BUSN79—Business Administration: Degree Project in Accounting and Finance.

Financial Leverage and Market Return: Empirical Evidence from US Market Indices.

Author: Ernest Agyei

Supervisor: Håkan Jankensgård

Date: 28th May 2020

Contents

Acknowledgement

The author really wishes to thank his supervisor, Håkan Jankensgård, for his advice and guidelines not forgetting Reda Mousli. The author is grateful to his Mother, Afia Chiaa, Family and friends, Derek Asuman, the Ghanaian Community in Lund, Swedish Institute, and Lund University. I really appreciate their extraordinary support in this thesis process.

Section 1.0: Abstract

Purpose

The purpose of this paper is to empirically investigate the relationship between leverage and firm performance if any exists, "what is the direction of the relation?" as well as test the possibility of non-monotonic relationship. This is a central issue in corporate finance and there is a huge gap in existing literature since there is no generally accepted conclusion on their relationship status, thus, the findings of this paper will underpin literature and enhance efficient decisions and policies of corporate agents like managers, investors, and government. Also, the notion that the relation of leverage and firm performance has a lot to do with its measurement will be comprehensively studied to robust the results.

Design/methodology/approach

Panel regression analysis is used for this study. This relationship is, tested empirically, robustly tested with other factors like control variables, standard robust, lagging to address reverse causality and serial correlation, the use of a variable instrument like asset tangibility, using dummy variables for industry, regional and year effect, the use of Hausman V test to choose a fixed effect, use of a white test for homoscedasticity to test good fit, and test also quadratic function. Later, a further robust test by comparing the results with other measurements of both the firm performance and leverage. Leverage is proxied by debt to asset and firm performance is measured by market return.

Findings

The results reveal that an increase in financial leverage has a negative, statistically significant impact on market return after introducing an instrumental variable to deal with potential endogeneity issues to make the results very robust, at the 10% level. The effect is linear and has a lot to do with measurement choices since some measures did not find significant pronouncement. The first null hypothesis is rejected while the second is accepted, with regards to this paper. This is to underpin literature and assist corporate decisions.

Originality/value

This is the 'first study' that examines the relationship between financial leverage and market return of companies considered into the top U.S market indices including S&P 500 Index, Dow Jones Industrial Average, NASDAQ Composite, and NYSE Composite Index, together known to be part of the Security Market Indicator Series (SMIS). This approach is considered to give us exposure to leverage and market return of companies internationally listed from other countries together

with companies already in the US (and dual-listed companies), so, this study will have a new look as it deals with the US market which is efficient according to literature. According to Ebaid (2009, p. 478) and Kyereboah-Coleman (2007, p. 57), most of leverage and market return relation studies consider developing markets (countries), thus, there are limited studies of developed markets like the US. Also, this paper uses market return as the measurement of firm performance and compare with other firm performance measurements like ROA and Tobin's Q as well as uses leverage as debt to assets compare with debt to equity (gearing) measurement to robust the results and aids our understanding and our approach to financial leverage decisions and mechanisms. It also considers different robust testing levels like the use of instrumental variables to address the endogeneity issue. I use dividend (%) plus stock return (%) as the formula for market return, to make my studies different from existing works of literature that use CAPM's formula and the Fama-French three-factor model which is an extension of the CAPM, as it is comprised of market risk, the outperformance of small-value cap firms relative to large-valued firms, and outperformance of high book-to-market value firms relative to low book-to-market value firms. $E(Ri) = Rf + Bi[E(RM) - Rf]$, for market return, $E(Ri) = Rf + B1[E(RM) - Rf] + B2\,(SMB) + B3\,(HML)$.

Keywords: Firm Performance, Market return, Leverage, Debt Overhang theory, Irrelevance theory, US stock indices, Free cash flow theory

Section 1.2: Introduction:

Managerial performance and responsibility to maximize shareholders' value are administered and enhanced by literature covering corporate governance. The maximization of the shareholders' wealth largely depends on the betterment of managerial performance, and corporate literature tries to give a better understanding of management to improve their decision makings to favor growth. Thus, making corporate governance literature vital to corporate finance. One central issue in corporate finance is leverage influence on firm performance (Modigliani and Miller, 1958), deciding on capital structure is one of the most important and challenging decisions managers face in the corporate world, and a change in the financing mix determines, arguably, firm's financing capacity, firms risk exposure, cost of external financing, investment capacities, strategic decisions, and eventually shareholders wealth. Irrespective of how valuable this topic is to the corporate world, few empirical studies are being examined to verify and clarify the long-debated issue of the relationship between market return and leverage financing (Dimitrov and Jain 2007, George and

Hwang, 2009). Since Modigliani and Miller (1958) work on irrelevance theory, much literature has been focused on the capital structure of corporations. Some pieces of literature claim capital structure explain market return, others say it does not. Even if the former holds, there are also conflicting findings as to the direction of the effect. Sides of the relation's arguments have been studied and reported on. First, leverage has a positive explanation for firm performance. It's argued by Jensen (1986) that leverage spills positive effect on firm performance by raising pressure on managers to perform to meet debt servicing obligation in a way to reduce free cash flow to control management moral hazard of misuse or overuse of the cash (Gill et al., 2011, Ahmad et al., 2013, Yang et al., 2004). Second, literature also found there is a negative relationship that exists between leverage and firm performance (Dawar, 2014, Yang et al., 2010). The Authors argue that higher leverage firms are prone to higher agency costs since debtholders' interests come in conflict with existing shareholders' interest, of which moral hazard gives rise to inverse relation (Jensen and Meckling, 1976, Myers, 1977). Moreover, the work of literature argues that mixed relationship exists between leverage and firm performance (Graham, 2000, Opler and Titman, 1994, Mourillo, 2005, and Arthur, 2010). The financial crises and boom and bust are argued by Adami et al. (2015) to have exposed firms of not managing the issue of financial leverage well, there is a lack of empirical consensus when it comes to this topic, firm performance and leverage relation (Laurent, 2007). The author stated that the lack of consensus can be ascribed to the various measurements, both the dependent and the independent variables, implying different results are derived from different measurements, thus, deductively, the measurement indicators play a role.

So, to analyze to contribute and enhance evidence of the true underlying relationship between leverage and firm performance, I used market return as the measurement of firm performance, since the dataset is full of public listed firms. I also use an efficient market, thus, considered companies included in the top market indices: S&P 500 Index, Dow Jones Industrial Average, NASDAQ Composite, and NYSE Composite Index since these indices house the companies that can be a representation of the USA and other international markets. This relationship is robustly tested, empirically, with factors like control variables, lagging to address reverse causality and serial correlation, comparing with other measurements of both the firm performance and leverage, the use of an instrumental variable, quadratic function testing, using dummy variables for industry, regional (local or foreign company) and year effect, the use of Hausman test to choose between fixed effect and random effects, a test of a good fit. I then proceeded to use other measurements of

leverage and firm performance to check further if indeed the relationship this paper has found will pronounce in those measurements with this same dataset, and the same methods as the aforementioned but only differ in the measurements. The models' robustness was tested with the same approach as the one used for the main measurement models, and both hypotheses, irrespective of the measurement, except for the models which have gearing as the variable of interest since gearing has no positive significant relation with asset tangibility, thus, I cannot use the instrumental variable to address endogeneity.

The results reveal that an increase in leverage financing has a negatively statistically significant impact on market return. The instrumental variable gave a negative statistically significant (at the 10% significant level) results and an economically significant relation in line with literature and theories. Indicating the results is negatively significant even after introducing an instrumental variable to deal with potential endogeneity issues, that there is a negative sensitivity of firm performance with regards to leverage financing which is in line with work of literature and debt overhang theory, financial distress cost and so forth. This implies that a percentage increase (decrease) in leverage financing will cause a mean percentage decrease (increase) in market return, statistically significant because it is at the 10% significant level. The relation between firm performance and leverage depends on the measurement in line with the work of literature (like Laurent, 2007, Ling and Chang 2011). After robust testing, only market return relation with leverage is negatively, statistically significant. Also, aside from market return and gearing, and Tobin's Q and leverage, all other relations based on the base models are statistically and economically significant, when regress independent variables and the dependent variable, without further robust testing for endogeneity, considering the base model for the first hypothesis (H1). Also, only ROA and leverage, ROA and Gearing, and Tobin's Q and Gearing results found significant support for non-monotonic relation, considering the base model for the second hypothesis (H2). Also, none of the models has a non-monotonic function pronounced in it when the base model is robustly tested. This makes us not find support for the non-linear function that enables the trade-off theory to be applied in this study. The effect is linear and has a lot to do with measurement choices. The results indicate an efficient market uses less leverage financing consistent with the pecking order. These findings are also consistent with Myers' (1976) underinvestment problem with leverage financing, Opler and Titman's (1994) shareholders problems with debt, thus a high level of leverage is detrimental to firm performance, market return

and in contrast against Modigliani and Miller's irrelevance theory and agency theory. The inverse relation pronounced is also consistent with the works of literature [such as Abor (2005)—firms on Ghana stock exchange; Ardatti (1967)—who used railroad firms; Adami et al. (2015)—with listed firms on London Stock Exchange; Acheampong, Shibu, and Agalega (2013)—who studied the Ghana Stock Exchange firms]. While on the other hand, it is in contrast with literature which found positive relation [such as Gonzalez (2002); (Jensen, 1986 and Stulz, 1990); (Graham & Harvey, 2001); (Jensen, 1986 and Stulz, 1990); Khalid et al (2014), Almajali et al (2012)]. The study did not find support for non-monotonic relation between leverage and market return which contrasts with literature [such as Ganiyu et al.'s (2019)] study of capital structure and firm performance in Nigeria. The inability to reject the second null hypothesis that there is a monotonic relationship can attributes to this paper not considering firm characteristics and it is in line with Ibhagui and Olokoyo (2018) argument that work of literature on the relationship between leverage and market return reports a monotonic relationship without a qualitative analysis of firm characteristics like size, and leverage level. The first null hypothesis is rejected while the second is accepted, with regards to this paper. This is to underpin literature and assist corporate decisions.

Research question:

1. Is market return sensitive to financial leverage?
2. How a market return is affected by financial leverage, considering companies listed on the top-notch US market indices for 2010 to the 2019-time horizon if the question (1) holds?
3. Does the relation depend on measurements?
4. Does leverage has a non-monotonic effect on the market return?

The remainder of this paper is organized in this way: section 2 is of literature review, section 3 has the theoretical framework and empirical review, section 4 is made of empirical framework and methodology, section 5 is data and descriptive statistics, section 6 is made of empirical analysis, section 7 is the conclusion and section 8 and 9 are made of tables and figures, reference lists and further included with section 10, appendices.

Section 2: Literature Review

There are diverse findings from previous studies that try to find the relationship between leverage and firm performance (I use market returns as a proxy), one of corporate finance central questions (Modigliani and Miller, 1963). These findings come in different arguments, some studies find no

relation, others find relation, but there are also conflicting arguments to the latter, as some works of literature find a positive relationship, others find a negative relationship while there is also a mixed relationship between leverage and firm performance. The literature review is organized in such a way of various arguments respective works of literature have covered. It starts with no relation argument, then positive relation, negative and mixed relation.

No or insignificant relationship between Leverage and market return

Modigliani and Miller (1958) argue that under perfect market return, financial leverage does not affect the market value of a firm, thus, its performance. These findings caused greater concern for the corporate world to take a critical look if indeed the use of leverage financing does not affect firm performance, which made literature to channel resources in this vital corporate finance issue, for instance, Ling and Chang (2011) argue that there is no evidence of firm performance being sensitive to leverage when leverage is high, using Taiwanese listed firms, and using Tobin's Q as a proxy for firms' performance. Toraman, Kihc, and Reis (2013) also did not find evidence of firm performance having any relationship with financial leverage, using the return on assets (ROA) as a proxy for firm performance measurement. Cole, Yan, Hemley, (2015) study support the no relevance theory introduced by Modigliani and Miller, as their study results showed that leverage and firm performance are indifference to each other in the three US sectors the paper focused on just as Philips and Sipahioglu (2004), Kovenock and Philips (1997) found insignificance results as well Velnampy and Anojan (2014).

The positive relationship between leverage and market return.

Gonzalez (2002) holds the underlying point that debt financing influences managers to make value maximization decisions and policies. It is also argued that leverage financing provides a disciplinary mechanism against problematic perquisite and value destruction investment managers who get influenced by excess cashflow undertake (Jensen, 1986 and Stulz, 1990). This study gives the impression that leverage financing is a mechanism that deters managers from the misuse of available cash since they have the commitment to pay off the debt's principal and interest that comes along to reduce the propensity for the firm to default. The direct and indirect costs that are accompanied by default cannot be undermined. The agency of free cash flow is handled by the need to service debt obligations, to reduce chances of free cash flow available to be squandered by management irresponsible spending including perks. Also, the threat of defaulting on debt's principal and interests influence firms' management to be efficient in their dealings. Gonzalez

(2002) suggests there are benefits of financial distress like revenue and cost restructuring, corporate operational structure, organizational strategies, and corporate governance restructuring. There is a consistent view that general rating and leverage are positively statistically correlated (Graham & Harvey, 2001), as even together determined, thus, highly levered firms will be downgraded to junk rating whiles low levered will be given investment rating, which will affect the cost of external financing including the high cost of capital, credit rationing, terms of debt covenants (which can be unbearable and profit draining). Financial distress is found by several authors to have distressed firms' Executives lose their jobs compared to their not distressed counterparts. Khalid et al (2014), Fosu (2013), Almajali et al (2012) found a positive relationship between leverage and firm performance, using profit as a proxy.

The negative relationship between leverage and market return.

On the other hand, leverage financing becomes an impediment for firms to undertake positive NPV investment opportunities, this is consistent with what Myers (1977) refers to as "debt overhung". If firms are forced to forego some available positive NPV Investment Projects, it reduces the growth rate of the firm since it's not making either organic investment or inorganic investments that cause the firm's performance, on average, to be explained by the leverage on a negative basis (Varouj, Ying, and Jiaping, 2003, Aivazian et al., 2005 & Ahn et al., 2006). Firms cannot have access to new underlying assets that could increase the cash flow, thus, there will be negative implications on such a firm's performance, and eventually, the firm's value. Varouj, Ying, Jiaping (2003) argue that the disciplinary mechanism of agency cost theory is usually not maintained in a firm with many opportunities to take NPV investment projects, so, only firms with few positive NPV investment opportunities' managers can be disciplined with leverage financing. Gonzalez (2002) says evidence from the studies of Warner (1977) and many other studies established that direct financial distress cost is comparatively low, including the survey that was done by Altman and Hotchkiss (2006). Empirically, it is known from Bris et al. (2006) study that on average, there is an 8.1% direct financial distress cost for smaller firms' samples on pre-bankruptcy assets. On the other hand, there are Indirect costs like debt overhung, underinvestment, policies like fire sales due to being financially constrained and it is on the urge of defaulting and has many illiquid assets, lost sales (loss customers), lost employees (loss experts), divided attention of the management (Gonzalez, 2002). Adding to the distress cost, decision-makers are coerced to make even harmful decisions against their partners and other stakeholders of the business life-cycle, not to rule out

that competitors will have competitive advantages and aggressive behaviors like a long purse and cutthroat competition to obtain a greater market share portion (Gonzalez, 2002). However, Carlos (2005) use an instrumental variable to find that leverage has a great impact on firm's probability to default while Arthur (2010) argues that on average companies are under-leveraged irrespective of the supposed benefits that leverage financing comes along with, which can be inferred that, the cost outweighs the benefit that is why the corporate world chooses to be under-levered.

