CORPORATE FINANCING DECISIONS: INTEGRATED EFFECTS OF MARKET TIMING, PECKING ORDER AND STATIC TRADE-OFF THEORIES

Antonios Siganos[a]

Chris Veld[b]

Daniel Gyimah[c]

Ming Dong[d]

[a] Accounting and Finance, Business School, University of Glasgow, United Kingdom,
Antonios.Siganos@glasgow.ac.uk

[b] Accounting and Finance, Business School, University of Glasgow, United Kingdom,
Chris.Veld@glasgow.ac.uk

[c] Accounting and Finance, Business School, University of Glasgow, United Kingdom,
d.gyimah.1@research.gla.ac.uk (Corresponding author)

[d] Schulich School of Business, York University, Canada, mdong@schulich.yorku.ca

This draft is preliminary and incomplete and therefore might not be appropriate to circulate or quote.

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ABSTRACT

The extensive research on security issuance decisions across the world, especially in US and UK, have focused separately on either market timing, pecking order and trade off theories. Specifically, even across the world no study has focused on the interactions between these theories on financing decisions. Accordingly, this paper attempts to establish the simultaneous effects of market timing, pecking order/asymmetric information and trade off effects on security issuance decisions in UK market. We particularly examine issue of four security types; equity, straight debt and equity repurchase and how financial constraints and valuation work to determine which financing choice(s) is/are made in the face of timing opportunities, pecking order/asymmetric information and leverage adjustment from trade off perspective.

Since the study is at a very early stage, we are yet to analyse data and produce results. In the meantime, ideas on how we can improve on the direction and focus would be much appreciated.

1.0 INTRODUCTION

Corporate financing decision is a crucial component of strategies that firms adopt to access funds in the external capital market to undertake new investment, for dividend payments, to maintain capital structure, for acquisition purposes, cash savings as precaution, among others. Several theories[1] have been developed to explain in part the reasoning behind financing decisions and the subsequent security issuance. Although there is yet to be unanimous agreement on which theory explains the overall capital structure dynamics, empirical evidence underscores the partial effect of each on financing choices. As Leary and Roberts (2010) point out pecking order is only able to accurately predict less than half of the financing decisions and incorporating factors that explain other financing theories in the model of security issuance decisions greatly increase the impact.

Despite the overwhelming empirical studies on financing decisions there is scant research which explores the interactions between the factors which influence security issuance decisions. Shyam-Sunder and Myers (1999) compare trade off theory with pecking order and conclude that pecking order has more predictive power than trade off. Dong et al (2012) study the simultaneous effects of market timing and pecking order and interacts with financial constraints. They find that the level of financial constraints dominates the issuing decisions of firms. Interestingly, however, no study has focused on the interactive effects of all the theories in a single model.

We take this step further without disputing the potency of any theory and test them concurrently in a single model. The motivation is to find out the degree to which certain factors provide interact with others in the corporate financing decisions. For example, we explore how and to what extent overvalued firms adjust their capital structure given the interaction of the level of financial constraints. If financing decisions are affected in part by any of the factors then a combination of them should speed up the issuance decisions.

The research attempts to analyse the interaction between static-trade off, market timing, and pecking order theories in understanding financing decisions of companies. In this way, the research seeks to study security issuance decisions of a sample of UK firms listed on the FTSEALLSHARE that issued equity, straight debt and repurchased equity during the periods between 1988 and 2010.

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[1] Trade off, pecking order, market timing, agency theory, asymmetric information, managerial entrenchment

2.0 EMPIRICAL REVIEW

2.1 Market timing: Scope and Evidence

Not only does market timing persists in theory but it has also received much attention in empirical studies. Nonetheless, the evidence is mixed and fails to provide a convincing argument about its dominance in security issuance decisions. Managers are optimistic when market conditions favour their financing decisions and that drives the opportunistic attitudes of firms which form the foundation of market timing. Survey evidence provides converging position of CFOs across countries and different economic environments. Graham and Harvey (2001) surveys 392 US CFOs and find that securities issues reflect the timing potentials of firms[2].

The convergent propositions underlying market timing hinges on four explanations.

i.   Mispricing forms the basis of market timing. Consistent firm timing of issues implies stock prices do not equate the fundamental value. Equity issues will be made at high valuation and repurchase/debt offerings represent low valuation. Since little information is known about a company prior to listing on an exchange, the degree of overvaluation will be higher for IPOs than for SEOs.

ii.   As a consequence of market timing stock prices react when security issues are made. Equity offerings at high M/B generate low long run returns whereas repurchase at low M/B is associated with high long run returns[3].

iii. Investor optimism is high at low asymmetric information which in turn motivates equity issues. Rajan and Servaes (1997) assert that equity issues are timed to meet periods of low information problems.

iv.   Survey evidence underscores managers' persistent attempts to time the market.

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[2] Bancel and Mittoo (2004) studies 87 CFOs from 16 European countries while Brounen, De Jong and Koedijk (2006) provides findings on 313 CFOs from 4 European countries. Both evidence including Graham and Harvey (2001) suggest that managers actually time the market before security issues are made.

[3] Baker and Wurgler (2002), Baker and Wurgler (2000), Eckbo, Masulis and Norli (2000) and Dong et al (2012) all find converging conclusion about this trend

2.2 Valuation and financing decisions

Recent studies contend that capital structure affects firm value and render the theoretical result of capital structure relevance redundant. Impliedly, it is necessary that managers take financing decisions with the view to improving the overall shareholder value. Thus, the degree of mispricing enables firms to issue securities that enhance this value. Not only does mispricing encourage equity offering but other evidence also suggest that mispricing is the result of available growth opportunities. Firms with substantial investment options have the edge to source financing from external capital market. In the spirit of market timing, which we emphasise here, firms issue equity at high valuation (high M/B) and repurchase equity/issue debt at low valuation (low M/B). With increasing levels of equity (at high M/B), the capital mix tilts more towards low leverage and corresponding leverage increasing transactions (repurchase/debt issue) result in high leverage. Conclusively, firms that time the market in their issues have low leverage for equity issues and improve their leverage levels at low valuations.

Changes in valuation should trigger specific financing decisions in line with market timing proposition. If analysts are optimistic about the earnings of the company, there is the tendency for the market value to deviate markedly from the fundamental value. This encourages opportunistic managers to issue equity to profit from the temporary price divergence. Baker and Wurgler (2002) emphasise that companies do not only make equity financing at high valuation and repurchase at low valuation but also capitalise on analyst favourable opinion about the company. In testing the persistence of market timing on capital structure, they study a sample of firms in IPO time and develop subsamples over a ten year period to determine the changing patterns of capital structure as market valuation changes. Their results reveal that there is a persistent impact of market valuation changes to the capital structure on a long run basis. Capital structure reflects the past valuation movements. The net effects of high market-to-book values are to lower leverage independent of increased retained earnings and decreased debt.

