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Determinants of Corporate Capital Structure

Project One

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ABSTRACT

This study mainly focused on assessing and analysing determinants of corporate capital structure to 75 firms in London Stock of Exchange (LSE) and looking the effects of financial crisis of 2008 on 75 firms' choice of leverage ratio. The analyses started with the review of different literatures on capital structure. Thereafter, the study employed panel data procedures in assessing the effect of determinants of corporate capital structure and their impacts during financial crisis. The results obtained suggest that most of the dominant capital structure theories are still relevant and valid to the firms selected for this study in the LSE. The researcher founded firm level determinants of corporate capital structure were affected at different significant levels during financial crisis.

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CHAPTER ONE

INTRODUCTION

The importance of capital in any business forms an integral part for driving operations of the firms. Therefore, any wrong financing decision would have impact of the growth and survival of the firm. It is important to make right financing decisions for growth of business through balanced mix corporate capital structure while executing managerial functions. This foundation of study on capital structure was established early 1950s. The initial concept was developed by Modigliani and Miller (1958) had significant contribution on corporate structure and financing decisions.

Modigliani and Miller paved the ways for other scholars to explore more on capital structure. Indeed, this has attracted several studies and providing empirical tests on capital structure; most of the tests were trying to find out whether theories could express firm's capital structure decisions and its determinants. Similarly, most of studies have focused much on capital structure of non financial firms includes (Frank and Goyal, 2009; Flannery and Rangan, 2006; Rajan and Zingales, 1995). Despite several studies being made on area of capital structure to developed countries, yet results suggesting proper mix of capital structure are still opens for further studies (Graham and Levy, 2011).

In addition the financial crisis of 2008 has attracted several studies by different scholars and finance managers to study on the ways in which firms' capital structure and its determinants were affected by the crisis. The crisis of 2008 witnessed the collapse of Lehman brothers which shocked investors and increased uncertainties to the future growth of firms. Thus, it requires financial managers to have thoroughly examination of all possible effects firm level capital structure. Likewise, Campello et al, (2011) further assessed the impact of financial crisis in general. Until now, fewer studies have been conducted on the effect of financial crisis to the determinants of capital structure.

Currently, it is important for firms to consider different factors and its relevance on capital structure. Managers need to be a position to analyses some question on capital structure. For example, what is the good source of financing? Is it the use of debt or equity? Therefore, this study intends to add knowledge through analysis of empirical evidence of capital structure and assessing possible effects of global financial crisis of 2008 and financing decision to firms listed in London Stock of Exchange (LSE). Indeed the importance of studying capital structure still valid despite several studies been made, yet there is need to be viewed again as time and factors affecting firms capital structure decisions are subject to change as other external factors affects firms.

Nevertheless, this study is restricted into selected firms in LSE. Then analysis of the study is centered on examining determinants of corporate capital structure and impact financial crisis on leverage.

This study is divided into the following section, the study starts with introduction, literature review and then followed by establishing the methodology and measurements involved the hypothesis tests and the conclusion on the financing decisions of capital structure and its implications.

CHAPTER TWO

CAPITAL STRUCTURE THEORY AND EMPIRICAL EVIDENCES

This section begins with discussion capital structure theories, and then followed by empirical evidences and finally determinants of capital structure will be discussed. It starts by providing the definition of capital structure and then followed by discussion of relevant and irrelevant theories of capital structure and its evolution. Then discussion on relevant determinants affecting corporate capital structure decisions of the firms will be in place.

Capital Structure

Capital structure has been viewed differently by scholars, for example Brealey and Myers (1991) defined capital structure through considering the mixture of equity and long-term debt. Nevertheless, this definition of capital structure considers finance of assets through employing equity, also long term debt, whereas this particular definition has a limit, because it is inadequate to provide a clear meaning as the use of short term debts and convertibles which are not considered. Also Welch (2011) argued that capital structure need to consider total resources used to finance the business, such that the use of total assets and total liabilities which will be useful to both financials and equity. Furthermore, Brealey and Myers, (2003), showed that capital structure composition entails the use of different types of securities issued by firms to finance its assets. Thus, the decision on whether to use appropriate leverage definition lies on interpretation made by the researcher (Frank and Goyal, 2005). Generally, firms are considered into two forms, either levered or unlevered i.e. levered occurs where firms have more debts, unlevered occurs where firms have no debts. Hence, the term capital structure shows the proportion of debts i.e. liabilities or borrowings to equity i.e. share capital, premium, reserve and retained earnings. This, ratio is termed as leverage.

Therefore, finance managers need to meet their objectives of the firm such maximizing shareholders wealth, thus it is important to examine different factors of capital structure and their effects on financing decisions. Usually firms use the following option; debt financing, equity financing or both, internal

financing through retained earnings. Financing decisions involve balancing the mix of capital structure decisions; thus, the importance of examining theories is in place.

Origin of Capital Structure

Corporate finance development passed through many changes in early 1950s. It involved the widely debated capital structure theories. Initially Modigliani and Miller (1958) developed the capital structure concept which puzzled and drawn more attentions among scholars. Some of the key questions are rested on; how do you choose capital structure and what is the right mix of capital structure? Despite several studies on these questions, it still opens further studies due to its mixed results. Thus, this section

starts with discussion on the capital structure irrelevancy theory, followed by discussion of other theories on capital structure and finally on empirical studies made.

Irrelevancy Theory of Capital Structure

Modigliani and Miller (1958) had important role in corporate finance through their contribution on area of corporate structure theory which formed the basis of the modern capital structure. The foundation of the theory lied on keys assumptions exists i.e. frictionless, perfect market, no taxes or such that firm value is not affected such that cost of capital depend much on the business risks and this assumes financing decisions of capital structure are irrelevant on enhancing shareholders value which suggest that no optimal structure.. Irrelevancy theorem was developed and assumed firms with no transaction costs, no taxes, and existence of perfect market to be independent when deciding on financing and investment choices. However, these assumptions of the theory stills complicated to exist in the real world of the business environment where frictions of market forces exist business, i.e. taxes and other costs like bankruptcy costs. Hence, the said MM propositions conditions are not feasible.