.

The mixed relationship between leverage and market return.

The positive effect that comes with the mechanism of leverage financing, also, at a point becomes a burden when a firm gets carried away with the positive "implications" from the leverage (Graham, 2000). Opler and Titman (1994) even argue that in a financial or economic downturn, firms that use greater leverage ratios are highly hit by such economic shocks, they tend to lose a greater portion of the market share and eventually experience lower operating profits than their competitors who use low leverage ratios, ceteris paribus, thus, indicating at such moments, the cost of leverage write off the benefits of leverage and so, the benefit of leverage financing does not come near the cost that high leverage can bring forth to firms. Arthur (2010) argues that when firms increase their leverage position, firms with lower leverage levels increase their market returns more than firms that are already highly levered. Mourillo's (2005) finding is also in support of the work that debt financing can in a way boost firm performance and at the same time hurt the firm badly. We think it is intuitive to imagine that the final effect of a firm's leverage position on its economic performance (Gonzalez, 2002) will be determined by which of the two sides of the economic points will have a larger effect. The author argues that in the end if leverage cost exceeds the benefit of leverage, the highly levered firm will poorly perform compared to the lowly levered firms. On the other hand, the author highlights that, in the opposite scenario where the benefits from leverage enable greater changes than the costs of the leverage, the high levered firms will perform better than the less levered. Empirical evidence from Opler and Titman (1994) for US firms also provide the support that highly leveraged firms lose market share and operating profits to their competitors or peers with less leverage. Some other side of leverage and firm performance relationship significance can be regarded which is part of the mixed argument, for instance, J. Cai (2011) empirical study found that leverage ratio has no significant rotation with a firm's future

R&D spending and the effect of the leverage ratio on a firm's stock price depends on the size of the firm's leverage. A firm with lower leverage ratio experience weaker statistically significant effect, consistent with Matsa (2011) work as well as Mura and Marchica (2010) which also find support for lower leveraged firms' significant positive relation with positive NPV investment projects. By so, J. Cai (2011) findings of the negative relation leverage has with the stock price also is in agreement with the findings of Myers (1977) theory of debt overhang's prediction that firms with greater possibility and probability to experience debt overhung has the stronger impact of their stock price from leverage ratio scenarios. (J. Cai, 2011) also has an empirical finding that outrightly supports that a change in leverage has a stronger negative effect on relatively highly leveraged firms' stock price. So, leverage the negative effect is lower when firms are not "over-leveraged".

Albeit the costs and benefits that the different schools of thought have established will vary to different companies and other factors, it is still worthwhile to analyze the corporate operating and economic performance response to leverage. This paper builds on the analyses of leverage and market return of companies in the USA's top-notch indices.

Section 3: Theoretical background

The theoretical and empirical background of the relationship between leverage and corporate performance is thoroughly analyzed in this section and based on capital structure and financing mix theories. Corporate Finance has different theories that try to find meanings into corporate financial leverage preferences. These theories include, first, the trade-off theory, which establishes an argument for optimal capital structure, by relaxing most assumptions from Modigliani and Miller (1958) hypothesis, apart from assumptions of market efficiency and symmetric information. Although financial leverage increment might create an avenue for firms to increase their value, by profiting from debt tax shields (Modigliani and Miller, 1963), on the other hand, the firm value gets diminished from both financial direct costs and financial indirect costs expected from leverage increment (Ross et al., 2002). According to the tradeoff theory, the optimum level of capital structure is when the benefits and the costs of financial leverage balance out exactly. The trade-off theory of leverage makes us believe that until the optimal capital structure is attained, we assume it is beneficial to increase leverage financing. The trade-off theory identifies that debt interest is subjected to tax deductibility which reduces the amount of a firm's income taxable, thus, reduces the firm's tax liability by tax shield. The trade-off between the bankruptcy cost and tax advantage

of debt financing determines the firm's optimal leverage level and it is realized at the level when the marginal present value of the debt tax shield on marginal debt is equal to the increase in the present value of financial distress costs (Owalobi and Anyang, 2013).

Secondly, pecking order explains the decision for firms' capital structure choice and mix that internal financing is preferred to external financing, ceteris paribus. The pecking order hypothesis argues that firms' choice of order of capital structure mix is dependent on the relative availability and relative cost of the external finance type (Myers and Majluf, 1984). This 'theory' considers financial position, historical profitability, and the need for additional capital for investment opportunities at a point in time. This theory explains why internal finance is preferred to external finance and why debt is considered the best option for firms compared to equity when internal financing is exclusive, thus external financing is on board or is the last resort. Debt financing is deemed interestingly appealing, relatively inexpensive, and flexible. Pecking order theory has a lot to do with information asymmetry. A sect of parties involved in the transaction sometimes has more information than other parties (who are less or poorly informed) which increases information costs to the less informed or uninformed parties. Pecking order explains that managers will first use internally generated funds for their capital needs. If the internally generated funds do not suffice to their investments, cash commitment or operational capital needs, then the firm will consider cheap debt, and make equity the last resort in financing the firm's activities because it's costly and not appealing because of the right and control equity subscribers gain by diluting the equity position of already existing shareholders (Myers and Majluf, 1984 and Popescu, 2009).

Moreover, Irrelevancy theory, put forward by Modigliani and Miller (1958), based on perfect market assumptions like no transaction cost, no taxes, no bankruptcy cost, and so forth. The theory posits that firm value is independent of the capital structure mix of a firm in a perfect market. Modigliani and Miller (theory) emphasized that the market value of a firm is determined by its ability to increase cash flow and reduce its underlying assets exposure to risks, for that matter, the weighted average cost of capital is expected to be constant. Modigliani and Miller state that a firm's value is not influenced by the capital structure mix but by the earning qualities of its underlying assets. Unfortunately, these emphases do not apply in the real world. These assumptions do not hold when put to a test in our real world, and previous researches have indicated they do not.

Also, market timing theory (Baker and Wurgler, 2002) argues that firms prefer equity to debt when a booming economy or the market situation makes the cost of equity financing low, otherwise debt finance would still be preferred as indicated by the pecking order theory. Firms exercise market timing for their equity issues and buybacks. New shares are issued when the stock price is deemed to be overvalued and the firm also, on the other hand, exercises stock buyback from the firm's shares when they are deemed to be undervalued. So, firms use equity financing when the market is favorable to do so.

Besides, free cash flow theory postulates that managers must pay excess cash to equity investors as dividends and interest to debt holders (investors) to reduce the excess cash to mitigate against the misuse of cash and overuse of cash. High debt ratio which correlates with high-interest payments disciplines managers and reduces their ability to invest in value destruction NPVs projects and the use of free cash for perking activities. Jensen (1976) argues that increasing leverage is a disciplinary mechanism to managers as they will tread carefully not to make the firm insolvent (Owadabi and Anyang, 2013).

Debt Overhang theory of Myers (1977) argues that firms higher leverage level induces the increasing probability of firms to forego the availability of positive NPV projects in the future because after shareholders have made initial investments in the projects, the debt holders have their obligations to be fulfilled first before shareholders will be considered for any residual amount that will be left which might be lower even than their initial investment for that project, so, they're discouraged to go on that tangent. The foregoing of such investment opportunities reduces the earning stream of the firm underlying assets that causes the firm performance to be below ideal or that causes an increase in leverage to cause a negative mean explanation of firm performance, ceteris paribus. So, from this theory, it can be inferred that an increase in leverage causes lower investments that cause lower earnings and lower firm performance.

There are Empirical studies on this issue with different findings which include:

No Relation Between Leverage and Market return

Ling and Chang (2011) argue that there is no evidence of firm performance being sensitive to leverage when leverage is high, using Taiwanese listed firms, and using Tobin's Q as a proxy for firms' performance. Toraman, Kihc, and Reis (2013) also did not find evidence of firm performance having any relationship with financial leverage, using the return on assets (ROA) as a proxy for firm performance measurement. Cole, Yan, Hemley, (2015) study supports the no

relevance theory introduced by Modigliani and Miller, as their study results showed that leverage and firm performance are indifference to each other in the three US sectors the paper focused on.

The positive relationship between capital structure and market return.

Wippern (1966), Holz (2002), Dessi and Robertson, (2003), Margrates and Psillaki, (2010) studies of financial leverage and firm value relationship on some industries found positive relationship when the studies used debt to equity ratio as a measurement of financial leverage and earnings to a market value of the common stock as a measurement of performance. Implying shareholders add up value to their wealth by using external (debt) financing. Managers finance their projects with more debt and manage the fund optimally to improve and sustain performance. Hamanda (1969) study also underpin the positive relation arguments as the study found that rate of return is positively related with leverage financing which is in line with Baker & Martin (2011) empirical study of United States of America firms, as well as the study of Masulis (1983) who also used changes in leverage to support a positive relationship with market returns. Considering the market returns monthly, Bhandari (1988) found the support of a positive relationship with annual leverage ratios. Matsa's (2011) work as well as Mura and Marchica's (2010) work also finds support for lower leveraged firms' significant positive relation with positive NPV investment projects.

The negative relationship between capital structure and market return.

On the other hand, some previous studies also indicate that financial leverage relates negatively to corporate performance. Majumdar and Chhibber (1997), Ghosh's (2007) study found the same relation as found by Abor (2005), who argues that debt financing associates inversely with corporate financial performance with listed firms on Ghana stock exchange as a dataset with regards to Abor's study. The authors argue that highly leveraged firms are faced with unfavorable conditions imposed by debt holders' covenants that interfere, in some sense, even against actions that will increase earning and firm performance. This could be motivated by the fact that some covenants might restrict firms from paying out dividends to shareholders or not undertaking positive NPV projects. Highly leveraged firms are prone to the high cost of debt financing which will cause a firm to focus on how to pay the debt burden (principal and interest) and leave small room for focusing on achieving earnings. Firms' habit of extreme financial leverage level would not allow for the firm to enjoy tax shields, and then it leads to an increase in debt distress cost of which the firm becomes exposed to bankruptcy risks and reduces the firm's performance. The

negative explanation of the mean change in firm performance is consistent with the costs of debt theories like debt overhang (Myers, 1977). Muradoglu & Sivaprasad (2012) also have empirical support for low leverage and high market returns. Moreover, Rao, Hamed, Al-yahee and Syed, (2007), Krishnan and Moyer (1997), Gleason, Mathur, and Mathur (2000), Simerly and Li (2000), King and Santor (2008) and Onalapo and Kajola (2010) provide the support that capital structure also relates negatively with firm performance. Ardatti (1967), although found evidence of inverse relationship leverage and market returns, for railroad firms, was not statistically significant, which the author ascribed to omitted factors that relate differently with leverage and market returns. Adami et al. (2015) analyses of listed firms on the London stock exchange also found there is a statistically significant inverse relationship between leverage and market returns. Not forgetting that Penman, Richardson, and Tuna (2007) found evidence that measurement errors in leverage, misprices, and unrecognition of important risk factors cause an inverse relationship between leverage and market returns. From the Ghana stock exchange, Acheampong, Shibu, and Agalega (2013) found the support of a negative relationship between leverage and market return. George and Hwang (2009) found support for a negative relationship between leverage and market return. Ogebe et al. (2013) found a negative relation between leverage and firm performance for a 10 years' time horizon dataset-study, using variables including GDP and inflation as a key influence on firm performance. The authors empirically classified the considered firms into low leverage firms and high leverage firms based on a baseline of above 10% as being a high leverage firm.

Mixed results of capital structure and market return.

Hurdle (1974) empirical study showed that financial leverage explains a negative mean change in firm performance when two-stage least squares (2SLS) is applied and explain positively when ordinary least squares (OLS) is applied instead. McConnell and Servaes (1995), Agarwal and Zhao(2007), Weill (2007), Cheng, Liu and Chien (2010) and Li Meng, Wang and Zhou(2008) presented additional evidence that support leverage has a positive effect on firm performance from one situation and negative effect on firm performance on others. These situations range from using firm size (small and large), the institutional basis for different countries, and so forth. Also, Ozdagli (2012) empirically found that it is not market leverage rather operating leverage that explains stock return based on tax deductibility.

Hypothesis

The hypotheses are based on both the theories and empirical studies. There are two (2) hypotheses to be studied. The null hypothesis will be rejected or not rejected due to the p-value that comes out from the regressions. The first null hypothesis is that there is no relationship between market returns and financial leverage, inspired by theories and literature. A second hypothesis will be investigated by observing the quadratic function of leverage to analyze if there is support for non-monotonic relation arguments. The underlying base model is based on the research question: does the leverage level explain market return?

Hypothesis 1 (H1) states t0hat financial leverage explains, on average, changes in market return. This is motivated to either find support for the Modigliani and Miller (1958) irrelevance theory or provide support of relation and further clarify the relationship between leverage and market issue, as there are still different results with different contexts, but no specific result, which can be generalized. So, this hypothesis will enable this paper to analyze if there is an inverse relationship between leverage financing and market return, thus, an increase in leverage will cause a decrease in market return which is related to financial distress cost and debt overhang theory. Or, there is a direct or positive relation as the free cash flow theory that disciplines managers to be responsible for financial management.

Hypothesis 2 (H2) there is a non-linear relation between leverage and market return. As literature argues that leverage and market return relation take a U-turn based on factors like economic, firm size, and leverage levels. If there is an economic downturn, leverage impact differently on different firms and different leverage level of firms as well as the test of possibility of non-monotonic relationship based on the excessive use of financial leverage argument.

H_1 = Financial leverage explains, on average, changes in market return.

H_2 = Financial leverage and market return have non-monotonic relationship.

Section 4: Empirical Framework and Methodology

Methodology

This paper focuses on an empirical study of the sensitivity of market return by leverage financing with regards to companies in the top market indices in the US. Since the dataset is a panel, that it combines both time series and cross-section, thus provides unbiased estimators. Demsetz and Lehn (1985) and Himmelberg et al. (1999) stated that leverage and firm performance are influenced by similar characteristics, some of which cannot be observed on economic grounds, following their study, I address this using panel regression, multivariate regression technique for this study. Vong

and Chan (2009), and Baltagi (2013) advocate for panel regression technique, since it gives more information, reduces collinearities, and gives efficient estimations. The authors also argue that the data individual variability and dynamic adjustment are easily traced in a panel data regression aside accounting for the heterogeneity that is found in the individual data units. At the descriptive analysis, the relevant aspects of leverage financing and the market return is provided with detailed information about each variable considered for the analysis. The correlation matrix is applied to measure the degree of connection between the variables under consideration. Regression analysis examines the relationship between the independent variables and the dependent variable, to know the effect of selected independent variables on market return. This regression method enables to identification the statistical and economic significant of each independent variable and their respective coefficient to the model and the significance of the overall model. The model used for the first regression is simple regression (only one variable), and the others were multiple regressions (more than one independent variable) including the base model. Here I follow Berger and di Patti (2006) as well as Margaritis and Psillaki (2007, 2010).