Moreover, the degree of responsiveness to valuation effects relates to the level of available cash flow to conduct the appropriate security issuance. Financially sound firm will be better able to react to mispricing than an otherwise financially constrained entity. The intuition is that high transaction costs can impede the ability and the speed with which firms make issues in accordance with the market timing hypothesis. Dong, Loncarski, ter Horst and Veld (2012) highlight the influence of financial constraints on valuation effects. They study securities issue on the Toronto Stock Exchange and find that companies that have substantial timing opportunities will be inclined to issue equity only when they are financially unconstrained such. Any issue of additional debt increases the leverage which is associated with costly financial distress. Similarly, the deduction from their position is not too remote from the pecking order hypothesis. However, as they emphasise, equity issue is highly valuation dependent even when there is financial constraints.

2.3 Investment and financing decisions

Cash stockpile following security issues will be high for firms that consistently access funds from the external capital market. Proceeds from firms are better utilised when there is demand for cash in undertaking a project or other debt commitments. Market timing asserts that managers time their issues as an opportunistic endeavour rather than in the quest to obtain financing for significant undertaking. Thus, cash stockpile will be high for firms that issue equity at high stock prices. A different explanation is that mispricing is related to perceived growth opportunities. Firms only issue equity at high stock prices in response to positive market perception about these investment opportunities.

Equity issues are timed at high market valuations consistent with the theory of market timing. Continuous timing of equity has negative effects on leverage such that as equity issues are made, the cumulative effects dominate debt capital component and reduce leverage in the long run. Firms that consistently time equity at high valuations report low leverage compared to those that repurchase equity/issue debt capital at low valuation. However, in contrast with the findings of Baker and Wurgler (2002), Hovakimian (2006) finds equity issues to have small and short lived effects on leverage. Debt issues have persistent positive effects on leverage. He further emphasises that firm-to-firm characteristics have more explanatory power to the changes in M/B ratios. M/B changes over time are expressive on cross sectional basis due to firm growth opportunities rather than market timing. Firms that issue equity at high valuation subsequently possess high growth opportunities such that the negative effects of equity on leverage results in low debt capacity concerns. This provides latitude to enter the external debt market for financing to take up investment opportunities in future.

Thus, mispricing drives investment. Firms undertake investment when the stock is overpriced through the issuance of equity financing to support the capital or cash required for the investment project. This view relates closely with the market timing phenomenon. Polk and Sapienza (2009) focus on the nexus between investment and mispricing without regard to financing through security issuance. Thus, the catering theory employed in their analysis control for equity issuance as financing for investment and establishes that mispricing alone has predictive power for investment decisions. Highly mispriced firms undertake abnormal investment and are associated with post-investment adverse returns. This reflects the tendency for financial slack as well as low debt capacity firms to invest even in negative NPV firms (Jensen, 1986). Therefore, the market is likely to penalise for the asymmetric information effects associated with the investment and thus discount the share price accordingly. The mispricing proxy, however, reflect more of earnings quality than mispricing since it does not relate market price with book value so fails to link the different perspectives. Again, they find that the time horizon of investors has significant impact on investment. Investment tracks mispricing more when the firms are dominated with high R&D and also possess short term horizon investors.

2.4 Post-issue stock performance

Stocks that trade in efficient markets respond instantaneously to new information that the market receives. Such information includes, among others, earnings announcements, corporate takeover and merger news, change in management. Security issuance likewise has signalling effects and rational market participants react accordingly. Theory on pecking order posits that due to high asymmetric information firms should opt to issue equity unless debt capacity concerns restricts debt issuance. If managers consistently time their issues, then theory suggests that stock prices change subsequent to the issuance decision. According to the market timing theory equity offerings are made at high valuation and repurchase and/or debt issues are preferred at low valuation. Post issue stock returns fall for equity and rise with equity repurchase/debt issues. Repurchase and debt issue feed the market with new valuable information which revives the depressed prices prior to the issuance decisions. For example, Ikenberry, Lakonishok and Vermaelen (1995) find substantial post- repurchase abnormal four year buy and hold returns of 12.2%. Several theories explain these reactions.

Equity issues convey "bad" news which triggers rational market response. Repurchase and debt financing signal good information about the prospects of the business and highlight earnings quality. Given the perceptions of the market concerning the financing choice, equity financing attracts low returns whereas repurchase/debt earns high returns. The extant empirical findings ascribe this trend to market timing determined solely by the level of mispricing regardless of investment opportunities. Decisions to issue securities reflect managers' opportunistic behaviour to profit from the lack of symmetry between stock market value and the intrinsic or fundamental value.

Stock market reactions to security issuance are not immediate which suggests that investors are irrational and are conservative in receiving new information in the market. Loughran and Ritter (1995) posit that long run stock performance is explained by the underreaction hypothesis. Other studies which also allude to this explanation include Bilinski and Strong (2009), Spiess and Affleck-Graves (1995) and Womack (1996). All of this evidence suggests that long run performance reflects investor partial processing of information signalled by managers at announcement date with partial effect on prices. The remaining effects of the information accounts for the long run lower returns. Full signalling effects take time to be totally absorbed in the security prices[4].

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[4] Bilinski and Strong (2009) hold that the correction last for 17 months as opposed to 5 year period reported by Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) and only 6 months by Womack (1996). Ikenberry, Lakonishok and Vermaelen (1995) find substantial post- repurchase abnormal four year buy and hold returns of 12.2%

2.5 Pecking order and information asymmetry

In an asymmetric information environment, financing choices that reveal positive information to the market is more likely to be preferred by managers. Firms that have high expected cash flows are in a better position to enter the capital market but may be restricted by of high asymmetric information. To convince the market, and investors for that matter, it is important that sufficient favourable information is released to the market. Thus, high valued firms are more likely to issue debt capital to signal substantially positive financial position than low valued firms, despite significantly high asymmetric information. The overriding intuition is that debt signals firm quality.

As debt issues are made with the supposition of providing positive information about the firm's quality, price reaction should be positive. Thus, leverage increasing transactions such as debt issue and equity repurchase are highly correlated with stock price returns. Equity issue reduces any positive impact of the positive financial and operating effects due to its associated adverse selection costs. The conjecture is that at high (low) asymmetric information, firms issue debt (equity). While equity issue costs much in terms of issue costs and asymmetric information effects, debt can be issued cheap and with relative rapidity; despite the subsequent increase in costs of financial distress. Myers (2001) explains that large debt financing is a major support for the pecking order theory. The empirical support is mixed but generally pecking order has some predictive power of financing decisions.