Modigliani and Miller (1963) further amended the earlier weakness of irrelevancy theory and relaxed some of the propositions, through introduction

corporate tax in the first model which assumed no taxes. When firms are financed by debts, always pay interests which is deducted from profit which create tax shield. They argued that firms can take use debt financing and enjoy the tax benefit (interest tax shield). Similarly, when firms use more debts, it also increases its market value through employing debts into other investment activities.

However, tax benefits need to be used with cautious, such that not all the time tax advantage on debt will be of use in getting maximum benefit in the amount of capital structure. When full debt is considered to be preferred to equity for maximizing firms value, but where firms leverage increases they stop making interests payments, thus leading to the financial distress costs. Thus, in some cases other forms of financing i.e. Retained earnings will be cheaper even if tax on investors is applied under personal income taxes. Also MM failed to consider the practical application on individual firms and the manner in which it can consider the aspects of debt ratio and market issues on securities.

In contrast, the convectional view of capital structure theorem came into criticism by several scholars. It was argued based on the relevance of the conditions in the real business world where imperfection exists (De Marzo and Duffie, 1995). According to Robicheck and Myers (1966), if there no taxes it is likely the value of the firms will also will not for change considerable amount of leverage. Thus, when firm use debt financing, then part of its earnings will be used to repay particular debt, however, when earning are not enough, then firms will not be able to operate resulting into negative working capital. This, contradict with the MM irrelevancy propositions.

The MM preposition difference lies on the factors influencing changes in values and cost of capital to the firms. That means when debt is introduced in the capital structure, tax shield advantage occurs through the effect of interest payments (Jensen and Meckling, 1976). Shareholders and debt holders are interested in minimizing agency costs. Thus, the optimal capital structure is considered through introduction of personal taxes in MM irrelevancy propositions. Nevertheless, the increase in leverage will results into increased

bankruptcy costs and financial distress, thus, firms consider cost and benefits of debts.

However, Modigliani and Miller (1963) ignored the primary notion of the cost involved as the results of increased debts. As the results the corrected model suggested that firms will increase the leverage when they are full debt financed. It was argued by Miller (1977) that the cost of bankruptcy were low as compared when taking debt advantage and looked on the effect of tax advantage on personal and corporate tax and found to be high value, and suggested the importance of changing capital structure as tax rates changes with time.

Thereafter, several theories emerged trying to find out the existing of optimal capital structures. The following main capital structure theories will be discussed; trade off theory, pecking order theory, agency cost theory and market timing. Hence, the following sections provide discussion of main theories capital structure

Capital Structure Theories

Trade - off Theory

Baxter (1967) and Krauss and Litzenberger (1973) advocated that trade off theory predicts that most of the firms prefer to identify the required target capital structure through balancing two main aspects i.e. tax saving and bankruptcy costs. This requires focusing on tax exposure of the firm and adjusting capital structure until tax shield counter the effects of all possible future financial distress costs. Trade off theory insists on the importance of making adjustment where changes arises to the expected target capital structure to most of the small firms seems to be small, also bankruptcy costs are also small. However, studies made by Frank and Goyal (2003) criticized the on the relevance of the trade-off theory, thus attracted the effect of tax and bankruptcy costs given that transactions costs are reduced.

Static trade-off theory emerged due to earlier weakness of MM theory; model presents benefits of debt financing tax advantages on debts and bankruptcy

costs and firms are likely to choose their capital structure taking into account all possible factors which are likely to affect firm through tax benefits and bankruptcy costs. Krauss and Litzenberger (1973). Also that the value of levered firms can be divided into three parts, the unlevered firms, tax on debt, and the value of firm after bankruptcy, whereas the unlevered firms have only one value. It seems that value of the firm is adjusted by balancing both factors. The optimal capital structure is obtained through balancing by issuing more debt so as to take advantage of tax benefits on debt which cancels out the deficit made(Krauss and Litzenberger, 1973). Trade off theory argued on the importance of adjusting capital structure when changes occurs.

Myers (1984) mentioned that firms need to be able to use their own debt-equity ratio through maintaining constant leverage ratio at equilibrium. Firms can change capital structure and absorb whatever fluctuation emerged in the market values of shares. In real world this seems to be unrealistic because of costs associated on issuing and repurchasing debts are not fixed. Some of the related costs include transaction costs which are inevitable whenever a change occurs. So, firms cannot adjust their capital structure as often as they need to avoid incurring more transaction, agency, and financial distress costs (Kraus and Litzenberger, 1973).

However, Myers (1984) assessed the role of trade off theory for ruling out tax on traditional capital structure, , this model was regarded as one period which means deals with firm's capital structure period independently. The static approach of modeling of capital structure is weak to firms which operate in different period. The capital structure of the firms varies across based on the performance from one period to another.. So the model will not be able to take into account all possible future expectation on capital structure.

In addition, trade off theory considers the importance of borrowing through using tax advantage and interest payments (Guney and Paudyal, 2008). The benefits obtained on tax charged after depreciation and investment are important on debt financing. Hence, these factors provide market equilibrium, through optimal leverage. Firms with higher non debt tax shield have lower

debts. Hence, the motivation of the firm to borrow drops when non debt tax shield increases (Myers, 2001).

Fama and French (2002) suggested higher profitability of firms matches with lower leverage. This seems to be inconsistencies which with static trade off theory, describing that higher profitability increases leverage through tax benefits.. In addition, the nature of this model being static and allowing flexibility of firms which ensures the optimal capital structure at any time, whatever sudden changes in capital structure results into unexpected results (Flannery and Rangan, 2006).The weakness static trade off theory on analyzing firms operations in dynamic business environment have resulted into rise of dynamic trade off theory which offers promising results.

Dynamic Trade off Theory

Fischer, et al (1989) illustrates earlier weakness through consideration on the aspects deviation from optimal target of capital structure. The model was formed based on the earlier weakness of static trade - off model. This theory views capital structure in form of continuous decision making through considering tax advantage on debt, costs of financial distress, restructuring costs and investment choices. In contrast, static trade off model considers related costs for adjusting capital structure which influence firm's position to shift from its optimal capital structure in a period

Fischer, et al (1989) argued on the importance of having enough ranges in which optimal capital structure fluctuates. It aimed in allowing firms to be flexible in adjusting their capital structure when the values of assets changes, it removes inconveniences of making immediate change of the value of assets. Models allows the capital structure to vary basing on their specified range while at the same time to adjustment cost which may not exceed the expected benefits. This provides the limits of debt equity ratio in which firms need to operate, this includes the upper and lower limits of leverage allows firms to operate (Frank and Goyal,2009).