Following the literature, I use fixed effects (FE) model specification because some of our variables of interest are constant over time such as the industry dummy, regional dummy and the results from Hausman V test, I use a fixed effect specification because the statistically significant p-value of 0.0000 and chi2 of 88,09 from Hausman V test gives us strong chance to reject the null hypothesis that random effect is preferable, after I run both the random effect (RE) and fixed effect (FE) models. The test of fixed effect and random effect will be the same if the error is uncorrelated with the regressors. Consequently, I consider both fixed effect and standard robust errors for the economical and statistical significance estimation and include year dummies to account for any time effect together with the industry and regional dummies. I examine the impact of leverage financing on firm performance using different proxies for the dependent variable and the independent variable of interest. Moreover, the linear function of leverage and firm performance does not make room for the trade-off theory. To address these issues, leverage squared is added to investigate the possibility of a U-shape (non-monotonic) relationship between leverage and market return. The research design adopted for the study is quantitative. The quantitative research design is appropriate because it measures figures and observed facts (Cooper and Schindler, 2006).

The study design under the quantitative research design is a panel. The population of this study is companies under the stock indices considered. The study focuses on a target population of 1899

companies included for the stock indices in the US. This study uses active, publicly-traded, non-financial firms included in the top-notch market index in the USA, namely, S&P 500 Index, Dow Jones Industrial Average, NASDAQ Composite, and NYSE Composite Index with a time horizon between 2010 and 2019 from Orbis database which 'houses' financial information of over 20 million companies. The dataset from exhibit 1.0 had 1899 number of non-financial companies, and 24 number of industries and I had to combine some industries to increase the sample size used in this study to enhance the robustness of the results (Brooks, 2008). I had to re-classify the industry into retail, electronic, transport, education, manufacturing, communication, properties, mining, products, commercial and the rests were transferred to others. Exhibit 2.0 and 2.1 provides the distribution of the considered industry sample. The results are robust to different methodologies. Eventually, I based on the Hausman V test to apply fixed effect methodology on the model and the white test to test homoscedasticity, and further use standard robust.

I tested for H1 by regressing the firm performance (market return) function on the explanatory variable (leverage) and control for other firm characteristics (firm size, EBIT margin, growth rate, Cashflow volatility, and investment rate), thus, consider the explanation's significance and directions if any. I then proceeded to test H2 using the same method for H1 to test for leverage and firm performance non-monotonic relation. I used instrumental variables of asset tangibility (Aivazian et al. 2005, Lang et al.,1996, Firth et al., 2008) to test the robustness of the results of the relationship that exists between leverage and market return and address possible endogeneity issue. Asset tangibility is the ratio of the sum of fixed assets and inventories (Net Fixed Assets) to total assets for firm x in year t (see Aivazian et al., 2005). He argues that bankruptcy cost has a relationship with leverage ratio, and so is the firm's assets tangibility. So, bankruptcy costs influence the managers' decision to increase leverage or reduce leverage. On the other hand, tangible assets reduce bankruptcy costs, and that motivates managers to levered up. I used the ivreg2 since it takes the 2 stage least square (2SLS), the GMM, and the LIML. Assets tangibility is a relevant predictor of the endogenous variables, it satisfies the exogeneous requirement and does not appear as an explanatory variable.

Based on the rule of thumb that if the pair-wise correlation coefficient between two explanatory variables is more than 0.8 (Gujarati, 2004) then we expect multicollinearity. From Fig., B, the pairwise correlations between the explanatory variables are low. The negative relationship between leverage and Investment rate, unlike the rests which are positively related, is consistent

with debt overhang theory, as it indicates, highly leverage reduces the opportunity to even access debt capital to finance a positive NPV project, since, senior debt holders will have the first claim of proceeds, and also, because of information asymmetry, creditors will not trust the claim of positive NPV not forgetting that even shareholders will not invest in such available positive NPV projects since debt holders have first claims of interest.

Variables Measurement

Firm performance measurement is arguably a key factor in the varying results in this corporate finance issue. Literature uses different measurement indicators as a proxy for firm performance, from accounting measurements (Majumdar and Chhibber, 1999; Abor, 200) including Return on Equity (ROE), Return on Assets (ROA), and market measurements (Welch, 2004) like Market return, Volatility, and the mixture of both market and accounting measurements like Market capitalization to total Assets (Tobin's Q). This study will use market measurement's market return as the main proxy for firm performance, considering publicly listed companies of the market indices, and later robust test the results with other measurements or proxies. So, in addition to the Market return as the dependent variable for the main models, I use ROA and Tobin's Q as other dependent variables for other models. King and Santor (2008) argue that Tobin's Q is a forward-looking measure that is an indicator of the valuation of firms' future growth opportunities while ROA is a backward-looking measure.

The dependent variable, firm performance, is proxied by Market return (%), which is derived from the available annual stock prices (%) and the dividend yield (%). The difference in the current and the previous prices and the dividend yield (%), divided by the previous price (%) derive market return (%). Annual stock return is not as volatile and noisy as the monthly and quarterly stock prices, so, I use the annual data since at least it will comparatively be a good reflection of a "true" stock performance: price and returns movement". There is a popular measurement of market return in the situation of capital asset pricing model (CAPM) which recognizes return as the addition of risk-free and beta rate multiplied by market risk premium, I decided to use the other measurement of dividend and stock return, to make my studies different from existing literature that uses CAPM, $E(Ri) = Rf + Bi[E(RM) - Rf]$, as the market return formula, and also the Fama-French three-factor model which is an extension of the CAPM, comprises of market risk, the outperformance of small-value cap firms relative to large-valued firms, and outperformance of high book-to-market

value firms relative to low book-to-market value firms, is another measurement of the market return.

$$Risk - Free\ \% + Beta\ \% * Market\ risk\ premium\ \% = Market\ retun\ \% \quad equ(1.0)$$

$$Risk - Free\ \% + Beta\ \% * Market\ risk\ premium\ \% + Small\ minus\ big\ \% + High\ minus\ Low\ \% = Market\ retun\ \% \quad equ\ (1.1)$$

So, for the market return formula for this model, Total (simple) market returns Rt includes dividends and is calculated as follows: dividends and is calculated as follows:

$$\mathrm{M}_{\mathrm{Return}\ \%} = \frac{(pt\ - pt-1) +\ D}{pt-1} = Stock\ return\ \% + Dividend\ \%$$
$$= Market\ retun\ \% \quad equ\ (1.2)$$

Leverage also has book value and market value measurements. The book value measurement is such that the firm's total book value of assets in relation to the total book value of debt. On the other hand, the market value is the book value of debt together with the market value of equity in relation to the total book value of debt. In this study, book leverage will be the focus (Barclay, Morellec & Smith Jr, 2003, J Cai, 2011), since market value might cause spurious correlation with other variables and can even be related to stock prices. With regards to the interesting independent variable, that is, Leverage, there are different forms of measurement in corporate finance and its previous literature. For instance, Debt to Equity ratio, Debt to capital, and Debt to Assets. Aside from that, the debt component also comes in different measurements including Non-current debt, Long-term debt, Total Long-Term Interest-Bearing Debt, Long-term, and Short-Term Interest-Bearing Debts, and so forth. The study will first use leverage as a measurement of Debt to Assets as the main leverage basis but will consider leverage as Debt to Equity to test for robustness, also. As seen in literature, when it comes to definitions of leverage ratios (Graham and Leary, 2010; Lemmon, Roberts, and Zender, 2008; Leary and Roberts, 2010; Lemmon and Zender, 2010; Gonzalez, 2002; Titman & Wessels 1988; Rajan & Zingales 1995).

$$\mathrm{Leverage(BV)} = \frac{Total\ Debt(\mathrm{BV})}{Total\ Assets(\mathrm{BV})} \qquad equ\ (1.3)$$

Here, I control for firm characteristics that explain market returns also, so the control variables include firm size (which is measured by the natural log of Assets), revenue growth (g) [that is the percentage change in revenue], cash flow volatility (lCF) [as a proxy of log cash flow] and Investment rate (linv) [as a proxy of log investment] Chong & Kim, 2018. The consideration of these control variables are motivated by prior literature, for instance (Banz, 1981; Acheampong et al, 2014) for firm size, (Yang et al., 2010; Rezaei and Habashi, 2012; Hermuningsih, 2013; Quang and Xin, 2014) for growth, for EBIT, literature like Ahmad et al., 2013. In addition to these control variables, I also use year and industry (effect) dummies, following the Fama and French (1997). The dependent variable and the interested independent variables are already "naturally logged", indicating an "elasticity"; that is a percentage change in leverage explains a percentage change, on average, of the market return. This enables all exposure to be put on an equal footing since it is relatively better for communication and comparisons of the coefficient of the relationship that exists between leverage and market returns. So, the included control variables including the natural log of total assets as a proxy of firm size, cashflow logged to get volatility, which influences firms' ability to meet its cash commitments; EBIT margin which is also about the profitability of the firm, since it has a lot to do with even the ability to sustain and maintain operations, as Ahmad et al. (2013) indicates it's an indicator of good economic fundamentals, that influences investors and market return in the long run; investment also logged to get the rate is also considered since the investment rate gives new asset bases that can help give new returns from new assets together with those provided with the already existing asset base, revenue growth also helps firm performance. I have considered these variables as control variables since they are firm characteristics that can explain the market return of the observed companies.

Market Return relationship with leverage

Yxt = Market Return, b1xt = Leverage

I estimate an equation to examine the sensitivity of market return to leverage financing. I used similar specifications as that of Lang et al. (1996) but this paper uses panel data. The relationship between leverage and a firm's performance is tested by the necessary regression models and further robust tested. Where the respective models will be based on these measurements below, which explains the model characteristics. Where: Yxt = Dependent variable of the company. Xxt = Independent variable of company, b0 = Intercept for X variable of x company for time t. (That is the expected mean value of Y when all X equals to 0), b1 – b6 = Coefficient for the independent

variables X of companies, denoting the nature of the relationship with dependent variable Y (or parameters), b7 to b9 = dummy variables, εxt = The error term Specially, where: LEV (%) = Leverage rate, M_Return (%) = Market return rate, TobinsQ = Tobin's Q = Market capitalization / Total assets, , Gearing = Gearing rate = Debt-Equity, EBIT (%) = EBIT Margin, lTA = log of Total Asset (Firm Size), lCF=Cash Flow volatility, Iinv=Investment rate, g = Revenue growth rate, ε xt = Error term.

Simple Regression

I run a simple regression model for the relationship between financial leverage and market return:

$$\text{M\_Return}\,xt \;=\; bo \;+\; b1\text{LEV}xt \;+\; \varepsilon xt \qquad equ\,(2.0)$$

Which regresses the dependent variable, market return function on the regressor, leverage, to test if there is a relationship between market return and financial leverage, 'and if there exists a relationship, what is the direction of the relationship between leverage and market return?'.

The first hypothesis (H1)

However, the main base model is the market return regressed on the regressors comprising of the independent variable of interest and other firm characteristics that influence market return, as used as control variables. The H1 baseline model is estimated by:

$$\text{M\_Return}\,xt \;=\; bo \;+ b1\text{LEV}xt \;+ b2\text{lTA}xt + \; b3\text{lCF}xt \;+\; b4\text{EBIT}xt \;+\; b5\text{Iinv}xt \;+\; b6gxt \;+\; \varepsilon xt \;\; equ\,(2.1)$$

So, I tested the possibility of omitted variables, by including these control variables to the simple regression model to estimate the base model. I included firm size, growth rate, cash flow volatility, investment rate, and EBIT margin because they are characteristics that are more likely to cause more or less market return, thus one must control for these sorts of characteristics in any empirical model that examines the effect of leverage on market return.

Second Hypothesis (H2)

I further tested the second hypothesis that the trade-off theory and other literature posit that leverage has a non-monotonic relation with the market return. For instance, there is both a positive

and negative explanation of market return by leverage. I included leverage square to the base model of the first hypothesis (equ 2.1). The H2 baseline model is estimated by:

$$\mathrm{M}_{\mathrm{Return}}xt = bo + b1\mathrm{LEV}xt + b2\mathrm{LEV}xt^2 + b3\mathrm{lTA}xt + b4\mathrm{lCF}xt + b5\mathrm{EBIT}xt + b6\mathrm{Iinv}xt + b7\mathrm{g}xt + \varepsilon xt \; equ(2.2)$$

I tested to estimate if I consider the quadratic function of leverage variable, will leverage explanation of market return have a U-turn or switch in between negative and positive since there are economic arguments that leverage has a mixed relationship with the market return. That, the relationship, or the explanation changes either with more leverage financing, during an economic downturn or the size of the firm changes.

Robust Test

First Robust without instrumental Variable (IV)

Hypothesis 1 (H1)

I used different methods to make sure the results are robust and endogeneity possibilities have been reduced to the minimum. So, I put the results through these robust testing methods. I corrected regression error for residual clustering and homoscedasticity using the white test, the white results mean I fail to reject the null hypothesis that there is homoscedasticity in the model. Since, from Fig. A white test was insignificant with a chi2 of 0.92 and a p-value of 0.63. I still considered standard robust although the model residual variables have the same scatter. I also consider the fact that the previous rates of both the market return and leverage can influence the market return sensitivity to leverage financing, so, both the market return and leverage are lagged by one year to be able to control for reverse causality in the model to address endogeneity. I then added dummy variables to purge idiosyncratic effects to the baseline model such as an industry, region, and year dummies to make the results more robust.

$$\mathrm{M}_{\mathrm{Return}}xt - 1 = bo + b1\mathrm{LEV}xt - 1 + b2\mathrm{LEV}xt^2 + b3\mathrm{lTA}xt + b4\mathrm{lCF}xt + b5\mathrm{EBIT}xt + b6\mathrm{Iinv}xt + b7\mathrm{g}xt + b8i.IND + b9i.reg + b10i.Yr + axt + \varepsilon xt \; equ(2.3)$$

I did Hausman V test to consider either to use fixed effect (fe) or random effect (re) to test the robustness of the model, so by removing the mean regional industry-year fixed effect to deal with

each year effect together with respective industry and regional effect. For attributing the respective idiosyncratic effects among the explanatory variables to expunge all the specifics, being its regional effects, industry effects, and time effects, and to be able to interpret the estimates.

Hypothesis Two (H2)

I also consider the fact that the previous rates of both the market return and leverage can influence the market return sensitivity to leverage in other periods, so, both the market return and leverage will be lagged by one year to be able to control for reverse causality in the model to address endogeneity. I did Hausman V test to consider either to use fixed effect (fe) or random effect (re) to test the robustness of the model.

$$M_{Return}xt - 1 = bo + b1LEVxt - 1 + b2LEVxt\text{^}2 + b2lTAxt + b3lCFxt + b4EBITxt + b5Iinvxt + b6gxt + b7i.IND + b8i.reg + b9i.Yr + axt + \varepsilon xt \quad equ\ (2.4)$$

So, I used a fixed effect for the model, I then added dummy variables to the model. An industry, region, and year dummies to make the results more robust.

