Abstract - The need of clear solution for the capital structure’s puzzle is somewhat became very important nowadays. This is supported by the fact that all industries struggled to deal with turbulent financial environment. Therefore all firms need a clear strategically perspective when deciding the optimal capital structure’s mixture. Recent research found that firms do engage to deal with systematic risk by conducting trade off policy between financial leverage and capital intensity. This paper was design to present better analysis of how Indonesia’s companies deal with systematic risk. We deploy Mandelker and Rhee (1984) decomposition method of systematic risk. Through the decomposition we found that based on mathematical perspectives, there should be inverse relationships between financial leverage and capital intensity. It shows how manager used capital structure (proxy by financial leverage) to deal with the turbulent in systematic risk. Using samples of 225 public companies in Indonesia from the year of 2000 to year of 2009, the paper try to answer the puzzle. In order to have better understanding concerning the relationships, we categorize the level of systematic risk in three groups; lower, middle and higher systematic risk. Deeper analysis in this study indicates strong support to the hypothesis that in the long run, there is a negative relationship between financial leverage and capital intensity among those three categories.

The strongest relationships happened in the lower and middle category. While at the higher systematic risk, the trade off is less than other levels. Specifically, managers were found to structure the selection of debt and capital intensity in a means consistent with strategic goal of long run control of systematic risk.

Keywords-component; Capital structure, systematic risk, open economy environment

I. INTRODUCTION

The increasingly turbulent of open economic environment has force every business to deal with higher degree of competition. Implementation of open market economy environment in some region (i.e. ACFTA, AIFTA and AJFTA) has put the manager in an unfavorable condition. In some cases we found that domestic industry tend to failed in competing with global environment because they aren’t ready with this new spirit.

To deal with those circumstances, managers are now seeking to manage business in the most effectively strategic manner by finding the appropriate competitive advantage. Based on strategic concepts, the term effectiveness refers to how can firms accomplish the objective strategically. Schendel and Hoofer (1976) argue that firm can improve their performance when managers select strategic goals and all of the activities of the firm that are directed towards meeting the ultimate goals of the company. Moreover it was stated that the long run strategic goals of the company is to increase the value of the firm.

Through Damodaran (2001) we can truly understand that the maximization of enterprise value consists of three major decisions; how to maximize company’s future free cash flow, the extending assets growth and how managers financed its project efficiently. In this context we know that financial management plays an important part in the process of achieving company’s ultimate goals.

Nonetheless, the strategic model of the firm stated that financial policy is a part of the firm’s overall strategy (Andrew, 1980). Therefore the objective of financial management has to be consistent with the ultimate goals of the company in order to increase the firm’s performance. These consistency is about somewhat to be explored by several study.

To date, the empirical study that has been sought to examine the relationship between financial strategy and each functional strategy is still inconclusive. This argumentation was given by some former researchers. Prasad, Bruton and Merikas (1997) argues that to date, the empirical investigations that sought to examine the impact of the organization’s overall strategic goals on the firm’s financial decisions are limited and conclusive. This inconclusive result was found most on the research of capital structure strategy’s role to accomplish long term objective of the firms. Most of these researches found major constraint when using a complex perspective in analyzing the topic, especially when the environments give strong effect to the decisions made by the managers.

For more than 50 years since Modigliani and Miller seminal article, many researchers have tried to explain how firms choose their optimal capital structure. Mostly many studies have been design to explore the basic reasons or the
II. RESEARCH QUESTION

Based on some explanations above, the research question examined in this study will be:

Are there any relationships between financial leverage and capital intensity in each level of long term systematic risk?

III. LITERATURE REVIEW

A. Capital Structure

Brigham and Daves (2005) define capital structure as the manner in which a firm’s asset are financed; that is the right side of the balance sheet. Capital structure is normally expressed as the percentage of each type of capital used by the firm, such as debt and equity. According to those definition, one of the substantive idea was there should be some relationship between investment strategy and capital structure strategy.

Weston and Copeland (1998) argue that theoretically, there should be an integrative understanding between investment and capital structure policy. This argument was based on Fisher separation theorem. In the first step, manager will consider about the firm’s investment futures in spite of the financing requirement. Manager will estimate all the uncertainty that possibly faced by the firm. In the next step, managers will decide the sources of fund which the firm used to finance the investment opportunity. Therefore, capital structure usually was used by investor as a signaling indicator of the firm’s prospect.