In a more robust study by Lemmon and Zender (2010), following the earlier work of Shyam-Sunder and Myers (1999) through increased sample size and time horizon (1971-2001), they confirm how the pecking order influence financing choices. Firms that enter the debt market have debt capacity to support additional leverage, stable cash flows with large pool of collateral. Information transparency enables firms to borrow at the equilibrium interest rate and increases their ability to access capital from the external debt market. With debt capacity, additional debt financing will have limited impact on costs of financial distress, while indirectly rebalancing the capital structure. Such debt issuing firms are supported by high levels of tangible assets and relatively stable profitability to guarantee stable cash flows.

However, it is possible for firms to obtain financing without necessarily going to the external market. Transactions such as employee options are unrelated to adverse selection costs; therefore equity issues are not constrained by asymmetric information effects. If firms consistently pursue these issues then the pecking order breaks down and is unable to determine which security financing firms adopt. Again, studies show that financial deficits have limited predictive control of financing choice. According to the pecking order theory, equity issues are made as last resort (due to adverse selection costs) in a state of significant debt capacity concerns which restricts access to the debt market. Thus, consequent financial distress costs discourage additional debt financing. This theoretical explanation has been challenged in several studies citing different motivation for equity issues that jars with the norm of pecking order hypothesis.

In the domain of asymmetric information effects, firms with substantial cash stockpile should avoid the external capital market and finance investment using internal cash flows. Helwege and Liang (1996) confirm this theory that firms with greater cash surpluses avoid external funding, but their results do not imply that cash deficit forces firms into the external finance market. Interestingly, asymmetric information also does little to explain the pecking order theory as significant asymmetric information fails to trigger equity finance. Equity issuers dominate external security financing which as emphasised by Fama and French, 2005 is not due to duress or cash deficit as theory posits. Again, firms which have previously obtained external financing are highly probable of obtaining additional funding subsequently. Again, Frank and Goyal (2003) use a broad cross section of 768 publicly traded American firms from 1971 to 1998, similar to Shyam-Sunder and Myers (1999) and find that equity dominates debt issues unrelated to financial distress[5].

If the overall constraint of equity issuance decisions is related to asymmetric information effects, then firms willing to make equity offering will be prepared to manipulate the market prior to the financing decisions. Korajczyk, Lucas and McDonald (1991) assert that information releases precede equity issues. Asymmetric information effects represent immense bane on equity offerings due to the tendency for rational investors to discount the stock prices as a result of a lack of symmetry in information between managers and investors. Arguing for dominating equity issues, they offer striking evidence which dispels the general notion of unattractive equity issuance decisions. They find a clustering of equity issues around information release dates. To obtain favourable response to security issuance, especially equity, firms are more inclined to, as a matter of timing philosophy, release 'good' information prior to equity offerings. The effect is to discount the tendency for price drop on issuing the security. Instructively, equity issues preceding positive information releases are associated with significant price premium. However, other systematic events can trigger price reaction in either direction. Effectively, the evidence put forward here is potentially inclusive and imprecise.

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[5] Also Fama and French (2005) highlight the limited impact financial distress and asymmetric information have on financing decisions.

2.6 Trade off and target leverage

What is the optimum capital structure and how do companies define and maintain it? This question has persistently been debated in the literature without a tentative answer. Theory of static trade off holds that there is a target leverage ratio which triggers security issuance decisions when there is a deviation of the current ratio. Debt and equity issuance are dependent on the conditions of the capital mix at point in time such that debt is issued when leverage is low and equity at high leverage ratio. By maintaining target leverage firms balance the benefits of debt capital from tax advantages and control of free cash flow problems and costs emanating from bankruptcy costs and other agency costs. Moreover, managers with high levels of free cash flow under their control can engage in inefficient investments. Leverage restricts managerial hubris through fixed interest commitments which siphon regular cash from the firms. Jung, Kim and Stulz (1996) stress debt reduces managerial discretion.

Hovakimian, Opler and Titman (2001) test the trade off theory using debt-equity model and contend that results on trade off are statistically significant. Firms possess both assets in place evidenced by the value of tangible assets in the business and growth options represented by the level of intangible assets available. The interactions between these two alternatives inform firms about the choice of financing to access. Whereas tangible assets expressly provide collateral, they support debt financing more than equity and growth opportunities track equity financing. Hovakimian et al (2001) find that more profitable firms have a relatively low leverage ratio which eventually triggers more debt financing to move the leverage ratio to target. On the other hand, since valuable growth opportunities reflect positively in the stock prices, firms are motivated to issue equity rather than debt to rebalance their leverage to target ratio. Specifically, they highlight the impact of repurchase on rebalancing the leverage.

It is noteworthy to understand the short run impact of market timing in the context of trade off theory. Timing security issues results in temporary distortion of the capital structure. Equity creates under leverage while debt and repurchase are leverage increasing transactions. Firms that consistently adjust their capital mix to reflect the target ratio rebalance their leverage subsequent to timing activities. Thus, leverage adjustment curtails the effects of M/B on capital structure. Kayhan and Titman (2007) as well as Marsh (1982) emphasise that when all market timing opportunities disappear financing choices move the leverage towards optimum level.

The degree of explanatory power between trade off and pecking order is encapsulated in the studies by Shyam-Sunder and Myers (1999) using the partial adjustment technique. Relying on the effects of tax advantages and financial deficits they find that pecking order can be rejected when firms follow static trade off but fail to reject static trade off in the event of pecking order. Despite the apparent bias in the sample towards larger firms, it is still intuitive to generate further investigation. A model which incorporates the effects of stock valuation and asymmetric information will be interesting to appreciate how this theory accommodates other factors other than tax advantages and costs of financial distress.

2.7 Financial constraints and financing decisions

Financing decisions incur substantial costs. Comparatively, transactions costs incidental to equity issues, otherwise known as flotation costs[6], are normally higher than that of debt capital. Therefore, firms that are financially sound stand a better chance to issue equity when market conditions are favourable. At high valuations, low asymmetric information with financial deficit and over leverage, firms prefer to issue equity capital than debt financing. Extant empirical evidence supports this trend yet most studies fail to account for the effects of financial constraints on financing decisions. Thus, financial flexibility relates to the ability to enter the external capital market. Firms that are substantially financially constrained rarely enter the capital market. However, studies show disparate results.

Theoretically, security issuance decisions depend on the need to achieve target leverage ratio, level of debt capacity and asymmetric information effects and mispricing. The speed of adjusting to optimum leverage, especially using equity, increases with financial flexibility. Korajczyk and Levy (2003) stress that financially constrained firms find it impossible and expensive to issue securities which quickly restore the optimum debt ratio[7]. In the study of security issuance decisions of Canadian firms, Dong et al (2012) emphasise the influence of financial constraints on the choice and speed of issuance in relation to high valuation. They contend that less financially constrained firms have high probability to issue equity when they are overvalued. This is suggestive that market timing is enhanced with cash availability.