Pecking Order Theory

Pecking order theory stressed the importance of firms on making decisions choosing between using internal fund or acquiring debts from the external funding source for financing investment activities. Myers (1984) presented the idea which originated from undetermined events in business which created uncertainty on investment opportunities. Basically the uncertainties are influenced by information asymmetry between insiders and outsiders. Always information asymmetry occurs when insiders are aware of all information and details about particular firm whereby investors have little information on a particular firm. The existence of information asymmetry may influence the ability of managers and investors while making decisions, for example when equity is mispriced, internal managers are well informed compared to investors. Thus, investors will be on the position of considering degree of uncertainty while making decision and require high expected rate return. As results it become expensive to the firm leading for choosing a different source of funding. Manager prefer using retained earnings for financing investment because of avoiding the problem of under investment.

Pecking order theory provides that firm prefer the cheapest source fund for financing its investment activities. Most of the firms like to use available internal funds such as retained earnings and when this has not meet the need will look to raise through issuing debt, convertibles bonds and finally equity (Myers, 1984). This method employed by pecking order has associated costs as results into poor choices. Indeed, when projects costs are costs incurred increased on investment made, this may results into rejecting the project because the expected negative net present value. Myers and Majluf (1984) has demonstrated asymmetric information framework to the management, such that insiders are well informed on the firm compared to outsiders who think much on the expected premium of the expected projects.

However, pecking order theory advocates less on much the use target capital structure than trade-off theory. It insists much on ways in which firm can raise

and retire fund basic on agreed funding terms. This is supported by the studies made (Frank and Goyal,2003) while testing firm financing and capital structure in different period and found that pecking order theory uses the large listed companies and public traded companies.

Therefore, pecking order theory simplifying some of the assumption on a real business world that all needs cannot be fully meets. In particular context pecking order theory provides the need for managers to work for the benefits of shareholders and the existence of well diversified equity holders and many small equity holders. However, when few equity holders retain many shares, this assumption in not met.

Agency Cost Theory

Jensen and Mackling (1976) asserts on the importance of determining optimal capital structure which involves agency costs. Debt is considered to create conflict between managers and equity holders; it is argued that both scholars identify the probability of distribution of cash flow given that the firms are not independent on their organization. Jensen and Mackling (1976) suggested on the increase to both equity and bond holder would be of importance to combine debts and equity to reduce total agency costs. ‘

Moreover, the study made by Ryan et al (1997) pointed out the summary of the agency cost theory based on the problems faced by firms, such that problem between stockholders holders and managers, stockholders and bondholders. Most of the problem between managers and stockholder exists because of the behaviour of managers of overspending and pay less attention on the leverage which do not benefit stockholders. Managers prefer lower leverage as avoid risks; managers mainly focus on serving their jobs. Conversely, managers prefer to spend more to the activities for the benefits of stakeholders.

Market Timing Theory

Baker and Wurgler (2002) contended on the aspects of time and market, these are crucial factors for deriving capital structure in financing and realising potential investment decisions. This theory has drawn the experience and

tendency of firms using equity rather than debts. Based on the historical market, equity financing has important role through considering the timing aspect while monitoring the movement of prices, such that the decision is whether to sell or buy based on the market value in particular time. Indeed Baker & Wurgler (2002) pointed out that firms with low leverage prefers when prices are high, whereas large firms raise fund when market value are low. Camara (2012) supported market time hypothesis through showing firms which are highly levered to have higher encouragement than lower levered firms at the time where market have more advantage.

Determinants of Capital Structure

After laying theoretical foundation, then several determinants of capital structure will be discussed. Based on the earlier studies conducted on capital structure which identified both dependent(leverage) and independent variables including growth opportunities, profitability, liquidity, tangibility, non debt tax shield and firm size, then the importance each of these variables will be discussed based on the relevance and importance to be included in the regression model and expected sign during estimation.

Profitability

The relationship between profitability and leverage depends on the applied theory, or example pecking order theory suggest negative relationship between profitability and leverage. It is argued that when firms are more profitable, prefer borrowing less because they have enough . internal funds for financing investment activities, on the other hand, firm with less profit uses debt financing because of less internal funds(Titman and Wessels,1988). In line with the pecking order theory Myers (1984), fama and French,(2002) and Rajan and Zingles,1995.provided a negative relationship between profitability and leverage. Firms with higher earnings uses less debts of the preferred investment opportunities.In addition to this Myers and Majiluf (1984) pointed out on the existence of information asymmetry between managers and investors, where by insiders are aware of true information of the firms compared to the interested investors , this suggest the importance of having

priorities in financing decisions among firms. In order to determine the profitability proxy, then EBIT is divided by total assets, this is used regardless of interest and tax imposed by the government. This, is also important when weighing the tax benefits on financing through debts.

.Some of the empirical studies made revealed that profitability and leverage are negatively related (Bartoloni et al,2013; Frank and Goyal,2009; Antoniou et al ,2008;). In contrast trade off theory expects positive relationship between leverage and profitability. It is argued most of profitable firms use more debts interest tax shield while maximizing firms' value through increasing debt financing. In deed firms with high profits are able to pay back their loan easily and this create the friendly environment for borrowing more (Hovakimian et al, 2004). When high tax saving is on debt, then it becomes less bankruptcy risks or provide opportunity for higher investments. Thus, the benefits accrued by higher profitability, means firm have high taxable income to shield, thus less financial distress (Titman and Wessels,1988). Therefore, it is expected that negative relationship between profitability and leverage.