Based on this perspective, Damodaran (2001) explain that the best capital structure mixture is the one that can maximize the value of the firm. Moreover, the term ‘best capital structure’ was shown by lower weighted average cost of capital for company’s overall project. This paradigm has lead manager to have some guidance in selecting the best financing methods. It’s no longer depend on what’s the available financing instrument, but on type of financing instrument that must be choose to increase the value.

B. Balancing Theory

The basic concept of balancing theory according to Brigham (1990) was to trade off the benefits of debt financing (favorable corporate tax treatment) against the higher interest rates and bankruptcy cost. This concept indicates that the weighted average cost of capital will decline as the use of debt by the firms. Balancing theory also indicates that the optimal capital structures are different among companies. According to Brigham (1999: 427-428) the implications of balancing theory are as follows:

1. Firms with higher business risk should use less debt. Because if managers increase the use of debt when business risk seems to be higher, then the use of debt will make the fixed interest expenses tend to be higher. In the long run, this situation may lead the firms to a financial distress.

2. Firms with higher taxation rate can be benefit by tax saving through the use of more debt.

C. Enterprise Value

Most of finance literature stated that the primary goal of the firm is to maximize the value of the company. It can be through the stock price increase or company’s value when acquisition held. One model that can be described to explain enterprise value clearly was FCF (Free Cash Flow) model. They use the basic formulas to indicate the enterprise value:

\[ \text{Enterprise value} = \frac{\text{FCF} \times (1+\text{growth})}{\text{COC} - \text{growth}} \]
Where:
FCF ; free cash flow of the company
Growth ; company’s growth, measured by the growth of assets or sales
COC ; company’s cost of capital

In this concept, we can see that capital structure decisions play an important role not only in deciding the lowest cost of capital but also in providing cash to generate future free cash flows.

Moreover, Damodaran (2001) explained that there should be an integrative connection between investment, and financing. Investment policy will not only be as the manner in which manager choose their best alternative, but also as final steps in calculating amount of fund needed to increase the firm’s value. Henceforth, when deploying enterprise value as the basic concepts, one must considered each policy regarding their contribution to the company’s overall value.

D. Concept of Risk

Managing capital structure is not only to minimize the cost of capital, but also the risk cohered in each financing instrument. The Webster dictionary defined risk as a hazard, a peril, and exposure to loss or injury. Bodi, Kane and Marcus (2005) defined risk as the potential for realizing low returns or even losing money, possibly preventing you from meeting important objectives.

The market perspective (Brigham (2005)) argues that risk can be divided into a systematic and unsystematic risk. Unsystematic risk is a type of risk that can not be minimized by diversification. Therefore, unsystematic risk is also known as a diversifiable risk.

Systematic risk (\(\beta\)) is a type of risk that can not be minimized by diversification mechanism. This risk is affected by external factors such as inflation, recession, higher interest rates etc. Moreover, Brigham (2005) argues that once unsystematic risk can be minimized by diversification, the only risk left was a systematic risk. Therefore, managers will try to do their best to manage the internal financial management to deal with systematic risk.

In spite of the strategy used by managers to deal with systematic risk, Brigham (2005 : 489-496) stated that there are two types dimension of risk which found as a side effect of investment and financing decision. Those two types of risk were:

a) Business risk; the risk a firm’s common stockholders would face if the firm had no debt. Business risk arises from uncertainty in projections of the firm’s cash flows, which in turns means uncertainty about its operating profit and its capital requirements.

b) Financial risk; the additional risk placed on the common stockholders as a result of the decision to finance with debt.