Adequate internal funds provide buffer for investments expenditure with less tendency to contact outsiders for financing. Financial deficit/surplus is the overriding factor in deciding to enter the external market. Firms are likely to relegate cost of financial distress from excessive debt capital to increase/decrease debt with substantial deficit/surplus. They adjust capital structure either in the face of above target debt or below target debt ratio. Byoun (2008) finds, in contrast to Kayhan and Titman (2007), that capital structure adjustment is more above-target ratio dependent than it is for below-target ratio.

However, if firms issue equity at a time when there is the need for adequate cash flow to support investment then this weakens market timing opportunities. DeAngelo, DeAngelo and Stulz (2010) find that market timing and life cycle play significant roles in financing decisions. Yet, at high valuation the need for "near term" cash for future investments drives equity financing. That is, not all firms take advantage of timing opportunities. It is only at high financial constraints will firms be forced to access outside financing. They find that close to 62.6% and 81.1% of equity issuers would have run out of cash or would have had subnormal cash balances respectively in the year after the issue.

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[6] Flotation costs include legal fees, registration fees, taxes and management time lost in working on new issues

[7] Faulkender, Flannery, Hankins and Smith (2012) find that financial constraints have, in terms of magnitude, larger effect on leverage rebalancing than market timing considerations.

3.0 HYPOTHESES

The evidence on financing decisions in the literature is varied and wide. In the context of market timing the dominant factor is mispricing whereas pecking order tracks adverse selection costs. Trade off theory highlights security issuance decisions that reflect attempts at adjusting to achieve target debt ratio. None of the theories conclusively explain the overall motivation to issue securities. Generally, each of the theories plays a partial role in the security issuance decisions but the literature concedes, albeit unconvincing, that certain factors dominate and are popular in determining security issuance decisions. We make deductions from the extant literature and formulate hypotheses that are within the purview of this study. Specifically, the conjectures we propose in this study fall in line with each of the theories (market timing, pecking order and asymmetric information, and trade off) and attempt to emphasise the interactions between factors that underlie each of the theories. As part of the factors and in line with recent findings, we stress how financial constraints act as impetus to each of the underlying determinants.

3.1 Financial flexibility and financing decisions

Pecking order theory advocates that there is a hierarchy of financing when there is the need to undertake investments. Firms will only enter the external capital market for financing following internal cash deficits; and will resort to equity financing only when they have effectively exhausted their debt capacity (Myers and Majluf, 1984). Financial deficit is crucial in determining when firms issue securities. Given the high costs of adverse selection and transactions equity issues only enable firms to balance its excessive leverage position. Thus, at high leverage any additional debt issues will potentially drag the firm into costly financial distress and bankruptcy. This means the combination of potential discounting of the stock price and relatively high transaction costs does not bode well for equity offering. At high stock prices firms are motivated to make equity offerings, but they must also the financial capacity to pay the high ancillary costs of issue. Opportunistic managers that issue/repurchase securities on the basis of the stock price must have the financial strength to also deal with costs (especially for equity issues) incidental to accessing the external capital market.

If firms only time their issues, then it is expected that they have substantial financial slack, especially for equity issuers. Without adequate investment opportunities cash strapped entities are less inclined to access financing. Growth options dominate the demand for cash, and hence the need to obtain external financing when there is internal deficit. DeAngelo, DeAngelo and Stulz (2010) stress that it is only the need for "near term" cash for future investments that motivate equity issue at high valuations. Firms that require cash for identified projects contact the outside investing public for financing without regard for market timing activities. Inferring from this position suggests that rate of investment should increase with equity issues.

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For market timing to hold, equity issues must track financial surplus. This means managers that time the market should not be financially constrained. The only motivation for any equity offering should be occasioned by high stock prices (high M/B) with substantial financial slack such that high transaction costs do not impair the ability to conduct the issue. Firms are typically opportunistic and will issue equity/repurchase at high/low valuations. Fama and French (2005) highlight this proposition and find that equity issuers are not constrained with cash rather these entities hold significant cash balances prior to the issue. While this lends credence to market timing theory, it weakens the position of the pecking order phenomenon. Stated differently, financial constraints do not curtail equity issue when firms with timing prospects issue equity. Therefore, equity issuers are less financially constrained and M/B suppresses factors that support pecking order (Dong et al, 2012).

The above discussion leads us to make the following conjectures

H1a: Overvalued firms are more likely to issue equity

H1b: There is high probability for less financially constrained firms to issue equity

3.2 Post-issue price reactions

In markets where security issues depend on prevailing conditions, investors are expected to act in response to issuers' decisions. Generally, capital market transactions reflect favourable information either to the seller or the buyer. There is always the lack of symmetry between the two parties in terms of the information that encourage the party to act in the market. Therefore, rationale investors discount stock prices to indicate situations of asymmetric information. Market timing theory asserts that managers issue equity at high stock prices and repurchase at low valuations. If investors are rationale, then the immediate response following announcement of equity (at high prices) and repurchase/debt issue (at low prices) is to bid down prices or up respectively.

Several theories underlie the gradual stock price reaction to security issuance decisions. Loughran and Ritter (1995) propose that investors' reaction take time to reflect in the stock price. Largely, irrational attitude of investors ensure that stock prices do not immediately fall following equity and rise with repurchase/debt issues. Opportunistic managers, therefore, take advantage of high and low valuations to make equity offering and repurchase/debt issues respectively. The combination of high adverse selection costs and transaction costs suggest that managers only exploit investors when they issue equity. According to the underreaction theory, overvalued/undervalued firms that issue equity/repurchase record low/high long run returns.

The discourse presented in hypothesis above when satisfied leads us to investigate the price reaction between financing choices and stock returns. Intuitively, firms that issue

equity/repurchase at high/low valuation depend on the level of financial flexibility. We extend the argument of equity issue at high valuation and hypothesise further as follows:

H1c: Equity issuing firms are more likely to record low post-issue returns than those that repurchase/issue debt

3.3 Partial effects of market timing and pecking order

Mispricing and asymmetric information costs have different interpretation to the theories that motivate security issuance decisions. Generally, equity issues track periods of high stock prices. In the context of market timing opportunistic managers issue equity (at high price) and repurchase/issue debt (at low price) regardless of need for cash. Firms that consistently time their security issues will invariably be engaging in cash stockpile. In the managerial entrenchment theory, mispricing and growth opportunities exist concurrently to determine equity issuance decisions (Zwiebel, 1996). In effect, the persistence of timing for security issues underscores investor irrationality. At high stock prices, which encourage managers to issue equity, rationale investors are more likely to discount the price in response to the perceived mispricing. Hence, high valuation accompanied by sufficient information release will decimate the apparent investor reaction to mispricing. Thus, successful equity financing at overvaluation will be supported with simultaneously low asymmetric information effects.