Size

Another important factor to be considered is firm size, to start with prediction made by trade off theory, which suggest that firms large firms use debt financing because of less financial distress than small firms when require obtaining target capital structure. Large firms have sevarals means of raising funds, for example use of capital market to raise its equity financing with less costs, this seems to cheaper for large firms because of reduced agency costs. Additionally, large firms have access to diversifies its investments due to its access to capital than small firms, which make them less vulnerable to bankruptcy risks. This imply that large firms may heavily be levered than small firms (Titman and Wesells,1988), in similar manner large firms have less information asymmetry (Rajapol,2010). Size can be measured into two ways, either through natural logarithm of sales or total assets, thus, this study intends to use natural logarithm of total assets because it helps scaling down different amount of total assets in different years with different size of assets diversified

and information owned by the owners. It is expected that growth of the firm size will also increase profit as in turn tangible assets also increases, resulting into enough amount of free cash flow. Pecking order theory suggested that firms prefer using internal funds .e. profit generated is used to finance different activities which also spurs the growth of the firm ,make use more internal funds rather than external funds.. In contrast with Trade off theory pointed out that most of the large firms' diversified investment and are less volatile than smaller firms. And it's argued that through investment diversifications by large firms reduce the costs of bankruptcy (Antoniou, et al 2002). This suggests large firms can easily take more debts with less information asymmetry which provide access of funds and have advantage of issuing equity at a lower costs compared to small firms . It is therefore expected positive relationship between size and leverage. .

Asset Tangibility

This is one of the determinants of capital structure providing a measure of level of collateral in which firms can have on its debtors. Firm's growth is proportional to the tangible assets. When the average growth of the firms is high in , it attracts the interest to the public due to the reputation or goodwill gained which create confidence to investors as financial distress costs are low (Frank and Goyal 2009). Asset tangibility offers an important function in the operation of the firms such that when firms need expansion, need loan, as results uses assets to secure borrowings. Most of potential investors uses assets as collateral, collateral offers advantage to debt holders and reduces the costs. As results firms will be able to operate with high leverage ratio with less financial distress costs (De Jong et al,2008,Hovakiamiam et al 2001, Titman and Wesels, 1988, Bradley, et al 1984).

Trade off theory pointed out that firms with a large number of tangible assets need to include more debts as compared with firms with large intangible assets. The effect can be traced when firms uses tangible assets as collateral in case of liquidation. It can be argued that asset tangibility create a simple room for easy borrowings (Wiwattanakantang,1999). However, when firms have lesser assets are restricted to different lending conditions , due to these

conditions tend to restrict firms as a result, they prefer equity. Then the value of asset tangibility, which is measured through the ratio of fixed assets to total assets, suggests that the higher the ratio is, the higher the security. Which suggests that it becomes easy to discharge debts in case of debt.

On the other hand, pecking order theory contended on the importance of selling secured debt for the success and development of the firms, which reduces the information asymmetry between insiders and outsiders which offers more advantage to the firm's growth. It is expected to have a positive sign coefficient of assets tangibility. In order to establish this relationship between tangibility and leverage, the ratio is based on computed by dividing fixed assets and total assets as assets tangibility.

Therefore, assets tangibility forms an important part in securing loan and has been evidenced much by empirical studies conducted by (Antoniou et al 2009, Deesomsak et al, 2004, Huang and Song, 2006). From above discussion leads us to predict that assets tangibility is positively related to the leverage.

Growth Opportunities

Growth opportunities offers additional values of the assets but limited to intangible assets which can neither be collateralized nor charged under taxable income (Titman and Wessel, 1988). This has drawn several opinions from different researchers on prediction of growth on leverage, for example studies made by (De Jong et al, 2008; Kim et al 2006) contended on the negative relationship between growth and leverage. But Fama and French (2002) founded a positive relationship between growth and leverage. However, still mixed results were obtained in the study made by Rajagopal (2010) who obtained both positive and negative. Frank and Goyal (2009) contends that growth of the firm increases the distress costs, agency costs problems and reducing free cash flow problems. Always firms prefer greater value on their investment. The static trade off theory has shown that firms with more growth opportunities have less debt because the need of debts is also less, resulting into a lower leverage (Antoniou et al, 2008). In contrast, firms with high growth opportunities prefer to retain its debt capacity while looking future borrowing. In addition, growth opportunities is considered in form of capital assets which

add value to the firms and are not used as collateral which does not form part of the current taxable income(Titman and Wessels,1988). This suggest that a negative relationship between debt and growth opportunities. Trade off theory has shown negative relationship between growth and leverage, shield is also a key. For example, when earning before tax is low this implies that high leverage that means firms is necessarily required to use internal funds to produce a positive NPV on the investment, thus raising additional fund through external sources (Antoniou et al, 2008). This , can also be measured through percentage change of total assets, Thus, growth is positively related to leverage.

H4: Growth opportunities are negatively related with leverage.

Non Debt Tax Shield

Based on the studies made by Kim et al 2006, Rajagopal 2010 addressed on the significant negative relationship between NDTs and the leverage. They argued based on the elements involved in deduction such as depreciation, amortization, depletion etc and tax on debt. As a matter of option NDTs can be used as substitute for tax deductible when debt financing is needed. It is expected to have negative relationship between leverage and NDTs, this ratio is calculated based on EBIT to total assets, it can be argued high ratio reduces the taxable income, resulting into discouraging firms on using debt. Non debt tax shield seems to have deviated in viewing firm's leverage through trade off theory. De Angelo and Masulis (1980) incorporated personal taxes to the model of Modigliani and Miller (1977) through considering deduction of depreciation, investment taxes being substitute for debt financing as the results to the equilibrium of the leverage (Antoniou et al 2008). Both trade off and pecking order theories founded a negative relationship between non debt tax shield because firms with large non debt tax use less debts in their capital structure compared to the firms with less non debt tax shield (Titman and Wessels, 1988).

Liquidity

It is worth noting the importance liquidity and possible way of finding liquidity is by looking the how quick can assets be converted when firms fall due. This element is important to be included as measure of the behavioural and the responsiveness of the firms resolves the debts. Thus the high liquidity ratio suggest that firms have high power of meeting its short term obligation when due, it is predicted to have direct relationship between leverage and liquidity. In most cases liquidity considers the following cash, liquidity, and part of unused borrowing power. Whereas free cash flow is considers the aspect of NPV for decision making that means a positive NPV projects are worth for investing (Myers and Majluf, 1984, Jensen, 1986). However, the relationship

between leverage and liquidity is negative due to the information asymmetry. That means the use of fund to finance project is ranked based on the priority as pecking order theory considers the use of internal funds first, suggesting debt is preferred than equity. Conversely, trade off theory proposes the positive relationship between leverage and liquidity. Therefore, from trade off theory, firms with higher liquidity prefer to use more debts, which mean to meet obligations on time (Shekh and Wang, 2011; De Jong et al (2008).

