evidence that capital market development is positively related to debt ratio.

Table 3.6. Factors Determining Debt-maturity

	Dependent variables: Debt-maturity					
	<i>Pooled OLS</i>		<i>Fixed-Effect</i>		<i>Random-Effect</i>	
<i>Asset Maturity</i>	0,2422	***	0,0487	*	0,1967	***
	(0,0214)		(0,0276)		(0,0212)	
<i>Size</i>	0,0652	***	0,0427	***	0,0683	***
	(0,0061)		(0,0168)		(0,0065)	
<i>Profitability</i>	0,0522	*	0,1180	***	0,0605	**
	(0,0314)		(0,0431)		(0,0303)	
<i>Volatility</i>	-0,0053		-0,0089		-0,0057	
	(0,0044)		(0,0069)		(0,0043)	
<i>Growth Opportunity</i>	0,0029	*	0,0028		0,0029	*
	(0,0018)		(0,0023)		(0,0017)	
FOE Dummy	-0,0501	***	0,0758		-0,0454	**
	(0,0179)		(0,0599)		(0,0207)	
Inflation	-0,0463	**	-0,0522	*	-0,0475	**
	(0,0235)		(0,0308)		(0,0217)	
Real GDP	-0,0059		-0,0078		-0,0057	
	(0,0078)		(0,0101)		(0,0072)	
Capital Market Development	-0,0919	**	-0,1273	**	-0,0953	***
	(0,0406)		(0,0535)		0,0377	
constant	-1,1219	***	-0,4794		-1,1717	***
	(0,1046)		(0,3757)		(0,1193)	
Number of Observation	2084		2084		2084	
R-Squared	0,1569		0,0508		0,1867	
F-test			1,83	***		
Breusch and Pagan Lagrangian multiplier test					259,89	***
Hausman specification test			77,53	***		

*, **, *** denote significance at the 10, 5 and 1 percent levels, respectively, Standard deviation is reported in parentheses

Table 3.6 demonstrates the estimation for debt-maturity or the ratio of long-term debt and total debt. We apply the some procedures for choosing which estimation is a priori better than others. By several tests, we conclude that fixed-effect is better than pooled OLS and Random Effect.

Debt maturity is positively associated with asset maturity. This evidence support the maturity matching hypothesis in which firms try to match their debt based upon asset. Size is also positively related to debt maturity. This means that firms tend to bigger firms tend to be favorable with higher maturity debts or long-term debt. Profitability is also positively related to debt maturity. More profit means higher maturity of debts. Growth opportunity has also positive correlation with debt maturity.

Table 3.6 also shows that firms with majority foreign ownership are negatively related to debt maturity. It means that firms owned by foreign parties tend to use short-term debt rather than long term debt. It may due to that firm with foreign ownership have more profitable units than local firms, so that they can easily access short-term debt for global financial institution.

Table 3.7 shows the estimation for internal and external choice of finance. Based upon tests for choosing the technique estimation, we prefer to use Random Effects. F-test lead us to choose OLS, but LM test show the rejection of null hypothesis which means we are supposed to prefer RE instead of OLS.

In this case, firms with bigger size tend to prefer internal finance rather than external finance. It is also demonstrated by the result of regression that firm with higher profit will choose the internal source of finance. Meanwhile, volatility is negatively related to internal-external choice. Thus, it means that firms with more volatile returns should choose external finance. Inflation and capital market development have positive relation with internal finance.

The findings in Table 3.7 for internal or external financing choice are basically supportive to the findings in Table 3.5 which shows the result of estimates for debt-equity choice. In Table 3.5 it is shown that size and profitability are negatively related to debt-equity choice. And in Table 3.6 these variables are positively related to internal choice. If in Table 3.5, big firms and profitable firms tend to use equity, the Table 3.7 supports the result in which they seem to be favourable with internal finance.