If firms possess information that investors do not have then at high stock prices there is a high probability that investors will discount the stock prices for an attempt by companies to make equity offerings. Similarly, repurchases/debt at low prices may be stifled by investor sentiments about the prospects of the firm if such issues deviate from a lack of information gap. The above analysis follows from the general understanding that debt/repurchase conveys "quality" information to the investing public. Does valuation coincide with low asymmetric information effects to enforce equity issues or it can only be accidental? Firms that have high adverse selection costs from asymmetric information effects may be unwilling to issue equity at high valuations if the benefits from mispricing are insufficient to offset the effects of high transaction costs and possible price discounting.

Thus, the capacity to time issues is reliant on the extent to which the market will be unable to discount the stock price. This interaction implies firms that attempt to time their issues must also be keen in undertaking activities that potentially diminish the prospects of undermining the stock price. Bayless and Chaplinsky (1992) and Korajcyzk, Lucas and McDonald (1992) find that equity issues proceed after release of information. Successful equity offering attracts smaller announcement effects to sustain the stock price. If benefits from high valuation can displace the costs associated with asymmetric information, then firms will be adamant to adverse selection problems.

However, there is scant evidence that valuation effects dominate high asymmetric information costs. Baker and Wurgler (2002) for instance, posit that mispricing and low adverse selection costs interact but the former dominate the influence of the latter. Hence, market timing is a powerful predictor of financing decisions over pecking order. High stock prices can also reflect manager-investor convergent views on the price. In periods of high prices unrelated to valuation effects firms are likely to have low asymmetric information effects (Lucas and McDonald, 1990). Therefore, we make the following propositions about the simultaneous effects of valuations and asymmetric information on financing decisions.

H2a: Firms have high probability to issue equity at low asymmetric information

H2b: H2b: Overvalued firms are more likely to issue equity, especially at low asymmetric information

3.4 Leverage rebalancing and valuation

Trade off theory posits that firms have target debt ratio which they consciously work to maintain. Capital structure and changes that occur reflect attempts to ensure the leverage ratio does not deviate from the optimum that is set. Intuitively, debt issues follow downward deviation from target whereas equity offerings track upward deviation. The level of leverage presents both benefits and costs to firms. In the framework of trade off theory, it is the balance of the two that is crucial. Benefits from tax reliefs and reduction of the agency costs of free cash flow associated with high leverage encourage additional debt capital (Jensen, 1986). Similarly, costly financial distress and bankruptcy tendencies with excessive debt financing impair the issue of debt/repurchase of equity (leverage increasing transactions). Target adjustment depends largely on the debt/equity issuance decisions. On the other hand, Hovakimian et al (2001) note that equity repurchase significantly dominate leverage adjustments.

Given that debt/equity financing decisions reflect the need to maintain optimum debt ratio, then mispricing can enhance the speed of adjustment. But given that financial constraints (which are correlated with leverage ratio) can affect the degree of response of financing decisions to valuation, it is unlikely that overvalued firms will issue equity when they are highly levered. Stated differently, overvalued firms are less likely to follow the trade off theory. Firms that are overvalued might issue equity when there is substantial downward deviation of current debt from the target. For example Marsh (1982) stresses that firms that pursue timing activities distort leverage ratio. Only subsequent adjustment will correct the leverage position. Studies such as Fama and French (2002) and Kayhan and Titman (2007) assert that leverage rebalancing following equity timing can help firms restore their debt ratio. The impact of M/B on security when current leverage departs from the optimum is highly limited and insignificant. Issue of either debt or equity only coincides with periods where the leverage position determines that the particular security must be issued.

The difficulty in accessing external capital market is high with the interplay of transaction costs, information asymmetry, financial constraints and mispricing effects. Valuable investment opportunities without corresponding adequate internal cash flow require firms to enter the capital market. Transaction costs limit any attempts to obtain external financing, especially for equity. However, when periods of high valuation coincides with the need to adjust leverage to achieve optimum level, the effects diminish the costs of accessing the market. It suggests that leverage rebalancing decisions should consider valuation effects before it might be undertaken. Faulkender et al (2012)[8] find that financial constraints and market conditions affect the adjustment towards optimum ratio. Controlling for the effects of financial constraints on the issuing decisions, we assess the interactions between deviation from optimum debt ratio and valuation impact.

Using M/B for mispricing and historical average debt ratio for target leverage, we hypothesis that there is a negative correlation between trade off and market timing theories. In line with the trade off theory, the only factor that reinforces the decision to make specific offerings is the need to adjust the capital structure. Thus, the above discourse suggests that firms that are overvalued might not regard the deviation from target (either under or over levered) in making financing decisions. For instance, Cook and Tang (2010) find that regardless of financial constraints firms adjust their leverage in response to macroeconomic conditions. Accordingly, we propose that the effects of high valuation dominate the costs of issue and causes firms to make equity financing even when they are under-levered. On the assumption that valuation is a first order financing decisions determinant over the leverage position, we hypothesise as follows:

H3a: There is high probability for over-levered firms to issue equity

H3b: Overvalued firms are likely to issue equity even when they are under-levered

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[8] Also both Korajczyk and Levy (2003) and Oztekin and Flannery (2012) find evidence which affirm that financial constraints greatly affect the degree to which firms are able to respond to the need to issue securities to adjust their leverage. High transaction costs curtail the ability to enter the external capital market for financing, especially when it involves equity offering.

4.0 DATA AND METHODOLOGY

4.1 Data and Source

The paper intends to analyse the integrated effects of static trade off, pecking order and market timing theories on the corporate financing decisions. Specifically, we assess the issuance of four types of securities; straight debt issue, equity, convertible bond issue and equity repurchase of sample FTSEALLSHARE listed firms for the period 1988 to 2010. The data on the security issues will be obtained from the Securities Data Company (SDC) and matched with the corresponding accounting, stock market prices and valuation data from DataStream. Data on analyst forecast earnings will be obtained from the Institutional Brokers Estimate System (IBES).

We recognise the potential impact the financial crisis will have on the security issuance decisions. Theoretically, in periods of overall market distress accessing the external market is unpopular even, especially when there is massive panic. Investors unsure of future trends are restrained in their investment decisions and firms are also careful in contacting the capital market, both equity and debt. While overvaluation and illiquidity are among the principal causes of the crash, we are careful in using data for 1988 which includes overvaluation and stock prices which can be overly volatile. Again, considering the 2008 financial crisis which had tremendous impact on US markets especially, it will be interesting to know how it impacted on corporate financing decisions.

Again, we restrict the study period to 1988 since that was the time dividends was included in the total stock returns for UK listed firms. Moreover, the inclusion of 3-year post crisis (after 2007) should assist in investigating the magnitude of the impact of the financial crisis on security issuance decisions, if any, and assess the type of securities which are prominently preferred during periods of stock market and general economic strife. Thus, our sample period nonetheless include data prior to and including 1988 as well as beyond 2007. We restrict the sample to only firms that undertook any of the four security issuance transactions: straight debt issue, equity issue, convertible bond issue and equity repurchase. Financial firms will be excluded from the sample in line with most research due to volatility of data variables and in regard to regulatory factors that affect financial firms. In addition, some variables are not amenable to comparison between financial and non-financial firms.