CHAPTER THREE

DATA AND METHODOLOGY

This project examines firms level determinants of capital structure and assessing the effects of 2008 financial crisis on 75 firms of different industries LSE for period of 23 years covering 1995-2017. The annual financial data of all selected firms were obtained from London Stock of exchange for the period 1995-2017. In addition, financial sector and utility firms were all excluded due to the nature of their capital structure which is quite different from other industries (Zou and Xiao, 2006).

This study uses panel data based on different firms with different operations. The panel data offers more advantage through controlling biasness caused by heterogeneity. It also provides coverage of both time series and cross sectional and able to incorporate large number of observations. It also offers more informative data with less multicollinearity problems in variables.

Each study tend to use different techniques during data analysis . since this study employs panel data then study formed regression model which provides best results. Dougherty(2011) contended the manner in which random sample can be explained in given population, such that either use of fixed effect or random effect, or pooled effect. It is worth noting the importance of each method while analyzing panel data where random sample are selected.

The use of random and fixed effect models varies on their use i.e. Fixed effect considers the effect of each cross sectional item involved in the sample and allows the intercepts to vary on each component. In contrast, random effect model assumes the variables involved in the sample are not correlated, thus, to obtained the required results which are reliable and be able to generalize the whole population. Then Hausman specification test is applied such that if the results is significant, then Null hypothesis is rejected, then the fixed effect model is employed. Similarly, if the null hypothesis is accepted, then the use of random effect will be in place. Furthermore, the validity of data can be tested by using random effect model or pooled ordinary least square(OLS). The most common tests for this is Breusch Pagan Lagrange Multiplier tests, whereby if the results show the rejection of null hypothesis(H_0), then random effect will be applied or pooled OLS. It is therefore, based on the tests conducted fixed effect model was selected in this study, intends to look at determinants of capital structure and impact of financial crisis of 2008 on leverage. This was through looking effects of independent variables including; - profitability, asset tangibility, growth opportunities, liquidity, and size to the dependent variable (leverage). Thus, the obtained coefficient values show the level of impact on firm's variable on leverage

Variables Definitions

This study has used research framework based on other studies made from literature review. The study use leverage as dependent variable and six independent variables of the firms level i.e. profitability, tangibility of asset, firm size, Non Debt Tax Shield, Liquidity and Growth opportunities- to provide clear dimension on measuring determinants of corporate structure.

Dependent variable

Leverage can be measured based on either book value or market value, each of these base, has its own advantages over the other, i.e. book values refers to the historical costs whereas market value are future based prices. Thus, classification of leverage is based on book values, which includes the following , ratio of longterm debt to total assets, short term debts to total assets, total debts to total assets and Debt to capital ratio(debt+book value of equity) (Deesomsak et al 2004, Antoniou et al (2008) , Bartoloni, 2013, Rajan and Zingales,1995). The definition of dependent variable (leverage) has been defined differently based on the nature and scope of the study i.e. proper interpretation of debts and assets, difference arises on whether using book value or market value or both. Thus, this study need to examine the effect of three chosen ratio while investigating the corporate determinants of capital structure on the listed firms. The selected leverage ratio includes the following , Total Debts/Total Assets, Total debts/ Total debts +equity , Short term debt/total assets, long term debt/total assets.).

Independent variables

Independent variables included in this study of determinants corporate capital structure are profitability, firm size, growth, liquidity, asset tangibility and net debt tax shield. These variables are useful for investigating level determinants of corporate capital structure and its effects during financial crisis of 2008.

Size

The effect of size has important role in determining financial distress of the firm i.e large firms are less riskier to be bankruptcy because of greater source of revenue and greater access to the credit in the cheapest way, thus trade off theory suggested the positive relationship between leverage and size(Titman and Wessels,1988), Similarly, pecking order theory predicted same behavior because large firms have more internal funds , easy to raise equity and well known to investors, as its information can be obtained in the market.

Firm size can be measure by either sales or total assets, this requires introduction of natural logarithm in to both, either i.e. use natural logarithm of

sales or natural logarithm of total assets. this study uses natural logarithm of total assets. Firm's sizes have direct relationship with value of assets value, that means when firms size grow, also its assets increases.. Empirical studies on capital structure employed natural logarithm of total assets as alternative measure (Frank and Goyal, 2009; Cassar and Holmes (2003) Antoniou et al, 2008). On the other hand, other studies used logarithm of sales includes (Titmans and Wessels, 1988; Rajan and Zingales, 1995). Hence, this study employs natural logarithm of total assets.

Growth opportunities

Growth is one of the variable used in determination of capital structure, from trade off point of view, trade off theory shows growth reduces firms leverage costs accompanied on issuing new debt, on the other hand growth increases profits, this create enough internal funds is available for investment , resulting into lowering debt costs. Also when growth is more positive , lenders view such firms as more reliable, as results can easily access debt financing, thus, positive relationship is expected . in order to measure growth, it is worth noting growth in terms growth rate of book value of the assets. Growth is considered in terms of change and prospects of the firm. When the growth rate is high, it expected growth of the firm will also be high. For purpose of this study uses model adopted from (Sheikh and Wang, 2011; Deesomsak et al, 2004) which demonstrated by ratio of $\{(Book\ Value\ Total\ Assets - BVequity + MVequity) / Book\ Value\ Total\ Assets\} * 100$

Asset tangibility

Asset tangibility is defined in terms of ratio of of fixed assets to total assets. Firms with more tangible assets have high value of asset tangibility, trade off theory predicts that firms with more tangible assets are likely to have high leverage ratio. When firms use collateral on securing debt, then collateral serves as guarantee in case of default or bankruptcy. Trade off theory predicted positive association between asset tangibility (Titman and Wessels, 1988; Rajan and Zingales, 1995)

In contrast, pecking order theory viewed that when firms have high proportion of tangible assets, reduces information asymmetry and lowers the costs of raising fund through equity. It predicts inverse relationship between asset tangibility and leverage, thus, firms need to make proper decision of selecting tangible assets, otherwise assets tangibility will increase ,thus increased debts(Rajan and Zingales,1995; Deesomsak et al, 2004) . Hence, positive relationship between asset tangibility and leverage is expected,

Liquidity

Liquidity is considered through proportion of current assets to current liabilities, showing how quick can assets meet its obligation when fall due. It is measured through ratio of current liabilities to current assets. From pecking order theory firms with high liquidity prefers less borrowings due to its internal capacity. Thus it is expected positive relationship between leverage and liquidity (Sheikh and Wang, 2011; Deesomsak et al, 2004).