Table 3.7. Factors Determining Internal and External Choice of Finance

	Dependent variables: Internal-External finance				
	<i>Pooled OLS</i>		<i>Fixed-Effect</i>		
<i>Asset Maturity</i>	0,1889 (0,2824)		0,9601 (0,5591)	*	0,1889 (0,2824)
<i>Size</i>	0,2560 (0,0801)	***	1,4941 (0,3408)	***	0,2560 (0,0801)
<i>Profitability</i>	3,5063 (0,4133)	***	2,8348 (0,8726)	***	3,5063 (0,4133)
<i>Volatility</i>	-0,1130 (0,0579)	**	-0,0165 (0,1393)		-0,1130 (0,0579)
<i>Growth Opportunity</i>	-0,0197 (0,0238)		-0,0053 (0,0474)		-0,0197 (0,0238)
FOE Dummy	0,1055 (0,2358)		-0,4149 (1,2144)		0,1055 (0,2358)
Inflation	0,7050 (0,3094)	**	0,5820 (0,6253)		0,7050 (0,3094)
Real GDP	0,0457 (0,1026)		0,2248 (0,2040)		0,0457 (0,1026)
Continued					
Capital Market Development	0,9042 (0,5352)	*	0,6765 (1,0851)		0,9042 (0,5352)
Constant	-3,9082 (1,3778)	***	-33,9306 (7,6147)	***	-3,9082 (1,3778)
Number of Observation	2084		2084		2084
R-Squared	0.0464		0.0450		0.0645
F-test			0.47		
Breusch and Pagan LM test					26.72
Hausman specification test					***

*, **, *** denote significance at the 10, 5 and 1 percent levels, respectively, Standard deviation is reported in parentheses

4.2. Behaviour in pre- and post-crisis period

In this section, we are concerned with the change of behaviour in pre- and post-crisis period. We also focus on the firm-specific factors for gaining better results.

In pre-crisis period, debt-equity ratio is positively related to asset maturity, which means that more debt is more fixed-asset. Unfortunately in post-crisis period, the relation is not significant. Then we are not able to make some comparisons for the issue of the relation of debt equity ratio and asset maturity. However we can draw some comparison analysts between pre- and post-crisis period on the variables of size and profitability.

In pre-crisis period, debt-equity ratio is

positively related to size. But in post-crisis period, debt-equity ratio is negatively related to size. Both estimations are significant in 1 percent confidence level. It indicates that in post-crisis period, behaviour of financing policies of listed firms in Indonesia is not better than in pre-crisis period. In pre-crisis period, firms with higher debt are those with bigger size. But in post-crisis period, inversely, firms with higher debts are smaller firms.

The relation of debt ratio and profitability is consistent in before and after crisis. Firms with higher debts are those having small profitability, or higher debts means smaller profitability. This evidence is not change because of the eruption of crisis in 1997. In post-crisis period, firms do not change the behaviour of accessing debts.

Table 3.8. Result for Debt-Equity Ratio

	<i>Dependent variable: Debt-equity ratio</i>					
	Total Period		Pre-crisis		Post-crisis	
<i>Asset Maturity</i>	-0,0546	*	0,0373	***	-0,0209	
	(0,0336)		(0,0123)		(0,0742)	
<i>Size</i>	-0,0628	***	0,0473	***	-0,0536	***
	(0,0111)		(0,0094)		(0,0162)	
<i>Profitability</i>	-0,8921	***	-0,5600	***	-0,7987	***
	(0,0475)		(0,0977)		(0,0609)	
<i>Volatility</i>	0,0777	***	-0,0025		0,0767	***
	(0,0067)		(0,0054)		(0,0087)	
<i>Growth Opportunity</i>	-0,0114	***	-0,0067		-0,0108	***
	(0,0027)		(0,0065)		(0,0029)	
Constant	0,6499	***	-0,5088	***	0,4913	
	(0,2124)		(0,1911)		(0,3125)	
Number of Obs	2084		334		1348	
R-Squared	0.2813		0.1596		0.2917	

Table 3.9. Result for Debt-Maturity

	<i>Dependent variable: Debt-maturity</i>					
	Total Period		Pre-crisis		Post-crisis	
<i>Asset maturity</i>	0,2022	***	0,1035	***	0,2979	***
	(0,0212)		(0,0314)		(0,0328)	
<i>Size</i>	0,0715	***	0,1085	***	0,0544	***
	(0,0064)		(0,0156)		(0,0073)	
<i>Profitability</i>	0,0684	**	-0,1736		0,1139	***
	(0,0295)		(0,1667)		(0,0332)	
<i>Volatility</i>	-0,0103	***	0,0108		-0,0114	***
	(0,0041)		(0,0108)		(0,0045)	
<i>Growth Opportunity</i>	0,0029	*	-0,0170		0,0026	
	(0,0017)		(0,0130)		(0,0016)	
Constant	-1,1972	***	-2,3694	***	-0,8228	***
	(0,1186)		(0,2949)		(0,1286)	
Number of Obs	2084		334		1348	
R-Squared	0.1814		0.2944		0.1757	

In debt-maturity measurement, as shown by Table 3.9, we have not significant changes in pre- and post-crisis period. On the relation between debt-maturity and asset maturity the coefficient is increasing in post-crisis period, if we compare with the before-crisis period. It means that firms are more

matching their debt to their asset in post-crisis period than in before crisis period. Another important remark is that firm volatility is negatively and significantly related to debt-maturity in post-crisis period. It means that more volatile firms should have short maturity debts.