4.2 Definition of Variables

4.2.1 Market timing:

   i.   *Valuation*

The extant literature offers disparate explanations to valuation effects. According to proponents of market timing theory, valuation represents mispricing which motivates managers to issue equity (overvaluation) and repurchase/issue debt (undervaluation). Market-to-book ratio (M/B) by definition encompasses firm value from market perspective as well as the fundamental or intrinsic value as determined by the companies' fundamentals. Given this background, any difference between what the market perceives as firm value and the firm's valuation results in mispricing. Summarily, higher intrinsic value than the market value generates high M/B whereas lower intrinsic value than the firm value generates lower M/B.

Using M/B as a measure of mispricing is without criticisms, and admittedly a careful decomposition[9] of the M/B reveals a component that better relate to growth opportunities as opposed to missvaluation. This position has been well articulated in the literature, especially for those who argue that M/B represents growth options rather than mispricing (e.g. Hovakimian (2006), Leary and Roberts (2005). Consistent with prior studies, while noting the limitations of M/B as proxy for mispricing despite the multiple definitions ascribed to it, we use Tobin's Q as robustness check. Therefore, we measure market timing using M/B as valuation parameter.

   ii.   *Long run returns*

To better distil the market timing effects of security issuance decisions which in turn strengthens the mispricing explanation, we conduct an event study to estimate the long run price reactions to corporate financing decisions. Event study, as a statistical method, isolates the effects on stock returns of a specific event for well defined estimation period. Our focus is to deduce the long run returns associated with financing as defined by abnormal returns. If firms time the market, then our event study should establish that equity issuers report lower aftermarket returns whereas firms that repurchase/issue debt at low valuation yield higher return.

We calculate Cumulative Abnormal Return (CAR) and Buy and Hold Abnormal Return ($BHAR$) Abnormal return (market-adjusted) is defined as the excess of firm stock returns over the market return (value weighted FTSEALLSHARE index). This abnormal return is cumulated for the event window to ascertain CAR.

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[9] Rhodes-Kropf, Robinson and Viswanathan (2005) and Elliot et al (2008) decompose M/B into two parts; viz market to value M/V for mispricing and value to book V/B for growth opportunities.

We compute *CAR* using market model defined as $CAR_{it} = \sum_{t=1}^{T} (R_{it} - R_{mt})$

Where:

R_{it} is the security i time t arithmetic return (plus dividends)

R_{mt} is the time t arithmetic return on the FTSEALLSHARE index value-weighted index (plus dividends)

Buy and hold abnormal returns (*BHAR*) measure the difference between compounded actual return and the compounded predicted return. The compounding feature associated with *BHAR* better simulates the effect of an event on an investor's portfolio. Again, *BHAR* provides a good measure of the long run investor experience under the long run event studies (Loughran and Ritter, 1995). *CAR* and *BHAR* both complement each other due to their peculiar limitations. Whereas *CAR* fails to capture the compounding effects, *BHAR* can also yield incorrect statistically significant abnormal performance due to short term return fluctuations. Therefore, the problems of extreme skewness occasioned by *BHAR* are curtailed when double checked with *CAR*.

$$BHAR_{it} = \prod_{t=0}^{T} [1 + R_{it}] - \prod_{t=0}^{T} [1 + R_{mt}]$$

Where:

R_{it} is the security i time t arithmetic return (plus dividends)

R_{mt} is the time t arithmetic return on the FTSEALLSHARE value-weighted index (plus dividends)

iii. Investment

Investment is used to represent capital expenditure. Firms with valuable investments have favourable stock market reaction due to positive information about the company that is fed to the market. Effectively, investment is highly correlated with stock returns. Since our objective is to decompose the effects on returns of valuation from other returns determining factors, including investment in the model will assist in achieving that.

It is defined by the capital expenditure over the prior period divided by total assets, given as:

$$INV = \frac{CAPEX_{it-1}}{TA_{it}}$$

Where:

$CAPEX_{it-1}$ is capital expenditure for the prior period

TA_{it} is total assets

iv. Financial constraints

In the context of this research, we define financial constraints as the degree of amounts of liquid assets and net worth. Thus, it relates more to the financial capacity to meet costs incidental to security issuance decisions. We proxy financial constraints using KZ-index[10], as developed by Kaplan and Zingales (1997). Revisiting our hypothesis, it is expected that financially constrained firms will be impeded in responding to high valuations to issue equity. This implies less financially constrained firms quickly take advantage of mispricing; therefore there is a negative correlation between valuation and degree of financial constraints.

However, the Tobin's Q component in the KZ-index presents inherent weakness due to its volatility and the tendency to bias the measure. It is also based on in-depth study of firms which makes it an attractive measure (Lamont et al 2001). In spite of this apparent flaw, several studies have used as a proxy for financial constraints (for example, Baker, Stein and Wurgler, 2002; Dong et al, 2012). We follow these studies and use as financial constraints metric in this study.

WE define the four variable version of KZ-index as follows:

$$KZ_{it} = -1.002 * \frac{CF_{it}}{TA_{it-1}} + 3.319 * LEV_{it} - 39.368 * \frac{DIV_{it}}{TA_{it-1}} - 1.315 * \frac{CASH_{it}}{TA_{it-1}}$$

Where:

   CF represents cash flow measured as net income plus depreciation

   TA is total assets

   LEV is leverage defined as long term debt over lagged total assets

   $CASH$ is defined as cash and cash equivalents

A higher KZ-index represents highly constrained firms which have debt capacity concerns, have low cash balance (limited financial slack), pay no dividends. According to the pecking order

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[10] Lemmon and Zender, 2010; Almeida, Campello and Weisbach, 2004 use dividend payment and debt capacity as proxy for financial constraints which I think the KZ-index captures in addition to other factors that affect the level of financial flexibility.
Again, Helwege and Liang, 1996; Lemmon and Zender, 2010; DeAngelo et al, 2010 adopt Altman's Z-score which define financial distress as evidenced by excessive leverage rather than the lack of financial surplus.

theory, firms with high KZ-index issue equity. Similarly, less financially constrained can better respond to both valuation effects and the need to adjust the leverage to achieve target debt ratio. The following formulae define the components of each parameter.

$$Cash\ flow,\ CF_{it} = \frac{NetInc + depreciation_{it}}{TA_{it-1}}$$

$$Dividend\ payout,\ DIV_{it} = \frac{CashDividends_{it}}{TA_{it-1}}$$

$$Slack,\ SLACK_{it} = \frac{Cash + CashEquivalents_{it}}{TA_{it-1}}$$

$$Leverage,\ LEV = \frac{LongtermDebt_{it}}{TA_{it-1}}$$

4.2.2 Trade off theory

    i.   *Financial distress*

The degree of financial distress supports the pecking order theory. In the frame of this hypothesis, firms that are potentially liable to financial distress prefer equity financing to debt. Financial distress as explained in theoretical financial is the inability of company to meet its financial obligations, especially to creditors. Factors such as excessive debt giving rise to fixed interest payments, lack of profitability particularly in situations where sales levels dwindle in response to economic downturns and the lack of liquid assets that could be sold to defray the obligations. Firms plagued with costly financial distress correlate with severe debt capacity concerns which limit external debt financing. Again, there is a lack of financial slack such that inadequate internal funds results in financial deficit. The effects of debt capacity concerns, lack of internal funds and profitability restrict any attempts to access the external debt market. Effectively, financially distressed firms are more likely to enter the external equity market for financing in order to undertake investments projects.