Profitability

Profitability is one of the determinants of capital structure and measured, through dividing earnings before interest tax Depreciation and total assets (Deesomsak et al, 2004 and Frank and Goyal, 2009). Trade off theory suggest that profitability of firms is much affected by market frictions such as agency costs, taxes and bankruptcy costs which have effect on profit. Hence, profits have positive relation with leverage. Most of the profitable firms are less vulnerable to bankruptcy as they can easily access fund with lowest costs, which contributes the increase of profit at the same time enjoying the tax benefits on interests payment.

Net Debt Tax Shield

Net Debt Tax Shield is measured by dividing Depreciation to Total Assets the study made by (Sheikh and Wang, 2011). Trade off theory identified the importance of tax deduction to firms. So when firms have high NDTS it means it reduces chances of enjoying tax advantage on leverage and becomes less valuable. It is predicted that NTDS to have negative relation with leverage.

Based on the above discussion on the variables used, then the following hypothesis are tested to investigate the determinants of corporate capital structure of firms listed LSE.

1. Profitability is negatively related to the leverage
2. NTDS is negatively related to the leverage
3. Firm Size is positively related to the leverage
4. Liquidity is positively related to the leverage
5. Asset tangibility is positively related to the leverage
6. Growth is positively related to the leverage

Model Setting

Variables discussed above are based on theoretical literature and hypothesis made. To analyse the effects determinants like profitability, asset tangibility, growth opportunities, liquidity, and firm size on leverage, panel data analysis is employed. The following panel data regression model is designed for the selected firms in Listed in London stock of Exchange (LSE);-

$$Y_{i,t} = \alpha + \beta X_{i,t} + \mu_{i,t}$$

The double subscripts attached in the above variables differentiate the regression equation formed above from other ordinary time series or cross-sectional regressions. The following is interpretation of the letters and variable used:-

The subscripts

i denotes the cross sectional dimension of firms,

t denotes time series dimension.

Y represents dependent variable (Leverage, Lev_i),

β represents the coefficient,

X shows the explanatory variables in the estimation model,

α is the constant term,
 μ shows randomly distributed error term.

CHAPTER FOUR

EMPERICAL ANALYSIS AND DISCUSION

This study includes 75 non-financial firms listed in LSE, the importance of excluding financial firms is based on the nature of different accounting rules and regulations in reporting (Rajan and Ziangles,1995). The study covers the period of 23 years from 1995-2017 for different companies with different operations.

The discussion on determinants of capital structure and impact of financial crisis on capital structure was divided into two parts, the first part include data for the whole sample period (1995-2017) and the second part which focuses on the analysis of financial crisis will be divided into two groups such that pre crisis (i.e. from1995 to 2006) and post crisis (i.e. from 2009 to 2017). That means data of 2007 and 2008 are excluded because financial crisis occurred. Then, the study begins with analysis to whole sample of selected firms for the period (1997-2017).

Descriptive Statistics

Table 1.3 shows the descriptive statistics for both dependent and independent variables of the firms listed in LSE and limited to 75 firms. In general, the results obtained shows the leverage mean ratio of 0.2347 which deviates at 14.48%, of the leverage ratio of .2347 suggest that firms listed in LSE seems to be financed through equity. The results obtained are similar with studies made by De Jong et al (2008) in Pakistan and Indonesia that revealed leverage mean of mean of 0.17 and 0.19 respectively.

Also the results obtained from table suggest that profitability have negative relationship with leverage, such that an increase of 1% in profitability will reduce leverage by 15.18%. in addition, firm size, tangibility, liquidity have positive influence on leverage as expected, and NTDS had negative relationship with leverage.

Table 1.3: Summary of Descriptive Statistics

Variable Name	Std.			
	Mean	Dev.	Min	Max
Leverage	0.2347	0.1448	0.000	1.198
Tangibility	0.3010	0.2274	0.000	0.952
Size	14.2890	1.6903	9.680	19.746
Growth_opp	0.6080	0.2080	0.065	2.392
Non_tds	0.0331	0.0221	0.000	0.223
Liquidity	1.5232	1.0722	0.228	21.612
Profitability	0.1518	0.0796	0.000	0.700

Source: Researcher Computation Results 2018

Regression results for firms listed in LSE

The analysis of the firm starts by looking the whole sample period (i.e. 1995-2017). This provides the important base on fresh evidences on the firm level determinants of the capital structure. The result of this model is based on 1628 observations and 75 groups of industries. The t statistics results obtained showed that the variables involved in the study are significant at 11.5% such that the alternative hypothesis (H_1 to H_6) are not rejected which suggest that all independent variables have significant effect to firms leverage. Also the probability value(P- Value) of the F Statistics is statistically significant (Prob > F =0.0000) meaning that the model used is perfect. Further, literature

reviewed, and several hypotheses designed to ascertain effects of determinants on leverage. The results of regression are shown on **Table 1.4**.

Profitability

The results of profitability obtained indicates negative relationship with leverage and the results suggest significant relationship at 1%. Thus, the finding agree with initial hypothesis H₁. this is inconsistency with studies made by (Rajan and Zingales, 1995); De Jong et al, (2008); Cheng and Shien, (2007) which supports the idea of pecking order theory but disagree with trade off theory. The obtained results with negative coefficient and at the significant level of 1% agree with pecking order theory.

Moreover, the results obtained suggest that profitability (PROF) of firms is statistically significant and has negative influence on leverage (-0.3003, 0.000). This is in line with earlier hypothesis which argues that profitability is negatively related with leverage. It also confirms the idea of pecking order theory that most of firms prefer to use internal source of funding than using debts. The current results could have been attributed by the high costs of borrowing, which suggests that most of the firms prefer using internal funds. The results obtained are in line with other similar studies made and showed negative relationship between profitability and leverage of the firms (Fama and French, 2002; Wiwattanakanang, 1999).