In this study, systematic risk decomposition was based on the Mandelker and Rhee (1984) between financial leverage and capital intensity, this paper utilizes Mandelker and Rhee (1984) decomposition of systematic risk into three elements. Those three elements are as follows:

1) Degree of operating leverage (DOL)
2) Degree of financial leverage (DFL)
3) The intrinsic un-leveraged risk (\(\beta^*\))

Degree of operating leverage represents the firm’s capital intensity and degree of financial leverage represents the firm’s debt intensity. The intrinsic un-leveraged risk is the uncertainty faced by all equity and all variable cost firms. According to the decomposition, systematic risk can be formulated as:

\[ \beta = (DFL) (DOL) (\beta^*) \]

Equation 1 shows that the value of systematic risk is depend on the three elements. Since DOL and \(\beta^*\) is known as business risk \(\beta_u\), therefore for an all equity firm, equation 1 becomes:

\[ \beta = (DFL) (\beta_u) \]

Equation 2 recognize that the firm’s systematic risk, \(\beta\), can be expressed as the product of two elements, business risk \(\beta_u\) and the firm’s financial risk (DFL). It also demonstrates that as debt financing for the firm increases so does the level of systematic risk. This equation also shows that there are many combinations of business risk and the firm’s financial risk which can be used to generate the same level of systematic risk. When the managers are trying to stabilize the systematic risk, thus equation 2 can be express as:

\[ k = DFL / \beta_u \]

According to equation 3, process to make systematic risk becomes stable or constant can be done only if there is negative relationship between financial leverage and capital intensity. This process is shown in equation 4 as follows:

\[ DFL = \frac{k}{\beta_u} \]

Equation 4 demonstrates the inverse relationship and support corporate trade off hypothesis. Specifically, manager is able to make asset structure decisions can be offset by an adjustment in financial leverage to maintain systematic risk in constant condition. Therefore equation 4 shows that in the long run, manager is using trade off financial leverage to capital intensity in the lights of changes in systematic risk. They will do the trade off only in the long run capital structure strategy.

According to the decomposition of systematic risk, each firm is associated with two risk index measures which are business risk and systematic risk. Based on Chance (1982) it is clearly that firms can be classified together by their systematic risk to form particular classes that share the same business risk. Thus by using equation 3 and 4 by holding systematic risk constant through the use of different systematic classes, the effect financial leverage to capital intensity and its joint impact can be examined.

E. Strategic Perspective to Capital Structure

In spite of Norton’s statements that up to present, optimal capital structure strategy is still became an
answerable puzzle. That statement was concluded based on several reasons just like; there were not clear arguments why managers choose a certain financial intensity. Frankfurter and Philippatos (1992) argue that this unclear answer happened because researcher didn’t use a strategic perspective as one of the investment framework. The former research done by Prasad, Bruton and Merikas (1997) found that there was a possibility to find a clear argument when the researchers use a strategic perspective in analyzing capital structure.

Lubakin and Chatterjee (1994) argue that firms will gain a lot of advantage by managing their systematic risk by selecting the proper composition of the firm’s capital structure. It was found that investor will evaluate the management’s effort in managing systematic risk through the firms stock’s value. This arguments lead to a conclusion that managing capital structure is the most important things in facing systematic risk in the long run.

IV. HYPOTHESIS

Based on the decomposition of systematic risk explained in the previous section and the findings of Prasad, Bruton and Merikas (1997), the hypothesis for investigation in this research will be:

There is a negative relationship between financial leverage due to capital intensity in each level of systematic risk

V. METHODOLOGY

Variables used in this research are as follows:

1. Financial leverage as independent variable. Financial leverage is a type of risk, management has to face as an additional effect for using debt. The mean debt to equity ratios was used as a proxy for the financial leverage variable. Mean debt to equity ratio can be obtained as follows:

\[
MDR = \frac{\sum_{i=1}^{n} MDR_i}{n}
\]

Where:

\( MDR_i \) = Debt equity ratio at the end of each year for every samples

\( n \) = Observations period (10 years)

\( MDR \) = Mean debt equity ratio

2. CAPITAL INTENSITY PROXY BY UN-LEVERAGED RISK (\( b_u \)) WHICH DEPENDS AS RISK THE FIRM SHOULD FACE IF THERE IS NO DEBT FOR SOURCING OF FUNDS. UN-LEVERAGED RISK CAN BE OBTAINED AS FOLLOWS:

\[
RU_i = a_u + (b_u)(RM_i) + \epsilon_{ut} \]

Where:

\( RU_i \) = un-leveraged return for period \( t \)

\( a_u \) = un-leveraged risk for each firm

\( RM_i \) = market rate of return for period \( t \)