Robust with instrumental Variable (IV)

Instrumental Variable

Hypothesis One (H1)

I find asset tangibility as a good instrumental variable (iv) for this main model, it meets the requirements of a good instrument, that is, it satisfies the exogeneous requirement and does not appear as an explanatory variable, and it is also statistically significant from the empirical analysis of leverage and asset tangibility relation.

$$\mathrm{M_{Return}}xt\ iv\text{^}2 = bo + (b1\ \mathrm{LEV}xt = TTA) + b2\mathrm{lTA}xt + b3\ \mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + a\ xt + \varepsilon xt \quad (first) \quad equ\ (2.5)$$

Hypothesis 2 (H2)

Just as I instrumented the first hypothesis model, I instrumented this second hypothesis model also.

$$\mathrm{M_{Return}}xt\ iv\text{^}2 = bo + (b1\ \mathrm{LEV}xt = TTA) + b1\mathrm{LEV}xt^2 + b2\mathrm{lTA}xt + b3\ \mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + a\ xt + \varepsilon xt \quad (first) \quad equ\ (2.6)$$

Section 5: Data and Descriptive Statistics

Data

I had a weakly balanced data set when I reshaped the panel data from wide to long shape and sorted the panel data by Id (firmID) and year. This study uses active, publicly-traded non-financial firms included in the top-notch market indices in the USA namely, S&P 500 Index, Dow Jones Industrial Average, NASDAQ Composite, and NYSE Composite Index with a time horizon between 2010 and 2019 from Orbis database which 'houses' financial information of over 20 million companies. I had 2169 companies when I selected active companies on Orbis and chose those indices. I filtered the companies down to 1899 by limiting it to publicly listed and excluded financial and financial related companies like Insurance companies since literature argues that they have different regulations with regards to their financial mix or capital structure.

Exhibit 1.0 contains summary statistics for the data on the variables: market return, leverage, firm size (as a natural logarithm of the asset), growth rate, cash flow volatility, investment rate, and EBIT margin.

I have these variations for firm performance and the regressors. The Overall variation indicates the variation over time and individual companies. The between variation indicates variation between the individual companies. The within variation indicates variation within individual companies over time. The Market return, as a proxy for firm performance, of the observed firms' variation on average is a ratio of 6.46 over the 10 years and the 1899 companies observed. There are 28 different sectors considering US SIC 3-digit codes (from exhibit 1.2), of which I brought it down to 10 industries. Which include (from exhibit 2.0) Retail (1800), Electronic (3390), Education (3100), Manufacturing (1250), Communication (910), Properties (790), Mining (2860), Production (790), Commercial (930) and the rest in others (2340). I observed that the maximum return of 4290.335 was too far away from the average return of 6.46, so, the dataset of the variable has outliers, thus, they must be removed. Tobin's Q ratio ranges between 0 and 1250 ratio with a mean ratio of 1.13. ROA also ranges between a ratio of -98 and 99 with 9.89 standard deviation and averages at 3.01. The leverage ratio ranged between 0 and 3.85, overall, but averages at 2.5. The gearing is averaged at 100.85 with a standard deviation of 1.34. Firm size has a standard deviation of 1.77 overall and 1.76 and 0.52 between and within, respectively. The growth rate is 2.63 ratio on average and EBIT margin falling between -98.87 and 100. With cash flow volatility ranging between a ratio of 4.75 and 18.07. Investment rate also averages at 11.78.

The market return, Tobin's Q, growth rate, and leverage have outliers that make the dataset kind of spurious. The data is also winsorized at the 1% and 99% levels to ensure outliers do not affect the results. After the outliers were removed, on average the ratio of market return of the companies is 5.70 and at maximum, 34.47 of return. Tobin's Q ratio ranges between 0 and 3.85 ratios with a mean ratio of 0.25. Leverage ranges between 0 and 21.98, overall, but averages at 15.12, a growth rate of 4.75 to 18.07, and 7.48 on average. However, some companies do not use leverage at all, so, minimum leverage of 0. From exhibit 3.0, the respective countries from which companies considered into the indices which are used for this paper are from. Since some of these market indices are of global standard, companies from various countries which meet the requirement for international listening of a company per the standard of the respective index can be on board of the market index. So, there are 24 countries, thus, 23 non-US countries and the US, so, divided into two categories of regions, with all the 23 countries categorized into the non-US region (foreign) and then US (domestic) (Exhibit 3.1). Also, region, industry, and year dummies, following the Fama and French (1997), can be found in Exhibit 1.0. The choice of variables and proxies were motivated by literature.

Section 6: Empirical Analysis

Simple Regression Results

When I run the OLS regression for the model, the results from Fig. 1 column (1) indicates a negative insignificant coefficient of -0.07 with an individual p-value that is more than the any of the significant levels, which indicates leverage and market have no relationship using simple regression. This result is in line with literature that market return is not sensitive to financial leverage and it is consistent with Modigliani and Miller's irrelevant theory, in a perfect market.

Results of the First Hypothesis

The result also became significant, unlike the simple regression model, at a p-value at 10% statistically significant level. This also has an economic significance, that a percent (%) increase in the leverage level will have an adverse effect by causing the market return to decrease, on average, by -28.9 percent (%), Fig 1., column (2). This results rather conflicts with no relationship literature and Modigliani and Miller's irrelevant theory, rather, it is in line with debt overhang theory and literature. The base model regression significant results indicate leverage's value-relevant information conveyed to the market is beyond that of other firm characteristics. Since leverage is statistically and economically significant after controlling for other firm characteristics

(Dimitrov and Jain, 2008, J Cai, 2011) and even support the study of Myers and Majluf (1984), a firm with good prospects or good cash position will use their internal funding before soliciting for external financing like leverage financing.

Result for Second Hypothesis

Fig. 7, column (1), the coefficients of the leverage is in a negative direction, that is -4.94 and leverage square is -0.037. Although the main leverage has a p-value at the 1% level, the leverage square is neither significant nor changes direction, indicating an insignificant relationship and even there is no evidence to support a switch of the direction of the estimated coefficient. This goes contrary to literature about leverage U-shape characteristics.

Robust Test

First Robust without instrumental Variable (IV)

Hypothesis 1 (H1)

I had a statistically significant Prob>Chi2=0.0000 and Chi of 29.91, from fig. A, which gives us a strong chance to reject the null hypothesis that random effect is preferable, from the Hausman v test. So, I used a fixed effect for the model aside motivation by literature. I had a coefficient of -5.77, statistically insignificant at the individual level with a p-value higher than any of the statistically significant levels, from Fig. 3, column (1). I did this to compare the other measurements that do not take asset tangibility as an instrumental variable. None of these models found support for statistical significance when we limit it to this robust level without instrumenting it yet, for all the hypothesis.

Hypothesis two (H2)

When I regressed market return and the regressors, I had a negative insignificant result, because it has a p-value which is higher than any of the statistically significant levels, from fig. 8.

Robust with Instrumental Variable (IV)

Hypothesis 1 (H1)

The regression results, from Fig. 5, column (1), I find leverage to explain market return with a statistically significant coefficient of -101.1 with an individual p-value of 0.072, which is at the 10% significant level. Before that, the relationship between leverage and asset tangibility has positive relation (that is coefficient of 1.37 and a p-value of 0.003), in line with literature that, it is a good instrumental variable. This implies that a percentage increase (decrease) in leverage financing will cause a mean decrease (increase) in market return. The result is statistically significant because it is at the 10% significance level.

Hypothesis 2 (H2)

Fig. 6, column (1), both coefficients are negative, the coefficient of the leverage is in a negative direction, -55.20 and leverage square is -0.212. Indicating they are all negatively statistically significant at the 10% significant level, and there is no support for a U-turn shape since only negative direction and no positive direction at a point. This goes contrary to literature about leverage U-shape characteristics. I instrumented in both the linear model and the non-linear model in the explanatory variable of interest. Before that, I checked the relationship between leverage and tangible assets, and it has a positive relationship (that is coefficient of 1.73 and a p-value of 0.000), underpinning the literature that it is a good instrumental variable. This implies that a percentage increase (decrease) in leverage financing will cause a mean decrease (increase) in market return.

Other Measurements.

Methods

I then proceeded to use other measurements of Leverage and firm performance to check if indeed the relationship this paper has found will be pronounced in those measurements with this same dataset, and the same methods as the aforementioned but only differ in the measurements. The models' robustness was tested with the same approach as the one used for the main measurement's models, and both hypotheses, irrespective of the measurement, except the models which have a gearing rate as the variable of interest since gearing has no positive significant relation with asset tangibility, thus, I cannot use the instrumental variable to address endogeneity. So, before I instrumented the models with leverage as the explanatory variable of interest because it is a good instrument, I initially tested with the other methods including lagging both dependent and explanatory variables of interest, adding dummy variables, robust standard, fixed effect to further address endogeneities. I instrumented those models with leverage as the variable of interest with tangible assets since they meet the criteria for an instrumental variable.

Discussion of Results

The equations from 2.1 to 2.6 are for the main measurements and main models while those equations from 3.1 to 7.4 (at the appendix) are models for the other measurements. The results for all base models have a significant explanation of leverage and firm performance except market return and gearing together with Tobin's Q and leverage base model relations, when I regress independent variables and the dependent variable, without further robust testing for endogeneity,

considering the base model for the first hypothesis (H1), irrespective of the measurement (Fig. 1 & 2). I had insignificant results for all the models irrespective of the measurements when they were robustly tested without instrumental variables with regards to the first hypotheses (Fig. 3 & 4). Moreover, considering the instrumented model for the first hypotheses (H1), the results, from fig. 5, show only Leverage and market return have negatively significant relation pronounced in it, while Tobin's Q and leverage have positive insignificant relation, and ROA and leverage have negatively insignificant relation. When it comes to the second hypotheses (H2), only ROA and leverage, ROA and Gearing, and Tobin's Q and Gearing results found significant support for U-shape or non-monotonic relation, considering the base model, from fig. 7. There is also no support for the non-monotonic relationship between leverage and market return nor any other measurement model after the baseline model had further robust tests, as the method used for the first hypotheses (from Fig. 8). The formulas can be found in the appendix. This makes us not find support for the non-linear function that enables the trade-off theory to be applied in this study. Because of the negative implications, they tend to use more of internal financing as suggested by pecking order theory, so, they do not use much of leverage financing for it to reach a point where it can have positive consequences. Thus, it is linear throughout. Also, the base models with significant negative explanation indicate leverage conveys value-relevant information to the market beyond other firm characteristics (Dimitrov and Jain (2008), J Cai, 2011).

I think these indices give us exposure to multiple region firms to facilitate the analysis to reduce regional bias. Market indices have different standards and different coverages, these indices are of global exposure, implying companies from different countries apply to be considered if they meet the requirements of the respective market index. Some companies are part of more than one market index, so, the Orbis data automatically recognizes and considers only one, the company appears once when multiple indices are selected. These markets have good performing companies and some indices also go beyond only monetary performance to consider the non-monetary performance of the companies. I believe the developed market indices will give us developed and efficient companies and efficient market information. These indices considered include the "blue-chip stocks", the largest companies in the U.S. by market cap, and most of the significant U.S. and non-US companies, and it is a good proxy for the representation of the overall stock market. An index is a barometer of markets.

Section 7: Conclusion

This paper finds support for a negative relationship between market return and leverage even after the robust test, using data of companies included in the US top market indices, at a 10% significant level. Also, aside from market return and gearing, Tobin's Q and leverage, all other relations based on the base models are statistically and economically significant, without further robust testing for endogeneity, considering the base models for the first hypotheses (H1). Also, only ROA and leverage, ROA and Gearing, and Tobin's Q and Gearing results found significant support for non-monotonic relation, considering the base models for the second hypotheses (H2). The models' robustness was tested with the same approach irrespective of the measurement, except the models which have gearing as the variable of interest since gearing has no positive significant relationship with a tangible asset when empirically tested, hence, I did not use an instrumental variable to address endogeneity. So, before I instrumented the models that have leverage as it meets the instrumenting requirement, I had insignificant results for all the models and their respective measurements when I robust tested with the other methods such as standard robust, lag the dependent and independent variables for autocorrelation, also Industry, regional dummy variables, and year fixed effects were activated. Those models with leverage as the variable of interest were subjected to an instrumental variable of asset tangibility, the results show leverage and market return have negative significant relation pronounced in it.

This implies that a percentage increase (decrease) in leverage financing will cause a mean decrease (increase) in market return, and it is statistically significant at the 10% significant level. Which has an economic significance in line with the literature, that a (highly) levered firm might not undertake positive NPV investment projects if more of the proceeds will go to debt holders, instead. The effect is linear and has a lot to do with measurement choices. The results indicate an efficient market uses less leverage financing. These findings are consistent with Myers' (1977) underinvestment problem with leverage financing, Opler and Titman's (1994) shareholders problems with debt, and in contrast against Modigliani and Miller's irrelevance theory and agency theory. The inverse relationship is also consistent with the literature [such as Abor (2005)—firms on Ghana stock exchange; Ardatti (1967)—who used railroad firms; Adami et al. (2015)—with listed firms on London Stock Exchange; Acheampong, Shibu, and Agalega (2013)—who studied the Ghana Stock Exchange firms]. While on the other hand, it is in contrast with literature which found positive relation [such as Gonzalez (2002); (Jensen, 1986 and Stulz, 1990); (Graham &

Harvey, 2001); (Jensen, 1986 and Stulz, 1990); Khalid et al (2014)]. The study did not find support for non-monotonic relation between leverage and market return which contrasts with literature [such as Ganiyu et al.'s (2019)] study of capital structure and firm performance in Nigeria. The inability to reject the second null hypothesis that there is a monotonic relationship can attributes to this paper not considering firm characteristics and it is in line with Ibhagui and Olokoyo (2018) argument that work of literature on the relationship between leverage and market return reports a monotonic relationship without a qualitative analysis of firm characteristics like size, and leverage level. The first null hypothesis is rejected while the second is accepted, with regards to this paper. This is to underpin literature and assist corporate decisions.

Limitation

The study is limited by focusing on well-performing companies in the top-notch indices. Also, this paper is limited to the 2010-2019-time horizon. This paper is also limited to literature accessible. The financial companies are excluded due to different regulations and measurements regarding capital structure (Alves & Francisco 2014), so this paper focus is on non-financial companies in the market indices, as well as few industries are considered due to insufficient data availability. This paper did not consider firm and economic characteristics that can explain well of monotonic or non-monotonic relationship and it is in line with Ibhagui and Olokoyo (2018) argument that work of literature on the relationship between leverage and market return reports a monotonic relationship without a qualitative analysis of firm characteristics like size, and leverage level. Lastly, apart from internal firm variables, there are also external market factors and macroeconomic factors that affect firms' performance that were not considered.