Table 3.10. Result for Internal External Financing Choice

<i>Dependent variable: Internal and External choice</i>						
	<i>Total Period</i>		<i>Pre-crisis</i>		<i>Post-crisis</i>	
<i>Asset maturity</i>	0,1399		-0,1677	***	0,5431	
	(0,2818)		(0,0446)		(0,5332)	
<i>Size</i>	0,2287	***	-0,0960	***	0,4148	***
	(0,0790)		(0,0388)		(0,1215)	
<i>Profitability</i>	3,3554	***	2,7309	***	4,3474	***
	(0,4002)		(0,3911)		(0,6201)	
<i>Volatility</i>	-0,0722		0,0166		-0,1594	**
	(0,0554)		(0,0209)		(0,0826)	
<i>Growth Opportunity</i>	-0,0208		-0,0282		-0,0177	
	(0,0238)		(0,0248)		(0,0314)	
Constant	-3,6882	***	2,2531	***	-6,4452	***
	(1,3662)		(0,8073)		(2,0216)	
Number of Obs	2084		334		1348	
R-Squared	0.0612		0.2007		0.0613	

By Table 3.10 we can see that internal finance is negatively associated with firm size in pre-crisis period, but it is positively related to size in post-crisis period. Before crisis, firms using internal finance are those whose small size, otherwise larger firms tend to access external finance. In post-crisis period, internal finance is positively related to size. It means that larger firms prefer to use their internal finance rather than debt.

5. Discussion and Conclusion

The objective of this chapter is to examine factors determining the financing behavior of the listed firms in Indonesia during the period 1994 – 2004. Furthermore, our interest is also to show the change of the financing policies in Indonesia due to financing crisis which started in the mid of 1997.

Our estimations are based upon three dependent variables, which are debt-equity ratio, debt-maturity ratio and internal-external choice of finance. First variable measure whether firms prefer debt rather than equity in their financing. Second variable gives an explanation of whether firms are favourable in the long-term rather than short-term debts in their debt composition, and the third variable deals with the question of whether firms prefer to use internal rather than external finance in their activities.

As described in previous section, in total period of study (1994 – 2004), listed firms in Indonesia have a negative relation between debt-equity ratio and profitability. This is an important leading indicator of firm fragility since the “gearing effect” is present. Gearing ratio is basically a ratio of total debt to total equity or capital. This ratio gives an indication of how easily a firm can repay debts from selling assets, since total capital (or shareholders fund) measures net assets (Pike and Neale, 1999). Firm with high debt-equity ratio will have a higher probability not only of failing to make a return to equity holders but also failing to meet interest cost obligations. In our case, high debt-equity ratio with low profitability would

raise the probability to be insolvent. In macro sense, the high probability of firm insolvency would lead economy to the financial fragility which could easily be ended in financial crisis.

However, there is an indication that listed companies in Indonesia were trying to match their debts structure with their structure of assets. Or we can say that there is a maturity-matching behaviour among listed companies in Indonesia. There is a strategic action of listed companies in Indonesia to match their debt to their asset. But this strategic action could be taken by big companies. The small firm tends to be more exposed to the short term debt rather than big one. This evidence is supported by the finding that firm size is related positively to debt-maturity.

It is also the case for the firm with bad profitability. They are more exposed to the short term debt than firm with higher profitability. It is supported by the finding that profitability is negatively related to debt-maturity. There is another interesting evidence that firm with foreign ownership majority prefer to use short-term debt rather than long-term debt. It may due to their good performance and their access to the global financial market.

Measured by debt-equity ratio, the behaviour of financing policies of listed firms in Indonesia in post-crisis period is not better than in pre-crisis period. In pre-crisis period, firms with higher debt are those with bigger size. But in post-crisis period, inversely, firms with higher debts are smaller firms. It could be an indication that debt level was not supported by enough collateral. If it is the case, the behaviour of financing policies of the listed companies in Indonesia is still risky and vulnerable with external shocks. Another indication of the vulnerability in post-crisis period can be seen in the evidence that volatility is associated with short-maturity debts. However, the question of whether small firms in Indonesia are more vulnerable to external shock should be investigated by further research.

This chapter is success to identify factors

determining financing structure of the listed firms in Indonesia as well as to identify the impact of crisis on the behaviour by comparing the behaviour in before and after crisis period. However, it still unanswerable questions such as why firm with majority foreign ownership is enjoyable with short-term debt. Or again the question of whether industrial sector differences should be important factor influencing firm financing behaviour. These questions should be discussed in the future research for gaining better understanding of corporate finance behaviour in Indonesia.

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