Firm Size

Firm size is statistically significant at 1% and positively related with leverage. The findings obtained in the regression output are supported by Titman and Wessels, 1988, the ability of firm to select the financing mechanism depends on the size of the firm. As most of the large firm have ability to diversifies its investment opportunities and access fund easily, and have lower risks than small firms. In addition, another advantage of large firms have little gap on the information asymmetry between managers and investors because of increased transparency.

In addition, results obtained from study confirms the earlier prediction made showing that size of the firms is positively related to leverage and firms size is statistically significant at one percent (0.0263, 0.000). Other studies on with empirical studies (Antoniou et al, 2008). It is argued that most of larger firms prefer diversification of revenue; as a result firms hold higher leverage in capital structure (Titman and Wessel, 1988). It seems that large firms have high credit rating; thus higher debts at lower costs in contrast with small firms. Therefore, it can be argued that the results obtained could have been contributed by firms under this study being of similar size and this make no any significance in size of variable

Thus, this support earlier hypothesis

Assets tangibility

Assets tangibility has statistically significant at 1% and positive related with leverage, this is supported by earlier studies by Myers (1984), Haris & Haviv,(1991), Antonious et al 2008. When the leverage ratio increases with level of tangible assets, this means where firms have enough collateral assets form an important base for high security for debt repayment, thus when debt is secured, it becomes less riskier and low financial distress. This, the results support hypothesis made. Alternatively, asset tangibility stand as substitute for weak creditors, as it provide the opportunity of standing as collateral in case firm fail to pay or bankruptcy (Cheng and Shiu,2007). Consequently, firms with limited tangible assets are not able to access funds from lending institutions or firms, as a results leading to severe lending conditions (Wiwattanakanang, 1999). This, suggest that the results obtained above supports both trade off and pecking order theory.

NDTS (Non-Debt Tax Shield)

NTDS has statistically insignificant at 1% and negatively related to the leverage which supports the earlier hypothesis made. This is in line with studies made, (Rajan and Zingales,1995; Deesomsak et al 2004). When firms

have high NTDS suggested that have little intention on taking tax advantage on debts tax shield as it becomes less valuable in the leverage.

LIQUIDITY

Liquidity is one of the proxy measure of leverage of firms, the findings provides significant at 1% and positively related to the leverage, this supports earlier hypothesis which is favour of trade off theory, but on the other hand disagree with pecking order theory, which suggest negative relation with leverage. However, some of the behavior prefer manipulating figures to show the good view of the firms in favor of shareholders (Deesomsak et al,2004). Thus, this supports hypothesis made

Growth

Growth found to be significant and positively related to the leverage, this supports prediction made pecking order theory, which suggest that firms with more high growth are expected to have increased debts, such that the growth supports the reliability of firms.

Table 1.4: Regression outputs for the whole sample (1995 – 2017)

Leverage	Fixed Effect		Random Effect	
	Coefficient	P> t	Coef.	P>z
tang	0.1660	0***	0.1618	0.000
size	0.0263	0***	0.0226	0.000
gr_opp	0.5923	0***	0.5864	0.000
non_tds	-0.2845	0.141	-0.2467	0.188
liquid	0.0192	0***	0.0206	0.000

profitability	-0.3003	0***	-0.3053	0.000
cons	-0.5320	0***	-0.4766	0.000
Overall R_Square		0.4348		0.4481

* Significant at 10%, ** Significant at 5%, ***significant at 1%

Source: Author's construction 2018

Effects of Financial Crisis on Determinants Capital Structure

To examine the effect of financial crisis of 2008 on capital structure, it is important to consider the period before crisis begin 2007 and the period after 2008 when crisis had spilled over different countries. Then, effect of financial crisis is divided two parts such that pre-crisis (1995-2006) and post crisis (2009-2017). In spite of results obtained in these periods to be similar, yet , it is worth noting some of the few exceptions from results obtained in those periods at each independent variable and its effect on leverage.

Asset tangibility (TANG) seem to have been affected by financial crisis, the results shows that prior to crisis the tangibility of the firms was significant at one percent, and coefficient of 0.1746, and after the crisis the tangibility seemed to be insignificant at five percent coefficient of 0.1258. The results suggest that tangibility variable decreased by 28% from pre crisis period of (1995-2006) to post crisis (2009-2017). This means financial impact on assets tangibility had less impact on leverage of the firms during financial crisis period than it was before crisis. Hence, it can be argued that collateral has become less important in lending decisions. Similarly, lenders needed to identify enough information based on quality and quantity of tangible assets during financial crisis. Consequently, this suggests that firms which fail to provide tangible assets experienced difficult in getting fund for their investment.

The effect of size found to be positive and significant to the leverage at one percent,1% to both prior and post crisis. While looking the effect in terms of big firms which have lower costs, less bankruptcy risk and easy borrowing at low rates. It is therefore the findings suggests that size of the firms has not been

affected by financial crisis. In contrast, the coefficient value drop by 12% on the crisis period.

Also the results of growth shows that, growth has not been affected much at both periods i.e. pre and post crisis and all are significant at 1% and its coefficient dropped by 6% after the crisis. Therefore, the impact of growth on leverage of the industry remained unchanged regardless of the financial crisis and suggesting that the growth of the firms is less significant.

In addition, prior to financial crisis, non tax debt shield (non_tds) was not statistically significant and positive with coefficient of 0.1402 whilst it was statistically significant at 5 (five) percent and negatively related to the leverage after crisis period with coefficient of 0.4774. This reveals that, the crisis changed the behaviour of this variable; non tax debt shield did not have any significant influence on leverage of the industry before crisis but after the crisis it negatively influenced the leverage of the industry.

Similarly, the influence of the liquidity of the industry (liquid) on leverage was changed as result of the global financial crisis. Prior to the crisis with coefficient of 0.0085, the liquidity of the industry did not significantly influence the leverage of the industry whilst it was statistically significant with coefficient of 0.0295 and positively related to leverage of the industry after crisis period. Hence, liquidity had important role during financial crisis.