Further Studies

There is an opportunity to base on the categorization of the company's original domicile that brings regional levels, that is US companies and Internationally listed companies (non-US), to consider the pronouncement of market return sensitivity with regards to locally and internationally listed firms. Thus, assign a dummy variable for the region with the US (locally listed) companies to take 1 and those non-US (internationally listed) companies, to take 0. To find out how companies in the US are affected by leverage financing compared to their counterparts who are internationally listed in the US market from other countries. Further studies can use the median of the firm size (natural logarithm of Total Assets) to categorize the companies into a larger size firm and a smaller

size firm to enable the second hypothesis of market return and leverage non-monotonic relation to be further tested. Also, further research can use the Leverage median to categorize the firms into highly levered and lowly levered firms and analyze if the firms considered in the US top-notch market indices also experience U-shape when levered firm increases its leverage position and what if it decreases its leverage position.

Section 8: Tables and Figures

Exhibit 1.0 **Summary Statistics**

Variable		Mean	Std. Dev.	Min	Max	Observations
countr~s	overall	19.56398	5.751584	1	24	N = 18990
	between		5.752947	1	24	n = 1899
	within		0	19.56398	19.56398	T = 10

region	overall	1.697736	0.459251	1	2	N =	18990
	between		0.45936	1	2	n =	1899
	within		0	1.697736	1.697736	T =	10
company	overall	950	548.2084	1	1899	N =	18990
	between		548.3384	1	1899	n =	1899
	within		0	950	950	T =	10
sector	overall	14.2882	7.442328	1	28	N =	18980
	between		7.444093	1	28	n =	1898
	within		0	14.2882	14.2882	T =	10
IND	overall	4.941517	2.84619	1	10	N =	18980
	between		2.846866	1	10	n =	1898
	within		0	4.941517	4.941517	T =	10
M_Return (%)	overall	6.45608	34.17496	0	4290.335	N =	18990
	between		11.42969	0	430.3498	n =	1899
	within		32.20795	-423.894	3866.441	T =	10

				1			
		4.941517					
IND	overall		2.84619	1	10	N =	18980
	between						
			2.846866	4.941517	10	n =	1898
					4.941517		
	within		0			T =	10
				0			
		1.130128					
TobinsQ	overall		9.523042	0	1250	N =	18990
	between				125.1967		
			3.911407	-124.067		n =	1899
					1125.933		
	within		8.683114			T =	10
				-98.043			
		3.009528					
ROA	overall		9.890203	-38.7807	99.213	N =	18990
	between						
			6.569932	-82.209	58.7825	n =	1899
					96.77033		
	within		7.394091			T =	10
				0			
		0.251667			3.852489		
LEV (%)	overall		0.226612	0		N =	16812
	between				3.103209		
			0.203256	-0.51486		n =	1893
					2.169571	bar	=
	within		0.104732		1 T	8.88114	
				0			
Gearing		100.8504					
(%)	overall		134.4441	0	999.916	N =	18990

	betwee				696.661		
	n		96.40627	-474.487	8	n =	1899
	within		93.73079		978.912	T =	10
				0			
		15.1235					
log (TA)	overall	8	1.774811	4.906025	21.9828	N =	16812
	betwee				21.7338		
	n		1.758048	2.503571	6	n =	1893
					20.7354	bar	=
	within		0.517416		3	T 8.88114	
				-87.7664			
		2.63379			24851.6		
g (%)	overall	5	216.77	-10.0863	4	N =	15305
	betwee				2761.32		
	n		82.18217	-2759.43	9	n =	1846
					22092.9	bar	=
	within		202.7762		4	T 8.2909	
				-98.867			
		10.2705					
EBIT (%)	overall	6	17.66995	-35.8622	100	N =	18990
	betwee						
	n		13.37607	-91.6153	94.991	n =	1899
					113.614		
	within		11.54957		6	T =	10
				4.75359			
					18.0701		
CF (%)	overall	12.7185	1.677679	7.280697	9	N =	15194
	betwee				17.6327		
	n		1.649975	6.62669	2	n =	1767
					15.6996	bar	=
	within		0.58629		7	T 8.59875	

				0				
		11.7797			19.0870			
INV (%)	overall	9	2.368466	0	4		N =	6359
	betwee				18.4773			
	n		2.382263	3.250022	2		n =	970
					16.1577		bar =	
	within		0.8116		2	T	6.55567	

Exhibit 1.1 **The Winsorized Statistics**

	overall			0				
M_Return (%)	overall	5.708877	6.069282	0	34.473		N =	18990
	betwee		3.94901	0	28.2959		n =	
	n						1899	
	within		4.609652	-22.587	36.73458		T =	
							10	
	overall			0				
	betwee	0.251667	0.226612		3.852489			
TobinsQ	n			0			N =	16812
			0.203256		3.103209		n =	
	within			-0.51486			1893	
			0.104732		2.169571			
						T	bar = 8.88114	
	overall			0				
	betwee	15.12358	1.774811	4.906025				
LEV (%)	n				21.9828		N =	16812

	within		1.758048	2.503571	21.73386		n = 1893
			0.517416		20.73543	T	bar = 8.88114
g (%)	overall between	12.7185	1.677679	4.753597 7.280697	18.07019		N = 15194
	within		1.649975	6.626692	17.63272		n = 1767
			0.586295			T	bar = 8.59875

Exhibit 2.0 **The Industries**

1. Agriculture, Horticulture & Livestoc	40	0.21	0.21
2. commercial Servi	930	4.9	5.11
3. Biotechnology and Life Sciences	70	0.37	5.48
4. Business Services	940	4.95	10.43
5. Chemicals, Petroleum, Rubber & Plast	1,630	8.59	19.02
6. Communications	440	2.32	21.34
7. Computer Hardware	140	0.74	22.08
8. Computer Software	490	2.58	24.66
9. Construction	520	2.74	27.4
10. Food & Tobacco Manufacturing	610	3.21	30.61
11. Industrial, Electric & Electronic M	2,760	14.54	45.15
12. Leather, Stone, Clay & Glass produc	130	0.68	45.84

13. Media & Broadcasting	470	2.48	48.31
14. Metals & Metal Products	660	3.48	51.79
15. Mining & Extraction	1,230	6.48	58.27
16. Miscellaneous Manufacturing	120	0.63	58.9
17. Printing & Publishing	210	1.11	60.01
18. Property Services	1,560	8.22	68.23
19. Public Administration, Education, H	420	2.21	70.44
20. Retail	1,130	5.95	76.4
21. Textiles & Clothing Manufacturing	230	1.21	77.61
22. Transport Manufacturing	710	3.74	81.35
23. Transport, Freight & Storage	950	5.01	86.35
24. Travel, Personal & Leisure	690	3.64	89.99
25. Utilities	770	4.06	94.05
26. Waste Management & Treatment	50	0.26	94.31
27. Wholesale	670	3.53	97.84
28. Wood, Furniture & Paper Manufacturi	410	2.16	100

Exhibit 2.1 **The Reviewed Industries**

	Overall		Between		Within
IND	Freq.	Percent	Freq.	Percent	Percent
1. Retai	1800	9.48	180	9.48	100
2. Elect	3390	17.86	339	17.86	100
3. Educa	3100	16.33	310	16.33	100
4. manuf	1250	6.59	125	6.59	100

5. commu	910	4.79	91	4.79	100
6. Prope	1610	8.48	161	8.48	100
7. Minin	2860	15.07	286	15.07	100
8. Produ	790	4.16	79	4.16	100
9. other	2340	12.33	234	12.33	100
10. Comm	930	4.90	93	4.90	100

Countries

Exhibit 3.0

countries	Overall Freq.	Percent	Between Freq.	Percent	Within Percent
1. AR	10	0.05	1	0.05	100
2. BE	10	0.05	1	0.05	100
3. BM	310	1.63	31	1.63	100
4. CA	680	3.58	68	3.58	100
5. CH	60	0.32	6	0.32	100
6. CW	10	0.05	1	0.05	100
7. DE	30	0.16	3	0.16	100

	10	1	
8. FR	0.05	0.05	100
	200	20	
9. GB	1.05	1.05	100
	140	14	
10. IE	0.74	0.74	100
	60	6	
11. IL	0.32	0.32	100
	10	1	
12. IT	0.05	0.05	100
	3010	301	
13. JP	15.85	15.85	100
14.	660	66	
KY	3.48	3.48	100
15.	10	1	
LR	0.05	0.05	100
16.	120	12	
LU	0.63	0.63	100
17.	170	17	
MH	0.90	0.90	100
18.	10	1	
MU	0.05	0.05	100
19.	10	1	
MX	0.05	0.05	100
20.	110	11	
NL	0.58	0.58	100
21.	20	2	
PA	0.11	0.11	100
22.	10	1	
SG	0.05	0.05	100

23.	13250		1325	
US	69.77		69.77	100
24.	80		8	
VG	0.42		0.42	100
	18990		1899	
Total	100.00		100.00	100
		(		
		n =	1899)	

Exhibit 3.1 **Region**

region	Overall Freq.	Percent	Between Freq.	Percent	Within Percent
1. non-U	5740	30.23	574	30.23	100
2. USA	13250	69.77	1325	69.77	100
Total	18990	100.00	1899	100.00	100
		(n =	1899)		

Fig. 1

(1) (2) (3) (4)

VARIABLES	M_Return	M_Return	ROA	TobinsQ
LEV	-0.0706	-2.899*	-2.832***	-0.0200
	(1.869)	(1.683)	(0.415)	(0.103)
lTA		-4.599***	-4.660***	-0.347***
		(0.520)	(0.127)	(0.0313)
lCF		5.579***	4.155***	0.249***
		(0.348)	(0.0934)	(0.0219)
EBIT		0.0354*	0.166***	0.00805***
		(0.0188)	(0.00493)	(0.00117)
linv		-0.00842	0.159***	-0.00422
		(0.183)	(0.0457)	(0.0112)
g		2.524***	0.258***	0.00813
		(0.347)	(0.0966)	(0.0221)
Constant	7.470***	8.208	20.15***	3.233***
	(0.751)	(5.845)	(1.235)	(0.333)
Observations	16,812	5,236	5,236	5,236
Number of firmID	1,893	893	893	893

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig 2

VARIABLES	(1) M_Return	(2) ROA	(3) TobinsQ
Gearing	-0.000730	-0.00371***	-0.000327**
	(0.00217)	(0.000575)	(0.000136)
lTA	-4.694***	-4.669***	-0.337***
	(0.520)	(0.127)	(0.0313)
lCF	5.638***	4.159***	0.243***

	(0.348)	(0.0934)	(0.0218)
EBIT	0.0356*	0.165***	0.00809***
	(0.0188)	(0.00493)	(0.00117)
linv	0.0160	0.190***	-0.00417
	(0.182)	(0.0455)	(0.0111)
g	2.536***	0.272***	0.00859
	(0.347)	(0.0966)	(0.0221)
Constant	8.052	19.64***	3.180***
	(5.859)	(1.242)	(0.333)
Observations	5,236	5,236	5,236
Number of firmID	893	893	893

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig 3

	(1)	(2)	(3)
VARIABLES	M_Return_lag1	ROA_lag1	TobinsQ_lag1
LEV_lag1	-5.769	0.00230	-0.00258
	(6.298)	(0.00237)	(0.00200)
lTA	-0.152	-0.00147	-0.000861
	(0.894)	(0.00147)	(0.000719)
lCF	-0.652	-4.45e-05	0.000151
	(0.719)	(6.56e-05)	(0.000124)
EBIT	0.0331	1.20e-06	3.73e-06
	(0.0278)	(2.51e-06)	(4.60e-06)
linv	0.184	4.76e-05	0.000314
	(0.151)	(5.27e-05)	(0.000231)
g	-3.262*	-6.49e-05	-5.46e-05

	(1.970)	(9.29e-05)	(6.11e-05)
2o.IND	-	-	-
3o.IND	-	-	-
4o.IND	-	-	-
5o.IND	-	-	-
6o.IND	-	-	-
7o.IND	-	-	-
8o.IND	-	-	-
9o.IND	-	-	-
10o.IND	-	-	-
2o.region	-	-	-
o.Y_1	-	-	-
Y_2	-2.075**	-0.000269	0.000100
	(0.863)	(0.000281)	(0.00107)
Y_3	-2.345***	0.00141	-0.00160
	(0.830)	(0.00141)	(0.00114)
Y_4	-1.970**	-0.000243	-0.000737
	(0.892)	(0.000253)	(0.000672)
Y_5	-2.807***	-0.000228	-0.000731
	(0.821)	(0.000237)	(0.000654)

Y_6	-2.818***	-0.000192	-0.000658
	(0.809)	(0.000200)	(0.000591)
Y_7	-2.983***	-0.000146	-0.000581
	(0.922)	(0.000156)	(0.000530)
Y_8	-2.208**	1.90e-05	-0.000499
	(1.052)	(5.00e-05)	(0.000449)
Y_9	-1.988**	4.87e-05	0.00134
	(1.011)	(6.16e-05)	(0.00139)
o.Y_10	-	-	-
Constant	19.57	0.0228	0.00916
	(16.95)	(0.0226)	(0.00885)
Observations	5,206	5,206	5,206
R-squared	0.031	0.003	0.002
Number of firmID	891	891	891

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig 4

VARIABLES	M_Return_lag1	ROA_lag1	TobinsQ_lag1
o.Gearing_lag1	-	-	-
lTA	-0.239	-0.00144	-0.000832
	(0.858)	(0.00145)	(0.000699)
lCF	-0.494	-6.77e-05	0.000175
	(0.647)	(8.10e-05)	(0.000140)
EBIT	0.0321	-4.39e-07	5.17e-06
	(0.0284)	(2.05e-06)	(5.31e-06)
linv	0.188	4.06e-05	0.000310

	(0.150)	(4.62e-05)	(0.000228)
g	-3.242*	-5.37e-05	-5.78e-05
	(1.963)	(8.59e-05)	(6.15e-05)
2o.IND	-	-	-
3o.IND	-	-	-
4o.IND	-	-	-
5o.IND	-	-	-
6o.IND	-	-	-
7o.IND	-	-	-
8o.IND	-	-	-
9o.IND	-	-	-
10o.IND	-	-	-
2o.region	-	-	-
o.Y_1	-	-	-
Y_2	-2.013**	-0.000350	0.000201
	(0.861)	(0.000357)	(0.00104)
Y_3	-2.277***	0.00132	-0.00149
	(0.843)	(0.00133)	(0.00107)
Y_4	-1.927**	-0.000310	-0.000637
	(0.910)	(0.000316)	(0.000599)

Y_5	-2.816***	-0.000297	-0.000625
	(0.852)	(0.000302)	(0.000576)
Y_6	-2.776***	-0.000245	-0.000580
	(0.833)	(0.000250)	(0.000533)
Y_7	-3.058***	-0.000173	-0.000528
	(0.967)	(0.000180)	(0.000491)
Y_8	-2.194**	-1.80e-05	-0.000441
	(1.108)	(4.58e-05)	(0.000406)
Y_9	-1.938*	1.33e-05	0.00139
	(1.032)	(3.74e-05)	(0.00142)
o.Y_10	-	-	-
Constant	17.48	0.0233	0.00774
	(15.57)	(0.0232)	(0.00789)
Observations	5,236	5,236	5,236
R-squared	0.028	0.003	0.002
Number of firmID	893	893	893