Financial distress, though correlates with financial constraints, also have partial effects of financing decisions and in particular determining the leverage levels. In trade off theory, we emphasise the costs associated with excessive leverage which we intend to capture its effects of adjustment towards target debt ratio, especially when the firm is over-levered. The focus here is to use financial distress, rather than financial constraints, which better measure bankruptcy costs.

Therefore, the Atman's Z-score is used as a measure of financial distress. This is in consonance with other studies such as Lemmon and Zender (2010).

The definition of the Z-score index is as stated.

$$Z = 3.3 * x_1 + 1.0 * x_2 + 0.6x_3 + 1.2 * x_4 + 1.4 * x_5$$

Where:

x_1=EBIT/Total assets; x_2=Net Sales/Total assets; x_3=Market value of equity/Total liabilities;

x_4=Working capital/Total assets and x_5=Retained earnings/Total Assets

This represents dummy variable 1 when Z is less than 1.81 and 0 otherwise.

ii.   Tax benefits

Tax status is argued to affect financing decisions. The interest payments deductibility provides gains to debt issuing firms and this motivates excessive debt capital in support of the trade off theory. In testing the financing decision in response to the trade off theory we include tax benefits as a control variable. This is given as ratio of tax payments to the preceding year of issue book value of total assets. We expect a positive relationship between debt financing and tax benefits.

iii.   Target Leverage

Target ratio is defined as the optimum debt ratio that a firm tries to achieve in accordance with the trade off hypothesis. The trade off theory postulates that firms consciously define a debt ratio which they continually work at attaining through security issuance decisions. At any point in time there is a reappraisal of the leverage level to ascertain deviation from the predetermined level. Therefore, firms that substantially deviate from the target use financing decisions to restore the current ratio. By implication, therefore, an upward deviation from the target triggers leverage decreasing transactions such as equity issue, whereas a downward deviation resulting in debt financing or comparative equity repurchase transactions that increase the current leverage to the target ratio. The idea is to simulate the effects of deviation from target on the security issuance decisions. By placing the target ratio side by side with benefits and costs of leverage better explain the impact of deviation from target on financing choice.

Following Hovakimian, Opler and Titman (2001) and Uysal (2011), we estimate the target leverage by regressing annual market leverage on set of leverage determining explanatory factors. The fitted values derived from the annual regressions represent the target leverage. In line with Rajan and Zingales (1995) and Hovakimian et al (2001), we use the following determinants of leverage as emphasised in the literature: firm size (as log of net sales), growth opportunities (using M/B), Research and Development, RD scaled by lagged total assets, ratio of selling expenses to sales, tangibility measured as total tangible assets scaled by lagged total

assets, profitability as $EBITDA/TA_{t-1}$ and market leverage (ratio of book debt over market value). The regression is estimated as a Tobit regression with double censoring. The dependent variable is censored from both below and above by the value of 0 and 1 respectively.

The above relation is expressed thus:

$$Leverage_{it} = \gamma X_{it-1} + \varepsilon_{1i}$$

Where: X_{it-1} represents the explanatory variables described above.

The deviation from target ratio is derived as follows:

$$LD = D_{it}^{\bullet} - D_{it-1}$$

Where:

LD is deviation from leverage, $D_{it}^{\bullet}$ represents the target leverage and D_{it-1} is the actual debt ratio.

4.2.3 Pecking order: Asymmetric information

   i.   Earnings deviation, ED

A fundamental condition in testing the pecking order is the measure of asymmetric information effects. This suggests a lack of consensus on the value assigned to the firms by both managers and investors. If managers and analysts do not agree on the value for the stock then one party is deemed to possess salient information which is yet to be incorporated into the assessment of the value by the other party. Generally, firm is the source of information so in the event of asymmetric information, investors are more likely to lack the particular information which has culminated in the divergent view of the valuation of the firm. Investors respond by discounting the stock price when managers make equity offering.

Analysts coverage better represent the difference between information that managers have and that available to analysts and even the information variation from one analyst to the other. Thus, if two parties have the same level of information then we expect these parties to assign almost identical, if not same, value to a particular stock. However, the information that analyst forecasts capture might include other external market dynamics which potentially biases the inference from the firm's perspective. As such, the deviation of actual earnings from analysts' consensus forecast is used to proxy for information asymmetry.

Earnings deviation, $ED = \dfrac{Earnings_{actual} - Earnings_{forecast}}{Earnings_{actual}}$

ii.   *Accruals quality, AQ*

The premise that the well-known and widely used proxies for asymmetric information can be contaminated is confounding. We attempt to obviate this apparent weakness by adopting accruals quality from the accounting literature as an alternative measure. Accruals quality measures the portion of accounting earnings that is reflected in cash flow. As a fundamental gauge of the quality of information, outsiders/analysts use to collect from financial statements relevant information that feed into the objective assessment of the financial viability of the firm. Poor accruals quality stemming from substantial deviation of earnings from cash flow represents higher asymmetric information effects between insiders and outsiders. We join the body of recent studies that have embraced this metric and conduct a robustness tests using accruals quality as a new measure of adverse selection costs in our econometric specifications[11].

The original model of Dechow and Dichev (2002) is modified by McNichols (2002) by adding change in revenues and PPE since both also affect expectations about current accruals.   Lee and Masulis (2009) add firm fixed effect to the modified DD model to cater for firm specific characteristics and adjust for heteroskedasticity. This modified version of the model is stated as follows:

$$CA_{it} = \alpha_i + \gamma_1 CFO_{it-1} + \gamma_2 CFO_{it} + \gamma_3 CFO_{it+1} + \gamma_4 \Delta SALES_{it} + \gamma_5 PPE_{it} + \varepsilon_{it}$$

Where:
CA_{it} =total current accruals=Δ current assets-Δ current liabilities-Δ cash+Δ debt in current liabilities
Δ=changes from year t to year $t-1$
CFO = cash flow from operations= net income before extraordinary items-total accruals and total accruals=current accruals-depreciation and amortization
$SALES$ =total sales revenue and
PPE = property, plant and equipment. Each of the variables is scaled by the average of total assets between year $t-1$ and year t

The model above estimates annual cross sectional regression for each firm. Finally, accruals quality AQ is computed as the standard deviation of the regression residuals from $t-4$ through t where larger standard deviation at year t reflects a poor earnings quality and hence high asymmetric information. Thus, accruals that do not map into cash flow for the prior, current and

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[11] Other studies which have embraced this metric include: Francis, LaFond, Olsson and Schipper (2005); Billett, Garfinkel and Yu (2011)

subsequent year may describe the quality of the accruals since they may never be realised. Since residuals contain both lag and lead values, for 5-year residuals for AQ_{it} we need a total of 7 years data. This takes the original sample period to 1984-2011.