Furthermore, the influence of profitability on leverage of the industry was not affected by the global financial crisis. The profitability of the industry was statistically significant at one percent and negatively related to leverage of the industry in the pre and post crisis period. The results obtained prior crisis with coefficient -0.3452 and post crisis with -0.2582. It can be argued that most of the firms employed internal earnings rather than using debts in financing their investment activities.

Table 1.5: Regression Outputs of pre and post financial crisis

	Prior financial Crisis (1995-2006)		Post financial Crisis (2009-2017)	
Leverage(Independe	Coefficient	P> t	Coefficient	P> t
Tang	0.1746***	0.0000	0.1258**	0.0300
Size	0.0436***	0.0000	0.0384***	0.0000
Gr_opp	0.6637***	0.0000	0.6209***	0.0000
Non_tds	0.1402	0.6440	-0.4774**	0.0370
Liquid	0.0085	0.1420	0.0295***	0.0000
Profitability	-0.3452***	0.0000	-0.2582***	0.0000
_cons	-0.8088***	0.0000	-0.7412***	0.0000
Number of obs	862			621
Number of groups	75			75
Prob > F	0			0
Overall R_Square	0.4342			0.3058

* Significant at 10%, ** Significant at 5%, ***significant at 1%

Source: Author's construction 2018

CHAPTER FIVE

SUMMARY AND CONCLUSION

Based on influential theory established by Modigliani and Miller (1958), various empirical studies made on capital structure have made an important contribution in area of finance. Most of the earlier studies made on developed countries identified several factors which could affect firms and the underlying reasons for choice of its leverage ratio (debt to equity). The study examined different factors influences corporate capital structure various firms listed in London Stock of exchange. This paper was divided into two parts. Firstly, assessing the evidence related to the determinants of capital structure in LSE, and secondly, effect of financial crisis of 2008 on the firms' determinants. Based on the data of 75 firms obtained from LSE, panel econometric technique used i.e. the fixed effect and random effect regression was used to test the effect of determinants to the leverage and analysing the effects during financial

crisis of 2008 on the capital structure decisions on listed of firms at LSE. The study conducted on 75 companies listed in LSE provides results in line with other studies conducted in previous years. Firstly, the results obtained has shown that predominant theories i.e. trade off theory and pecking order theory on capital structure are still applicable to the firms listed London Stock of Exchange.

Also study on the effects of determinant on financial crisis of 2008 firm's choice of capital structure on the financial crisis, it was found that some determinants like Profitability, tangibility, Non debt tax shield, size, and liquidity were all affected and found to be significant at either one and five percent during by financial crisis. It also observed that growth opportunity and profitability being significant influential factor after crisis.

Therefore, the analysis was made to different determinants of corporate capital structure and its effects during financial crisis. However, study is limited in time; also data provided were on only listed firms listed in London stock of exchange.

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Appendies

Fixed Effect Model

Leverage	Coefficient	Std. Err.	t	P> t
tang	0.1660243**	0.0228	7.28	0***
size	0.0263	0.0028	9.37	0***
gr_opp	0.5923	0.0122	48.57	0***
non_tds	-0.2845	0.1930	-1.47	0.141
liquid	0.0192	0.0038	5.05	0***
profitability	-0.3003	0.0303	-9.9	0***
_cons	-0.5320	0.0469	-11.34	0***
Number of obs			1628	
Number of groups			75	
Prob > F			0.0000	
Overall R_Square			0.4348	

Random Effect Model

leverage	Coef.	Std. Err.	z	P>z
tang	0.1618	0.0212	7.64	0.000
size	0.0226	0.0025	8.98	0.000
gr_opp	0.5864	0.0121	48.44	0.000
non_tds	-0.2467	0.1872	-1.32	0.188
liquid	0.0206	0.0037	5.6	0.000
profitability	-0.3053	0.0300	-10.16	0.000
_cons	-0.4766	0.0430	-11.09	0.000
Number of obs	1628			
Number of groups	75			
Prob > chi2	0.0000			
Overall R_Square	0.4481			

Hausman Specification Test

HO: Random Effect Model is appropriate

H1: Fixed Effect Model is appropriate

Hausman Specification Test Results

Prob>chi2	0.0000
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Since P-Value is less than 0.05, we reject null hypothesis, meaning that Fixed Effect Model is the appropriate Model to use

Breusch and Pagan Lagrange Multiplier Test for Random effects

HO: Pooled Regression Model is appropriate

H1: Random Effect Model is appropriate

Breusch and Pagan LM Test Results

Prob > chibar2	0.0000
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Since P-value is less than 0.05 we reject null hypothesis meaning that Random Effect Model is appropriate.

Fixed Effect Model prior to financial Crisis

Leverage	Coefficient	Std. Err.	t	P> t
tang	0.1746	0.0344	5.07	0.000
size	0.0436	0.0048	9.02	0.000
gr_opp	0.6637	0.0180	36.79	0.000
non_tds	0.1402	0.3037	0.46	0.644
liquid	0.0085	0.0058	1.47	0.142
profitabilit	-0.3452	0.0449	-7.68	0.000
_cons	-0.8088	0.0777	-10.41	0.000
Number of obs		862		
Number of groups		75		
Prob > F		0.0000		
Overall R_Square		0.4342		

Fixed Effect Model Post Financial Crisis

Leverage	Coefficient	Std. Err.	t	P> t
tang	0.1258	0.0577	2.18	0.030
size	0.0384	0.0070	5.49	0.000
gr_opp	0.6209	0.0264	23.56	0.000
non_tds	-0.4774	0.2277	-2.1	0.037
liquid	0.0295	0.0059	5.03	0.000
profitabilit	-0.2582	0.0419	-6.16	0.000
_cons	-0.7412	0.1142	-6.49	0.000
Number of obs			621	
Number of groups			75	
Prob > F			0.0000	
Overall R_Square			0.3058	

Variable Name	Mean	Std. Dev.	Min	Max
leverage	0.2347	0.1448	0	1.198
tang	0.3010	0.2274	0	0.952
size	14.2890	1.6903	9.68	19.746
gr_opp	0.6080	0.2080	0.065	2.392
non_tds	0.0331	0.0221	0	0.223
liquid	1.5232	1.0722	0.228	21.612
profitability	0.1518	0.0796	0	0.7