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig 5

VARIABLES	(1) M_Return	(2) ROA	(3) TobinsQ
LEV	-101.0*	-7.376	0.106
	(54.29)	(12.16)	(2.699)
lTA	-0.813	-4.334***	-0.216**
	(1.716)	(0.384)	(0.0853)
lCF	3.898***	3.828***	0.195***
	(1.209)	(0.271)	(0.0601)

EBIT	-0.0281	0.178***	0.00760***
	(0.0362)	(0.00811)	(0.00180)
Linv	-0.460	0.0214	-0.0223
	(0.355)	(0.0795)	(0.0176)
G	1.950***	0.366***	0.0135
	(0.510)	(0.114)	(0.0253)
Observations	5,142	5,142	5,142
R-squared	-0.488	0.459	0.036
Number of firmID	799	799	799

Fig 6

	(1)	(2)	(3)
VARIABLES	M_Return	ROA	TobinsQ
LEV	-55.20*	-3.241	3.401*
	(30.64)	(9.550)	(1.976)
LEVsq	-0.212*	0.0271	0.0140*
	(0.118)	(0.0368)	(0.00761)
lTA	-4.727***	-4.107***	-0.311***
	(0.670)	(0.209)	(0.0432)
lCF	4.797***	3.489***	0.224***
	(0.598)	(0.186)	(0.0386)
EBIT	0.000207	0.179***	0.00745***
	(0.0219)	(0.00682)	(0.00141)
linv	-0.414*	0.0307	0.00698
	(0.238)	(0.0743)	(0.0154)
g	0.348	0.496***	0.0390
	(0.409)	(0.128)	(0.0264)

Observations	4,588	4,588	4,588
R-squared	-0.088	0.451	-0.166
Number of firmID	732	732	732

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig 7

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	M_Return	ROA	TobinsQ	M_Return	ROA	TobinsQ
LEV	-4.942***	-2.252***	0.213**			
	(1.389)	(0.453)	(0.0961)			
LEVsq	-0.0368	0.0334***	0.00365**			
	(0.0229)	(0.00767)	(0.00155)			
lTA	-5.169***	-4.122***	-0.338***	-4.767***	-4.593***	-0.326***
	(0.413)	(0.134)	(0.0291)	(0.526)	(0.128)	(0.0316)
lCF	5.179***	3.743***	0.219***	5.660***	4.135***	0.240***
	(0.283)	(0.0957)	(0.0189)	(0.349)	(0.0936)	(0.0219)
EBIT	0.0156	0.166***	0.00639***	0.0358*	0.165***	0.00809***
	(0.0152)	(0.00507)	(0.00102)	(0.0188)	(0.00492)	(0.00117)
linv	0.00978	0.168***	0.00503	0.0291	0.176***	-0.00619
	(0.146)	(0.0475)	(0.0101)	(0.183)	(0.0455)	(0.0112)
g	0.841***	0.308***	0.0181	2.535***	0.271***	0.00862
	(0.309)	(0.106)	(0.0203)	(0.347)	(0.0966)	(0.0221)
Gearing				0.00351	-0.00799***	-0.00103***
				(0.00509)	(0.00134)	(0.000317)
Gearingsq				-6.27e-06	6.52e-06***	1.04e-06**
				(6.81e-06)	(1.83e-06)	(4.28e-07)
Constant	22.78***	16.50***	3.263***	8.462	19.22***	3.120***
	(4.459)	(1.368)	(0.335)	(5.877)	(1.239)	(0.333)

Observations	4,688	4,688	4,688	5,236	5,236	5,236
Number of firmID	832	832	832	893	893	893

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

	(Robust)	(Robust)	(Robust)

Fig 8

	(1)	(2)	(3)
VARIABLES	M_Return_lag1	ROA_lag1	TobinsQ_lag1
LEV_lag1	-6.030	0.00218	-0.00261
	(6.662)	(0.00228)	(0.00200)
LEVsq	-0.0241	-2.18e-06	1.84e-05
	(0.0215)	(4.23e-06)	(2.13e-05)
lTA	0.413	-0.00201	-0.000961
	(0.729)	(0.00201)	(0.000805)
lCF	-0.667	-2.64e-05	0.000173
	(0.727)	(6.45e-05)	(0.000143)
EBIT	0.0505*	1.96e-06	3.80e-06
	(0.0276)	(3.50e-06)	(4.53e-06)
linv	0.168	3.75e-05	0.000369
	(0.138)	(4.76e-05)	(0.000272)
g	-1.299***	-0.000115	-9.33e-05
	(0.397)	(0.000141)	(8.37e-05)
2o.IND	-	-	-
3o.IND	-	-	-
4o.IND	-	-	-

5o.IND	-	-	-
6o.IND	-	-	-
7o.IND	-	-	-
8o.IND	-	-	-
9o.IND	-	-	-
10o.IND	-	-	-
2o.region	-	-	-
o.Y_1	-	-	-
Y_2	-1.956**	-0.000334	0.000132
	(0.846)	(0.000347)	(0.00118)
Y_3	-2.091***	0.00153	-0.00176
	(0.781)	(0.00153)	(0.00126)
Y_4	-1.829**	-0.000291	-0.000812
	(0.874)	(0.000304)	(0.000737)
Y_5	-2.643***	-0.000281	-0.000807
	(0.765)	(0.000292)	(0.000715)
Y_6	-2.788***	-0.000248	-0.000734
	(0.744)	(0.000257)	(0.000654)
Y_7	-2.357***	-0.000188	-0.000650
	(0.752)	(0.000199)	(0.000589)
Y_8	-1.835**	1.20e-05	-0.000561
	(0.934)	(5.85e-05)	(0.000500)

Y_9	-2.604***	3.69e-05	0.00154
	(0.958)	(6.00e-05)	(0.00159)
o.Y_10	-	-	-
Constant	11.03	0.0314	0.00995
	(15.04)	(0.0312)	(0.00980)
Observations	4,667	4,667	4,667
R-squared	0.018	0.003	0.003
Number of firmID	829	829	829

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig 9

	(1)	(2)	(3)
VARIABLES	M_Return_lag1	ROA_lag1	TobinsQ_lag1
o.Gearing_lag1	-	-	-
Gearingsq	-8.32e-06***	8.80e-10	1.07e-10
	(1.98e-06)	(9.38e-10)	(3.02e-10)
lTA	-0.175	-0.00145	-0.000833
	(0.856)	(0.00145)	(0.000700)
lCF	-0.551	-6.16e-05	0.000176
	(0.649)	(7.58e-05)	(0.000141)
EBIT	0.0327	-5.08e-07	5.16e-06
	(0.0284)	(2.13e-06)	(5.30e-06)
linv	0.212	3.80e-05	0.000310
	(0.149)	(4.41e-05)	(0.000228)
g	-3.236*	-5.43e-05	-5.78e-05
	(1.961)	(8.59e-05)	(6.15e-05)

2o.IND	-	-	-
3o.IND	-	-	-
4o.IND	-	-	-
5o.IND	-	-	-
6o.IND	-	-	-
7o.IND	-	-	-
8o.IND	-	-	-
9o.IND	-	-	-
10o.IND	-	-	-
2o.region	-	-	-
o.Y_1	-	-	-
Y_2	-2.072**	-0.000344	0.000201
	(0.859)	(0.000351)	(0.00104)
Y_3	-2.306***	0.00133	-0.00149
	(0.842)	(0.00133)	(0.00107)
Y_4	-1.999**	-0.000302	-0.000636
	(0.907)	(0.000309)	(0.000597)
Y_5	-2.876***	-0.000291	-0.000624
	(0.851)	(0.000296)	(0.000575)
Y_6	-2.834***	-0.000239	-0.000579

	(0.832)	(0.000245)	(0.000532)
Y_7	-3.102***	-0.000168	-0.000527
	(0.966)	(0.000175)	(0.000490)
Y_8	-2.292**	-7.66e-06	-0.000440
	(1.107)	(4.35e-05)	(0.000404)
Y_9	-2.026**	2.25e-05	0.00139
	(1.032)	(4.20e-05)	(0.00142)
o.Y_10	-	-	-
Constant	17.23	0.0233	0.00775
	(15.56)	(0.0232)	(0.00790)
Observations	5,236	5,236	5,236
R-squared	0.030	0.003	0.002
Number of firmID	893	893	893

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Fig. A

	(1)
VARIABLES	M_Return
LEV	1.147
	(1.233)
Constant	6.997***
	(0.418)
Observations	16,812
R-squared	0.000

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

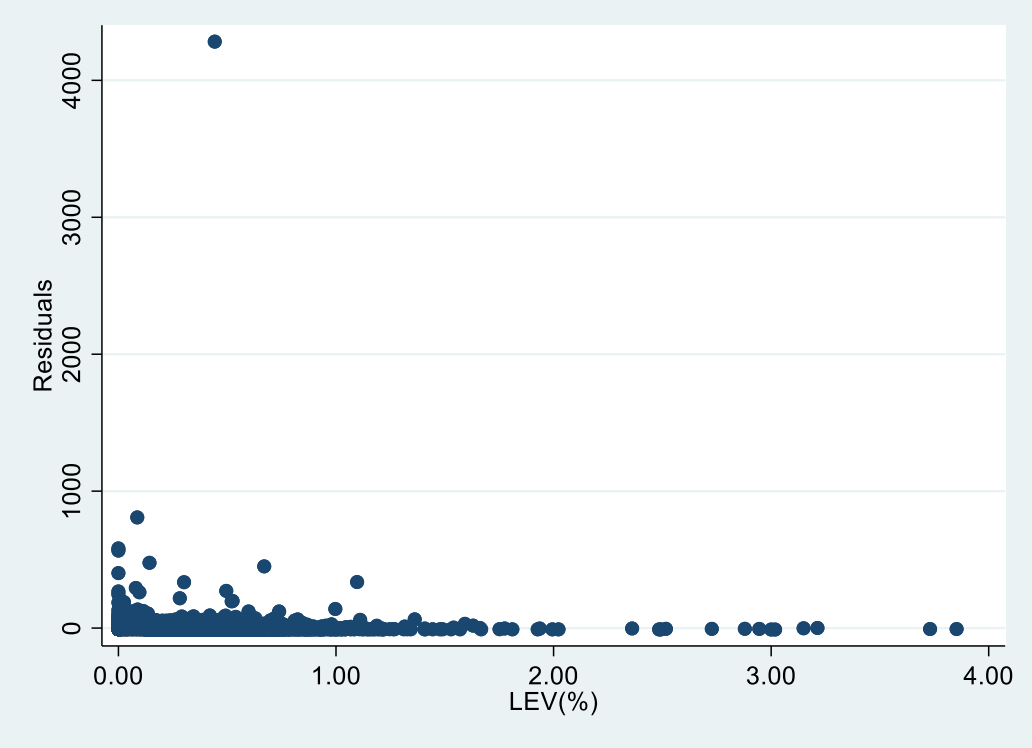
The white test gives a chi2 of 0.92 and a p-value of 063.

Fig. B

Correlation matrix

	LEV	lTA	lCF	EBIT	linv	g
LEV	1					
lTA	0.1557	1				
lCF	0.0597	0.8964	1			
EBIT	0.1493	-0.0189	0.0822	1		
linv	-0.0945	0.5806	0.492	-0.0208	1	
g	0.0165	-0.1514	-0.1352	0.1546	-0.102	1

Graph 1.0



Section 9: References:

Wippern, R.1966. Financial Structure and The Value of The Firm. The Journal of Finance,21(4):615-633. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-6261.1966.tb00270.x *[Accessed: 20 May 2020]*

Holz,Carsten A.2002. The Impact of The Liability-Asset Ratio on Profitability in China's Industrial State-Owned Enterprises, China Economic Review,13: 1-26. Available from: https://www.sciencedirect.com/science/article/abs/pii/S1043951X01000542 *[Accessed: 20 May 2020]*

Majumdar and Chhibber (1997). Capital structure and performance: Evidence from a transition economy on an aspect of corporate governance. Capital structure and performance: Evidence from a transition economy on an aspect of corporate governance. https://www.coursehero.com/file/p2dfh9l/Majumdar...

Marchica, M.T. and Mura, R. (2010) Financial Flexibility, Investment Ability and Firm Value Evidence from Firms with Space Debt Capacity. Financial Management, 39, 1339-1365. https://www.scirp.org/reference/ReferencesPapers.aspx?ReferenceID=2434881

Gormley, T. A., & Matsa, D. A. (2011). Growing Out of Trouble? Corporate Responses to Liability Risk.Review of Financial Studies,24 (8), 2781-2821.http://dx.doi.org/10.1093/rfs/hhr011

Gormley, Todd A.; Matsa, David A.; Milbourn, Todd. Journal of Accounting & Economics. Dec2013 Supplement, Vol. 56, p79-101. 23p. DOI: 10.1016/j.jacceco.2013.08.001.