3. The un-leveraged return measured using formulas are as followed;

\[
RU_i = \frac{(N_i)(d_i) + (N_i)(P_i) - (N_i)(P_{i-1}) + (I_i)(1-T)}{(N_i)(D_{i-1})} \]

Where;

\( RU_i \) = un-leveraged return for the period \( t \)

\( N_i \) = number of shares outstanding at the end of period \( t \)

\( N_{i-1} \) = number of outstanding shares at the end of period \( (t-1) \)

\( d_i \) = per share cash dividends in period \( t \)

\( P_i \) = per share price at the end of period \( t \)

\( P_{i-1} \) = per share price at the end of period \( (t-1) \)

\( V_{L,i} \) = market value of the firm at the end of period \( t \)

\( D_{i-1} \) = long term debt at the end of period \( (t-1) \)

\( T \) = average corporate tax rate for period \( t \)

\( I_i \) = amount of interest paid in period \( t \)

4. Return Market (RM) will be calculated as follows;

\[
RM_i = (ML_i) - (ML_{i-1})
\]

Where;

\( ML_i \) = mean market rates for the period \( t \)

\( ML_{i-1} \) = mean market rates for the period \( (t-1) \)

\( R \) = total return for period \( t \)

\( \beta \) = systematic risk for each firm

\( RM_i = \) market rate of return for period \( t \)

\( a_u \) = intercept

\( \epsilon_{ut} \) = error term

The total return \( (R) \) will be calculated as follows:

\[
R = \frac{(N_i)(d_i) + (N_i)(P_i) - (N_i)(P_{i-1}) + (I_i)(1-T)}{(N_i)(D_{i-1})} \]

\( (N_i) = \) number of outstanding shares at the end of period \( t \)

\( N_{i-1} \) = number of outstanding shares at the end of period \( (t-1) \)

\( d_i \) = per share cash dividends in period \( t \)

\( P_i \) = per share price at the end of period \( t \)

\( P_{i-1} \) = per share price at the end of period \( (t-1) \)

Once the systematic risk for each firm can be obtained, the next step will be subdivided into groups which had similar levels of systematic risk. The sample was initially divided into three groups of firms with the pattern of grouping as follows:
VII. RESULT

As previously stated, this research analyzes all Indonesian listed company within period of 2000 to 2009. At the beginning of the study the research found 269 firms which had a fiscal year end of December 31st and which possessed all the necessary information for analysis. In order to make the study meaningful, it is necessary that firms have to be categorized according their systematic risk. Thus, those firms with negative systematic risk or business risk or mean debt equity ratio were eliminated. The result was a final sample of 225 firms.

After calculating systematic risk for each firms, these 225 firms were then subdivided into three groups; lower, middle and higher systematic risk. The result of this categorization can be seen in table 2.

<table>
<thead>
<tr>
<th>β Group</th>
<th>Risk category</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 – 0.50</td>
<td>Low</td>
</tr>
<tr>
<td>0.51 – 1.00</td>
<td>Middle</td>
</tr>
<tr>
<td>1.01 ke atas</td>
<td>High</td>
</tr>
</tbody>
</table>

Based on table 2, this research indicates that more than 50% of samples have systematic risk more than 0.51 means that most of the samples were dealing with middle and higher systematic risk along 2000 to 2009.

The result of the correlations is summarized in table 3. A review of the result in table 3 indicates strong support for the first hypothesis which is there is a negative relationship between financial leverage and capital intensity. A closer review of the results in these tables indicates a strong negative relationship between financial leverage and capital intensity for all three systematic groups. The strongest negative effect mostly can be seen in lower systematic risk.

<table>
<thead>
<tr>
<th>β Groups</th>
<th>Group Size</th>
<th>R Pearson Product Moment</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 – 0.50</td>
<td>109</td>
<td>-0.628</td>
<td>0.031</td>
</tr>
<tr>
<td>0.51 – 1.00</td>
<td>32</td>
<td>-0.512</td>
<td>0.042</td>
</tr>
<tr>
<td>1.00 - up</td>
<td>84</td>
<td>-0.328</td>
<td>0.021</td>
</tr>
</tbody>
</table>

A closer review to all of the result of this study indicates that among all Indonesian listed company, the strong negative relationship between financial leverage and capital intensity can be seen in the level of low and middle β groups. The strong negative correlation is found less in lower and middle class. This condition may happen because this study comprises a period of 2000 to 2009. It means that this study cover post period of monetary crisis year of 2000. This monetary crisis have a deeply impact to all Indonesian firms. The weakness of IDR against US Dollar has made the value of debt has increased specially for firms with debt domination in US Dollar. That is why the negative relationships between financial leverage and capital intensity in the higher β groups were less than the other β groups.