Fosu, S 2013, 'Capital structure, product market competition and firm performance: Evidence from South Africa' The Quarterly Review of Economics and Finance, vol. 53, no. 2, pp. 140-151. DOI: 10.1016/j.qref.2013.02.004

Velnampy, T. and Anojan, V. (2014). Capital Structure, Liquidity Position and Their Impact on Profitability: A study of Listed Telecommunication Firms in Colombo Stock Exchange, Sri Lanka. Research Journal of Finance and Accounting, 5 (9), 131-139 https://www.iiste.org/Journals/index.php/RJFA/article/download/13046/13433

Hamada, R S 1969, Portfolio Analysis, Market Equilibrium and Corporate Finance, pp. 13-31, The Journal of Finance Vol. 24, Available from: http://ecsocman.hse.ru/data/856/126/1231/hamada_-_cs_1969.pdf [Accessed: 20 May 2020]

Baker, H K & Martin, G S 2011, Capital Structure and Corporate Financing Decision: Theory, Evidence and Practise, pp. 75-90, John Wiley & Sons, Inc, New Jersey. Available from: https://www.sciencedirect.com/science/article/abs/pii/S1043951X01000542 *[Accessed: 20 May 2020]*

Malcolm Baker, Jeffrey Wurgler (2002). Market Timing and Capital Structure. The Journal of FinanceVolume 57, Issue 1. https://doi.org/10.1111/1540-6261.00414

Masulis, R W 1983, The Impact of Capital Structure Change on Firms Value: Some Estimates, pp. 107-126, The American Finance Association, Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.477.4201&rep=rep1&type=pdf [Accessed: 20 May 2020]

Modigliani, F. and Miller, M.H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. The American Economic Review, Vol. 48, No. 3, pp. 261-297. Available from https://www.jstor.org/stable/1812919 *[Accessed: 20 May 2020]*

Abor, J. (2005), "The effect of capital structure on profitability: an empirical analysis of listed firms in Ghana", Journal of Risk Finance, Vol. 6 No. 5, pp. 438-445. Available from: https://doi.org/10.1108/15265940510633505 Accessed by: 20th May 2020

Modigliani, F. and Miller, M.H. (1963). Corporation Income Taxes and the cost of capital; A Correction. The American Economic Review, Vol. 53, No. 3, pp. 433-443. Available from https://www.sciencedirect.com/science/article/pii/S2212567115008643 *[Accessed: 20 May 2020]*

Bris A, Welch I, Zhu N (2006). The Costs of Bankruptcy: Chapter 7 Liquidation versus Chapter 11 Reorganization. The Journal of FinanceVolume 61, Issue 3. https://doi.org/10.1111/j.1540-6261.2006.00872.x

Baltagi, B. H., (2013). Econometrics Analysis of Panel Data. 5th Edition, New York, John Wiley & Sons Ltd. Available from: bcs.wiley.com/he-bcs/Books?action=index&bcsId=4338&itemId=1118672321 *[Accessed: 20 May 2020]*

Masulis, R W & Korwar, A N 1986, Seasoned Equity Offerings: an Empirical Investigation, pp. 91-118, Journal of Finance Economics 15, Available from: http://219. 219.114.96/cufe/upload_files/file/20140522/3_20140522_32%20Seasoned%20equity% 20offeringsAn%20empirical%20investigationOriginal%20Research%20Article. pdf [Accessed: 20 May 2020]

Miller, M H1988, The Modigliani-Miller Propositions after Thirty Years, pp. 99-120, Journal of Economic Perspectives Vol. 2, Available from: http://vip.opload.ir/ vipdl/94/4/zohreh/The-Modigliani-Miller-Propositions-After-Thirty-Years. [Accessed: 20 May 2020]

Bhandari, LC1988, Debt/Equity Ratio and Expected Common Stock Returns: Empirical evidence, The Journal of Finance vol. XLIII, Available from: Lund University Libraries. [Accessed: 20 April 2020]

Shyam-Sunder, L & Myers, S C 1999, Testing Static Trade-off against Pecking Order Models of Capital Structure, pp. 219-244, Journal of Finance Economics 51, Available from: http://pages.stern.nyu.edu/~eofek/PhD/papers/SM_Testing_ JFE.pdf [Accessed: 18 May 2020]

Kinsman M. and Newman J. [1999]: "Debt Level and Corporate performance: An Empirical Analysis", Proceedings of the 28th Annual Meeting of the Western Decision Sciences Institute, April 6-10, 1999, Puerto Vallarta, Mexico. Available from: https://www.researchgate.net/publication/228253634... *[Accessed: 18 May 2020]*

Altman, E. I., & Hotchkiss, E. S. (2006). Corporate financial distress and bankruptcy (3rd edition). Hoboken, NJ: John Wiley & Sons1. Available from: https://onlinelibrary.wiley.com/doi/book/10.1002/9781118267806 *[Accessed: 18 May 2020]*

Mwangi, L. W., Muathe, S.K., and Kosimbei, G. (2014). Relationship between Capital Structure and Performance of Non-Financial Companies Listed in the Nairobi Securities Exchange, Kenya. Global Journal of Contemporary Research in Accounting, Auditing and Business Ethics, Vol.1 Issue 2. 72-90. Available from: https://oapub.org/soc/index.php/EJEFR/article/view/412 *[Accessed: 18 May 2020]*

Booth, L., Aivazian, V., Demirguc-Kunt, A., & Maksimovic, V. (2001). Capital structure in developing countries. Journal of Finance, 56, 87. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/0022-1082.00320 *[Accessed: 10 May 2020]*

Author(s): Carlos A. Molina Source: The Journal of Finance, Vol. 60, No. 3 (Jun., 2005), pp. 1427-1459 Published by: Wiley for the American Finance Association Stable Available from: https://www.jstor.org/stable/3694931 [Accessed: 20 May 2020]

Tim C. Opler and Sheridan (1994). Titman Financial Distress and Corporate Performance. The Journal of Finance, Vol. 49, No. 3, Papers and Proceedings Fifty-Fourth Annual Meeting of the American Finance Association, Boston, Massachusetts, pp. 1015-1040 Published by: Wiley for the American Finance Association Stable Available from : https://www.jstor.org/stable/2329214. [Accessed: 20 May 2020]

Dhaliwal, D. S., Heitzman S., & Zhen Li, O. (2006). Taxes, leverage, and the cost of equity capital. Journal of Accounting Research, 44(4), 691–723. Available from: http://dx.doi.org/10.1111/j.1475-679X.2006.00214.x *[Accessed: 10 May 2020]*

Dimitrov, V., & Jain, P. C. (2008). The Value Relevance of Changes in Financial Leverage beyond Growth in Assets and GAAP Earnings. Journal of Accounting, Auditing and Finance.

Available from: https://journals.sagepub.com/doi/full/10.1177/0972652715601910 *[Accessed: 10 May 2020]*

Arthur Korteweg (2010). The Net Benefits to Leverage. The Journal of Finance, Vol. 65, No. 6, pp. 2137-2170 Published by: Wiley for the American Finance Association Stable. Available from: https://www.jstor.org/stable/23324407 [Accessed: 20 May 2020]

Gonzalez m. Gonzalez, (2012). Leverage and corporate performance: International evidence. International Review of Economics and Finance. Available from: https://www.researchgate.net/publication/271883261... *[Accessed: 15 April 2020]*

Denis Davydov (2016). Debt structure and corporate performance in emerging markets. Research in International Business and Finance (Journal). Available from: https://www.sciencedirect.com/science/article/pii/S0275531916300691 *[Accessed: 15 April 2020]*

Michael R. King & Eric Santor (2008). Family values: Owner structure, performance, and capital structure of Canadian Firms. Journal of Banking & Finance. Available from: https://papers.ssrn.com/sol3/Delivery.cfm/SSRN_ID... *[Accessed: 15 April 2020]*

Ahn, S., Denis, D.J., Denis, D.K., 2006. "Leverage and investment in diversified firms." Journal of Financial Economics 79, 317-337. https://www.sciencedirect.com/science/article/pii/S0304405X05001510

Aivazian, V.A., Ge, Y., Qiu, J.P., 2005. "The impact of leverage on firm investment: Canadian evidence," Journal of Corporate Finance 11, 277-291. https://www.onlinelibrary.wiley.com/doi/abs/10.1111/j.1755-053X.2005.tb00120.x

Chen Lin; Yue Ma; Paul Malatesta, & Yuhai Xuan. Corporate ownership structure and the choice between bank debt and public debt. Journal of Financial Economics. Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2024308 *[Accessed: 15 April 2020]*

Carlos A. Molina, 2005," Are Firms Underleveraged? An Examination of the Effect of Leverage on Default Probabilities", The Journal of Finance, pp. 1427-1459. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-6261.2005.00766.x *[Accessed: 15 April 2020]*

Booth, Aivazian, Asli and Maksimovic, 2001," Capital structure in developing countries", The Journal of Finance, pp. 87-130. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/0022-1082.00320 *[Accessed: 15 April 2020]*

Varouj A. Aivazian, Ying Geb, Jiaping Qiuc, 2005," The impact of leverage on firm investment: Canadian evidence", Journal of Corporate Finance pp. 277-291. Available from: pdfsr.com/pdf/the-impact-of-leverage-on-firm-investment-canadian-evidence *[Accessed: 29 March 2020]*

Corey Cole, Ying Yan and David Hemley (2015). Does Capital Structure Impact Firm Performance: An Empirical. Journal of Accounting and Finance Vol. 15(6). digitalcommons.www.na-businesspress.com/JAF/ColeC_Web15_6_.pdf

O.W. Ibhagui, F.O. Olokoyo. Leverage and firm performance: New evidence on the role of firm size North American Journal of Economics and Finance 45 (2018) 57–82 58. Available from: DOI: 10.1016/j.najef.2018.02.002 ... [Accessed: 29 March 2020]

Valentin Mitrov, Premc. Jaw, 2007," The Value-Relevance of Changes in Financial Leverage Beyond Growth in Assets and GAAP Earnings", pp. 191-222. Available from: https://www.emerald.com/insight/content/doi/10... *[Accessed: 29 March 2020]*

Murillo Campello, 2006," Debt financing: Does it boost or hurt firm performance in product markets?", Journal of Financial Economics pp. 135-172. Available from: https://www.sciencedirect.com/science/article/pii/S0304405X05001777 *[Accessed: 29 March 2020]*

Rao, Hamed, Al-yahee and Syed, (2007). Capital Structure and Financial Performance: Evidence from Oman. Indian Journal of Economics and Business. https://www.questia.com/library/journal/1G1...

Muradoglu, G. and S. Sivaprasad. 2009. Leverage, stock returns, taxes and industry concentration. Retrieved on December 19, 2016, from http://ssrn.com/abstract=1031987.

Muradoglu, G. and S. Sivaprasad. 2012. Capital structure and abnormal returns. International Business Review 21(3): 328–341. https://www.sciencedirect.com/science/article/pii/S0969593111000473

Khalid, Ata et al. (2014) Terahertz oscillations in an In0.53Ga0.47As submicron planar gunn diode. Journal of Applied Physics, 115 . p. 114502. Available from: ISSN 0021-897 [Accessed: 29 March 2020] http://eprints.gla.ac.uk/93202/

Hurdle, G.L., "Leverage Risk, Market Structure and Profitability", Review of Economics and Statistics, Vol.56, pp. 478-85, 1974.

Arthur Korteweg, 2010," The Net Benefits to Leverage", The Journal of Finance, pp. 2137-2170. Available from: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-6261.2010.01612.x *[Accessed: 29 March 2020]*

Altman, E. I., & Hotchkiss, E. (2006). Corporate Financial Distress and Bankruptcy. John Wiley & Sons. https://onlinelibrary.wiley.com/doi/book/10.1002/9781118267806

Jie Cai a, Zhe Zhang, 2011," Leverage change, debt overhang, and stock prices", journal of Corporate Finance, pp. 391–402. Available from: https://www.sciencedirect.com/science/article/pii/S0929119910001082 *[Accessed: 29 March 2020]*

A.Y Almajali, S. A Alamro, Yahya Z. Al-Soub. (2012). Factors Affecting the Financial Performance of Jordanian Insurance Companies Listed at Amman Stock Exchange. Journal of Management. Available from: DOI: https://doi.org/10.5296/jmr.v4i2.1482 *Accessed: 29 March 2020]*

Stulz, R.M. (1990) Managerial Discretion and Optimal Financing Policies. Journal of financial Economics, 26, 3-27. Available from: https://www.scirp.org/reference/ReferencesPapers.aspx?ReferenceID=2201699. S0304405X05001777 *[Accessed: 29 March 2020]*

Dawar V. (2014). Agency theory, capital structure and firm performance: some Indian evidence. Managerial Finance 40(12):1190-1206. *Available from:* DOI: 10.1108/MF-10-2013-0275. *Accessed: 29-04-2020 10:46*

Marco Pagano, Ailsa A. Röell and Josef Zechner (2002). The Geography of Equity Listing: Why Do Companies List Abroad? Source: The Journal of Finance, Vol. 57, No., 6 pp. 2651-

2694 Published by: Wiley for the American Finance Association Stable. Available from: https://www.jstor.org/stable/3094540 Accessed: 29-04-2020 10:46

Acheampong, P, Agalega E & Shibu, A K 2013, The Effect of Financial Leverage and Market Size on Stock Return on the Ghana Stock Exchange: Evidence from Selected Stocks in the Manufacturing Sector, Pp. 125-134, International Journal Of Financial Research, Available from: Www.sciedupress.com/journal/index.php/ijfr/article/viewFile/3973/2344 [Accessed: 29 March 2020]

John R. Graham and Campbell R. Harvey (2012). The Theory and Practice of Corporate Finance: Evidence from the Field. Journal of Financial Economics. Available from: https://faculty.fuqua.duke.edu/~charvey/Research/... *Accessed: 29-04-2020*

Ross S. [1977]. "The Determination of Financial Structure: The Incentive Signalling Approach", Bell Journal of Economics 8, 23-40 Available from: https://www.jstor.org/stable/3003485 *[Accessed: 5 May 2020]*

Ross, Stephen A., and Westerfield, Randolph W., and Jaffe, Jeffrey, (2002), "Corporate Finance", 6th edition, McGraw-Hill. https://www.mheducation.com/highered/product/...

Aivazian V., Ge Y., Qiu J., 2005. The impact of leverage on firm investment: Canadian evidence. Journal of Corporate Finance 11, 277–291. Available from: https://www.sciencedirect.com/science/article/pii/S0929119903000622 *[Accessed: 5 May 2020]*

Fred D. Ardatti 1967, The Effect of Financial Leverage and Market Size on Stock Returns on the Karachi Stock Exchange: Evidence from Selected Stocks in the Non-Financial Sector of Pakistan. The International Journal Of Business & Management, Vol. 5, Issue 10 Available from: https://www.researchgate.net/publication/202329264.. *[Accessed: 5 May 2020]*

Adami, R, Gough, O, Muradoglu, Y G & Sivaprasad, S. 2015, How does a Firm's Capital Structure affect Stock Performance? Available from: Lund University Libraries. [Accessed: 10 April 2020]

Michael C. Jensen (1986). Agency Costs of Free Cash Flow, Corporate Finance, and Takeovers. The American Economic Review, Vol. 76, No. 2, Papers and Proceedings of the

Ninety-Eighth Annual Meeting of the American Economic Association (May, 1986), pp. 323-329. https://www.jstor.org/stable/1818789 *.. [Accessed: 5 May 2020]*

Penman, S H, Richardson S A & Tuna, 2007, The Book-to-price Effect in Stock Returns: Accounting for Leverage, Journal of Accounting Research vol. 45, Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.421. 4711&rep=rep1&type=pdf [Accessed: 5 May 2020]

Lang L., Ofek E., Stulz R.M., 1996. Leverage, investment and firm growth, Journal of Financial Economics 40, 3–29. Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1669104 *[Accessed: 5 May 2020]*

. Stulz R.M., 1990. Managerial discretion and optimal financing policies. Journal of Financial Economics 26, 3– 27. Available from: https://www.sciencedirect.com/science/article/abs/pii/0304405X9090011N *[Accessed: 5 May 2020]*

Muradoglu, G., & Sivaprasad, S. (2008). An Empirical Analysis of Capital Structure and Abnormal Returns. Retrieved from http://ssrn.com/abstract=948393*. [Accessed: 5 May 2020]*

Myers, S. (1977). Determinants of Corporate Borrowing. Journal of Financial Economics. Available from: https://www.sciencedirect.com/science/article/pii/0304405X77900150 *[Accessed: 5 May 2020]*

Rajan, R., & Zingales, L. (1995). What Do We Know about Capital Structure? Some Evidence from International Data. Journal of Finance, 50(5), 1421-1460. Available from: https://www.sciencedirect.com/science/article/pii/0304405X77900150 *[Accessed: 5 May 2020]*

Ganiyu Y.O, Adelopo I, Rodionova Y (2019). Capital Structure and Firm Performance in Nigeria. African Journal of Economic Review. Available from: https://www.ajol.info/index.php/ajer/article/view/182550 *[Accessed: 20 April 2020]*

Kyereboah-Coleman A. (2007). Corporate Governance and Shareholder Value Maximization: An African Perspective. African Development Review. *Available from:* https://doi.org/10.1111/j.1467-8268.2007.00165.x *[Accessed: 20 April 2020]*

Oyakhilome W. IbhaguiFelicia Omowunmi Olokoyo (2018). Leverage and firm performance: New evidence on the role of firm size. The North American Journal of Economics and Finance. Available from: DOI: 10.1016/j.najef.2018.02.002. [Accessed: 20 April 2020]

Psillaki, M., Tsolas, I.E. and Margaritis, D. (2010). Evaluation of Credit Risk Based on Firm Performance. European Journal of Operational Research, 201(3), 873-888. https://www.coursehero.com/file/p4falc0s/Psillaki...

Psillaki, M., Tsolas, I.E. and Margaritis, D. (2007). Capital Structure and Firm Efficiency. Journal of Business Finance & AccountingVolume 34, Issue 9-10. https://doi.org/10.1111/j.1468-5957.2007.02056.x

George and Hwang (2009). A resolution of the distress risk and leverage puzzles in the cross section of returns. Journal of Financial Economics 96(1):56-79. *Available from:* DOI: 10.1016/j.jfineco.2009.11.003. *[Accessed: 20 April 2020]*

Ibrahim El-Sayed Ebaid (2009). The impact of capital-structure choice on firm performance: empirical evidence from Egypt. Journal of Risk Finance. Available from: https://econpapers.repec.org/RePEc:eme:jrfpps:v:10:y:2009:i:5:p:477-487 *[Accessed: 20 April 2020]*

Feng-Li Lin & T sangyao Chang (2011): Does debt affect firm value in T aiwan? A panel threshold regression analysis, Applied Economics, 43:1, 117-128, Available from: https://www.researchgate.net/publication/227606411_Does_debt_affect... *[Accessed: 20 April 2020]*

Roberta DessÌ & Donald Robertson, 2003. "Debt, Incentives and Performance: Evidence from UK Panel Data," Economic Journal, Royal Economic Society, vol. 113. https://ideas.repec.org/a/ecj/econjl/v113y2003i490p903-919.html

George, T J & Hwang, C Y 2009, A Resolution of the Distress Risk and Leverage Puzzles in the Cross Section of Stock Returns, The Journal of Financial Economics, Available from: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.452.8994&rep=rep1&type=pdf [Accessed: 20 April 2020]

J.J McConnell, H Servaes (1995). Equity ownership and the two faces of debt. Journal of Financial Economics, 39 (1995), pp. 131-157. https://doi.org/10.1016/0304-405X(95)00824-X

Kovenock, D., and G. Phillips, 1997, "Capital Structure and Product Market Behavior: An Examination of Plant Exit and Investment Decisions," Review of Financial Studies, 10, 767-803. https://pdfs.semanticscholar.org/b570/fe39bedd7f97d48aa164dba5c0ce9e234562.pdf

Owolabi, S. & inyang,U (2013). International Pragmatic Review and Assessment of Capital Structure Determinants. Kuwait Chapter of Arabian Journal of Business and Management Review Vol. 2, No.6. https://www.arabianjbmr.com/pdfs/KD_VOL_2_6/10.pdf

Myers, S C 1984, The Capital Structure Puzzle, pp. 575-592, Journal of Finance 39. http://lib.cufe.edu.cn/upload_files/file/20140522/3_20140522_35%20Myers,%20Stewart%20C.,%201984,%20The%20capital%20structure% 20puzzle.pdf [Accessed: 20 April 2020]

https://us.spindices.com/documents/methodologies/methodology-dj-global-indices.pdf *[Accessed: 20 April 2020]*

Phillips, P. A., & Sipahioglu, M. A. (2004). Performance implications of capital structure; evidence from quoted U. K. organisations with hotel interests. The Services Industry Journal, 24(5), 1–21. https://www.tandfonline.com/doi/abs/10.1080/0264206042000276829

Toraman, C., Kihc, Y., & Reis, S.G. (2013). "The Effects of Capital Structure Decisions on Firm Performance: Evidence from Turkey". International Conference on Economic and Social Studies. 10-11 May, 2013. Sarajevo. 137-145. https://www.researchgate.net/publication/328916442...

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. Journal of Risk Finance, 6(5), 16–30. Akinlo, O., & Asaolu, T. (2012).

Profitability and leverage: Evidence from Nigerian firms. Global Journal of Business Research, 6(1), 17–25. Brick, I. E., & Ravid, S. A. (1985). On the relevance of debt maturity structure. Journal of Finance, 40, 1423–1437. Chandrakumarmangalam, S., & Govindasamy,

P. (2010). Leverage- an analysis and its impact on profitability with reference to selected cement companies in India. European Journal of Economics, Finance and Administrative Sciences, 27, 1450–2275.

Chen, J. J. (2004). Determinants of capital structure of chinese listed companies. Journal of Business Research, 57, 1341–1351.

Cheng, Y., Liu, Y., & Chien, C. (2010). Capital structure and firm value in china panel threshold regression analysis. African Journal of Business Management, 4(12), 2500–2507.

Fama, E. F., & French, K. R. (1998). Taxes, financing decision and firm value. The Journal of Finance, 53.

Hansen, B. E. (1999). Threshold effects in non-dynamic panels: estimation, testing, and inference. Journal of Econometrics, 93, 345–368.

Jeleel, A., & Olayiwola, B. (2017). Effect of leverage on firm performance in nigeria: A case of listed chemicals and paints firms in Nigeria. Global Journal of Management and Business Research: Accounting and Auditing.

Jensen, M. (1986). Agency costs of free cash flow, corporate finance and takeovers. American Economic Review, 76(2), 323–329.

Kebewar, M. (2013). The effect of debt on corporate profitability: Evidence from French service sector. Brussels Economic Review, 56(1), 43–59.

Klapper, L. F., & Love, I. (2004). Corporate governance, investor protection, and performance in emerging markets. Journal of Corporate Finance, 10(5), 703–728.

Lin, F., & Chang, T. (2011). Does debt affect firm value in taiwan? a panel threshold regression analysis. Applied Economics, 43, 117–128.

Mashayekhi, B., & Bazaz, M. S. (2008). Corporate governance and firm performance in Iran. Journal of Contemporary Accounting and Economics, 4(2), 156–172.

Modigliani, F., & Miller, M. (1958). The cost of capital, corporate finance and the theory of investment. American Economic Review, 48, 261–297.

Negash, M. (2001). Debt, Tax shield and bankruptcy costs: some evidence from johannesburg stock exchange. Investment Analysis Journal, 54(3), 114–128. Nwankwo, Odi (2014). Effect of capital structure of nigeria firms on economic growth. Mediterranean Journal of Social Sciences, 5(1), 515–519.

Olokoyo, F. O. (2013). Capital structure and corporate performance of nigerian quoted firms: A panel data approach. African Development Review, 25(3), 358–369.

Olokoyo, F. O. (2012). Capital structure and corporate performance of nigerian quoted firms: A panel data approach. African Development Review, 25(3), 358–369.

Onaolapo, A., & Kajola, S. (2010). Capital structure and firm performance: evidence from Nigeria. European Journal of Economics, Finance and Administrative Sciences ISSN 1450.

Patrick. O., & Ogebe, J. O. (2013), The Impact of Capital Structure on Firms' Performance in Nigeria. http://mpra.ub.uni-muenchen.de/45986/.

Pratheepkanth, P. (2011). Capital structure and financial performance: evidence from selected business companies in colombo stock exchange Sri Lanka. Journal of Arts, Science and Commerce, 23.

Pratomo, W. A., & Ismail, A. G. (2006) Islamic bank performance and capital structure. MPRA Paper No 6012.

Robb, A., & Robinson, D. T. (2009), The capital structure decision of new firms [Online] Available: http://papers.ssrn.com/so13/papers.cfm?abstract-id=1345895 [Accesssed: 17 October 2009].

Ruland, W., & Zhou, P. (2005). Debt, diversification and valuation. Review of Quantitative. Financial. Accounting, 25(3), 277–291.

Salawu, R. O. (2007). An empirical analysis of the capital structure of selected quoted companies in Nigeria. The International Journal of Applied Economics and Finance, 1(1), 16–28.

Simon-Oke, O. O., & Afolabi, B. (2011). Capital structure and industrial performance in Nigeria (1997–2007). International Business and Management, 2(1), 100–106.

Tian, G.G., & Zeitun, R. (2007). Capital structure andcorporate performance: Evidence from Jordan. Australasian Accounting Business and Finance Journal, 1(4), 40–61.

Further reading

Cuong, N. T. (2012). Threshold effect of capital structure on firm value: evidence from seafood processing enterprises in the south-central region of Vietnam. International Journal of Finance and Banking Studies, 3(3), 14–29.

Vo, D., & Phan, T. (2013). Corporate governance and firm performance: Empirical evidence from Vietnam. http://www.murdoch.edu.au/School-of-ManagementandGovernance/_document/Australian-Conference-ofEconomists/Corporate-governance-and-firm-performance.pdf, 03.12.2013.

O.

Section 10: Appendix

ROA relationship with leverage

Y_{xt} = ROA, $b1_{xt}$ = leverage

Hypothesis 1 (H1)

$$\mathrm{ROA}xt = bo + b1\mathrm{LEV}xt + b2\mathrm{lTA}xt + b3\mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + \varepsilon xt \quad equ\ (3.1)$$

Robust Test

$$ROAxt - 1 = bo + b1\mathrm{LEV}xt - 1 + b2\mathrm{lTA}xt + b3\mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + b7i.IND + b8i.reg + b9i.Yr + axt + \varepsilon xt \quad equ(3.2)$$

$$\mathrm{ROA}xtiv\text{^}2 = bo + (b1\ \mathrm{LEV}xt = TTA) + b2\mathrm{lTA}xt + b3\ \mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + a\ xt + \varepsilon xt \quad (first) \quad equ\ (3.3)$$

Second Hypothesis (H2)

$$ROAxt = bo + b1\mathrm{LEV}xt + b1LEVxt^2 + b2\mathrm{lTA}xt + b3\mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + \varepsilon xt \quad equ(3.4)$$

Robust Test

$$\mathrm{ROA}xtiv^2 = bo + (b1\ \mathrm{LEV}xt = TTA) + b1LEVxt^2 + b2\mathrm{lTA}xt + b3\ \mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + a\ xt + \varepsilon xt \quad (first) \quad equ\ (3.5)$$

Tobin's Q relationship with leverage

Y_{xt} = Tobin's Q, $b1_{xt}$ = Leverage

H1: base model

$$\text{TobinsQ}xt = bo + b1\text{LEV}xt + b2\text{lTA}xt + b3\text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + \varepsilon xt \quad equ\ (4.1)$$

Robust Test

$$\text{TobinsQ}xt = bo + b1\text{LEV}xt + b2\text{lTA}xt + b3\text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + b7i.IND + b8i.reg + b9i.Yr + axt + \varepsilon xt \quad equ(4.2)$$

$$\text{TobinsQ}xtiv\text{^}2 = bo + (b1\ \text{LEV}xt = TTA) + b2\text{lTA}xt + b3\ \text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + a\ xt + \varepsilon xt \quad (first) \quad equ\ (4.3)$$

Second Hypothesis (H2)

$$\text{TobinsQ}xtiv\text{^}2 = bo + (b1\ \text{LEV}xt = TTA) + b1LEVxt^2 + b2\text{lTA}xt + b3\ \text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + a\ xt + \varepsilon xt \quad equ\ (4.4)$$

Market Return relationship with Gearing

Y_{xt} = Market Return, $b1_{xt}$ = Gearing

H1

$$\text{M\_Return}\ xt = bo + b1\text{Gearing}xt + b2\text{lTA}xt + b3\text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + \varepsilon xt \quad equ\ (5.1)$$

Robust Test

$$\text{M}_{\text{Return}}xt - 1 = bo + b1\text{Gearing}xt - 1 + b2\text{lTA}xt + b3\text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + b7i.IND + b8i.reg + b9i.Yr + axt + \varepsilon xt \quad equ(5.2)$$

Second Hypothesis (H2)

$$\text{M}_{\text{Return}}xt = bo + b1\text{Gearing}xt + b1\text{Gearing}xtxt^2 + b2\text{lTA}xt + b3\text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + \varepsilon xt \quad equ\ (5.3)$$

Robust Test

$$\mathrm{M}_{\mathrm{Return}}xt-1 = bo + b1\mathrm{Gearing}xt-1 + b1\mathrm{Gearing}xtxt^2 + b2\mathrm{lTA}xt + b3\mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + b7i.IND + b8i.reg + b9i.Yr + axt + \varepsilon xt \quad equ(5.4)$$

ROA relationship with Gearing

Yxt = ROA, $b1_{xt}$ = Gearing

H1

$$\mathrm{ROA}\,xt = bo + b1\mathrm{Gearing}xt + b2\mathrm{lTA}xt + b3\mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + \varepsilon xt \quad equ\ (6.1)$$

Robust Test

$$\mathrm{ROA}\,xt-1 = bo + b1\mathrm{Gearing}xt-1 + b2\mathrm{lTA}xt + b3\mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + b7i.IND + b8i.reg + b9i.Yr + axt + \varepsilon xt \quad equ(6.2)$$

Second hypothesis

$$\mathrm{ROA}\,xt = bo + b1\mathrm{Gearing}xt + b1\mathrm{Gearing}xt^2 + b2\mathrm{lTA}xt + b3\mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + \varepsilon xt \quad equ\ (6.3)$$

Robust Test

$$\mathrm{ROA}\,xt-1 = bo + b1\mathrm{Gearing}xt-1 + b1\mathrm{Gearing}xt^2 + b2\mathrm{lTA}xt + b3\mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + b7i.IND + b8i.reg + b9i.Yr + axt + \varepsilon xt \quad equ(6.4)$$

Tobin's Q relationship with Gearing

Yxt = Tobin's Q, $b1_{xt}$ = Gearing

H1

$$\mathrm{TobinsQ}xt = bo + b1\mathrm{Gearing}xt + b2\mathrm{lTA}xt + b3\mathrm{lCF}xt + b4\mathrm{EBIT}xt + b5\mathrm{Iinv}xt + b6\mathrm{g}xt + \varepsilon xt \quad equ\ (7.1)$$

Robust Test

$$\text{TobinsQ}xt-1 = bo + b1\text{Gearing}xt-1 + b2\text{lTA}xt + b3\text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + b7i.IND + b8i.reg + b9i.Yr + axt + \varepsilon xt \quad equ(7.2)$$

Second Hypothesis (H2)

$$\text{TobinsQ}xt = bo + b1\text{Gearing}xt + b1\text{Gearing}xt^2 + b2\text{lTA}xt + b3\text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + \varepsilon xt \quad equ\ (7.3)$$

Robust Test

$$\text{TobinsQ}xt-1 = bo + b1\text{Gearing}xt-1 + b1\text{Gearing}xt^2 + b2\text{lTA}xt + b3\text{lCF}xt + b4\text{EBIT}xt + b5\text{Iinv}xt + b6\text{g}xt + b7i.IND + b8i.reg + b9i.Yr + axt + \varepsilon xt \quad equ(7.4)$$