This study indicates that managers of all Indonesian listed company are trying to get the best performance in the market by managing capital structure properly. The negative relationship between financial leverage and capital structure shows that managers are seeking to maintain the strategic systematic risk level by conducting a negative trade off between financial intensity and capital intensity. Therefore the strategic view of capital structure are somewhat proved in this study. Managers in middle systematic risk will try to maintain its level properly. That’s why the correlation in lower systematic risk is higher than others.

This facts leads to the understanding that most of Indonesian listed company do engage in achieving the higher enterprise value. In some cases we found that firm uses retained earning more than debt to remain their value stable. This happened along the period of 2000 to 2002. As we all know that these periods was known as the recovering stages for all Indonesian firm. Most of company found to extend their debt payment as a result of weakening the IDR to US$.

The bad experience of financial crisis in 1998 has motivated all managers to give more attention in financing decisions. In spite of the use of debt as mechanism to give positive signal to the market, now managers were also determine the maximum value of their debt. Once the company reaches their maximum level then manager will chose to use internal rather than external resources.

The paradigm followed the process that in determining the appropriate financing methods, manager must considered the impact of their decision to enterprise value as a whole. In this essence manager must not only trying to get the lowest cost of capital, but also determine the suitable amount of fund that can be enhance to produce more free cash flow in the future.

The argument supported Damodaran (2001) that investment and financing policy must be understood simultaneously. There shouldn’t be any discretion between those two policies. Along with the third policy, investment, financing and dividend policy must be considered in every decision to enhance the enterprise value. In addition to the explanation above, the study also found that in the long run managers of Indonesian listed company uses trade off theory in financing policy.
Although there still some signal of the implementation of Pecking Order Hypothesis, the study found that managers tried to deal with the turbulent environment by using more retained earning to maintain the company’s growth level. The use of internal financing in turbulent market has understood as one of the method to minimize the level of risk. However that mechanism has forced manager to increase their net income so that they can save more as retained earnings.

Along the turbulent period in 2003 to 2007, some of Indonesian company tried to enhance their efficiency by cutting unnecessary cost. As a result, they can lower the expenses that lead to increase the net profit. Although it seems the best solution in dealing with the environment but still there is something left behind which is preparing for the free trade implementation.

In early 2010, the ACFTA (ASEAN China Free Trade Area) implementation had lead many company into unfavorable situation. From 2007, they only have three years to equip their self with the appropriate competitive advantage. This must be the reason of the lower domestic market share compared to foreign penetration. From January to April 2010, more than 56% of the Indonesian market was controlled by the foreign company. The implementation of ACFTA gave some opportunity for the multinational company to operate in their optimum cost.

Although some domestic companies seem failed, the rest were found to take advantage from the agreement. In the context of free trade agreement, company can exploit the null tariff for some commodities. Means that they are not only have an opportunity to lower their cost, but also can gain fund with the lowest cost. The mechanism can lead to lower their cost of capital and as consequent increase the enterprise value.

VIII. LIMITATIONS

There are some limitations to this study which should be recognized. First, this study limited the impact of the environmental effect by obtaining a large sample representing a wide range of industries. It has been known that the use of strategic capital structure may be different from one industry to another, depend on each environmental force. Therefore, future research may seek to examine strategic capital structure for each industry in order to get the deepest analysis. Second, this study does not consider the effect of financial crisis to the strategic capital structure. Therefore, future research may seek to expand the effect of financial crisis to the optimal strategic capital structure.

IX. CONCLUSION

This study concludes that the Indonesian listed companies engage in application of long run strategic capital structure concepts. The evidence presented that there is a negative relationships between financial leverage and capital intensity. Therefore the proposed hypothesis received strong support. Managers of the Indonesian listed company do engage in trade off to control and maintain the strategically selected level of systematic risk. The strongest relationships happened in the lower and middle beta category. At the higher systematic risk, the trade off is less than other levels.

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