Thus $AQ_{it} = \sigma(\varepsilon_i)_t$

4.2.4 Control variables

In addition to the key parameters that we have defined as affecting financing decisions, we incorporate other auxiliary variables that have partial effects on security issuance decisions. While these variables may not be wholly conclusive, their recognition will improve the results of the regression models. Rajan and Zingales (1995) identify four firm characteristics that have significant impact on financing decisions. Particularly, leverage levels correlate with each of these variables which in turn determine financing decisions as a result of the leverage levels. The four Rajan and Zingales (1995) leverage determining factors include firm size, profitability, asset tangibility and growth opportunities (M/B and Q ratio).

Following Rajan and Zingales (1995) Baker and Wurgler (2002) and Dong, et al (2012), we decompose the effects of other factors that determine leverage other than market to book ratio. Accordingly, we control for these variables:

    i.   *Asset Tangibility*

Tangibility is defined as the ratio of total net property, plant and equipment to total assets expressed as percentage. Tangibility representing assets in place have been shown to correlate with leverage levels. Generally, firms with substantial amount of tangible assets have the latitude to provide collateral for debt capital than an otherwise defined entity. In that spirit, asset tangibility has a positive relationship with leverage. Therefore, tangibility is associated with higher leverage. It is given by the following relation: $Tangibility_t = \dfrac{TanASSETS_{it}}{TA_{it}}$

    ii.   *Profitability*

Profitability is defined in the model as the earnings before interest, taxes and depreciation (EBITDA) divided by total assets and expressed as a percentage (in other words as the return on assets). Jensen (1986) asserts that free cash flow problems associated with profitable firms force them to issue debt capital. Again, evidence attest that profitable firms have high levels of internal funds and as such are unlikely to be financially distressed. Moreover, profitability translates into growth opportunities in subsequent periods. That is, profitable firms are more likely to investment in research and development which produces opportunities for growth. Thus, with growth options firms' equity more than debt financing and hence record low leverage levels.

Following from that, and according to the pecking order theory, these firms are unlikely to access the capital debt market for financing. Therefore, profitable firms have a low leverage.

It is defined accordingly as: $PROFIT_{it} = \dfrac{NetInc_{it}}{CommonEquity_{it}}$ NetInc is Net Income before extraordinary items

iii. Firm size

Firm size is measured as the log of net sales/market capitalisation has a positive relationship with leverage. This is due to the ability of large firms to shield against financial distress and access capital debt market. Empirical evidence asserts that small firms possess considerable growth opportunities, low leverage yet greater uncertainty due to information asymmetry. Large firms, on the other hand, are mostly matured entities which have exhausted growth options but are highly followed by analysts. The effects analysts limit asymmetric information effects. Again, large firms have substantial tangible assets which provide collateral facilities to access debt financing. Intuitively, small firms are less likely to follow the pecking order, even though this argument is sternly challenged in the literature (Lemmon and Zender, 2010). In terms of leverage levels, the collateral facility from the high degree of asset tangibility ensures that large firms have high leverage than small entities. The conclusion from this analysis reflects the positive relationship between firm size and leverage.

We compute firm size using Rajan and Zingales (1995) definition. Thus, firm size is calculated as the natural logarithm of market value. The reasoning for scaling with natural logarithm is to curtail the bias associated with outliers and errors. Residuals get bigger with bigger values for the dependent variable. This apparent anomaly is inevitable because error or change in the value of an outcome variable is often a percent of the value rather than an absolute value. The natural logarithm of a variable neutralises the residuals for the bigger value. Moreover, the difference in size among small and large firms is controlled using logarithm rather than the "raw" values. This eliminates potential skewness associated with large values. There is neutrality with firm size and the effects on financing choice or leverage removes any bias.

4.3 Model Specification

We test all but hypothesis *H1c* using the multinomial logit regression model to determine the likelihood for firms to choose one security over the other given relevant intervening factors. In all the set ups, we emphasise the choice amongst equity and repurchase on one hand, equity and debt on the other hand. Again, we test the choice between the leverage increasing transactions- repurchase and debt- to assess the magnitude of the independent variables on each of them.

H1a: Overvalued firms are more likely to issue equity

At the outset, we test market timing by looking at the financing decisions relating to the level of valuation. Since this evidence is widely articulated in the literature, it is a first step to understanding the effects of financial constraints on security issuance decisions.

H1b: There is high probability for less financially constrained firms to issue equity

Having established market timing effects on financing decisions, the next stage of the regression attempts to analyse how valuation and financial constraints interact. Specifically, we assess the extent to which firms issue equity (overvalued firms) or debt/repurchase given the level of financial constraints.

Given the above hypotheses, the main findings will be to establish the idea in hypothesis 1b. Therefore, the regression model incorporates the interactive effects of valuation and financial constraints on financing choice. The argument reiterated here is that financial flexibility enhances firm response to mispricing and motivates equity offering. Given this proposition, we expect $M/B * KZ$ to be negatively correlated for equity issuing firms, and otherwise for repurchase/debt issuing firms.

We adopt the regression model of Dong et al (2012) to estimate the likelihood of issuing equity over repurchase. Effects of asymmetric information *ED* and trade off components (*LEV*) are controlled in addition to other relevant control variables. The model is stated as thus:

$$R_{(i)} = \beta_0 + \beta_1 * MB_{it} + \beta_2 * SIZE_{it} + \beta_3 * Z_{it} + \beta_4 * ED_{it} + \beta_5 * LD_{it} + \beta_6 * TAN_{it}$$
$$+ \beta_7 * LEV_{it} + \beta_8 * PFT_{it} + \beta_9 TAX_{it} + \mathbf{\beta_{10}} * \mathbf{MB_{it}} * \mathbf{LD_{it}} + \varepsilon_i$$

Where:

R_i denotes the choice between equity and debt on one hand; and equity and repurchase. In both cases R_i is 1 for equity and 0 otherwise.

H1c: Equity issuing firms are more likely to record low post-issue returns than those that repurchase/issue debt

The extant literature posits that firms that time the market record low aftermarket returns. If this is true it should support or confirm our earlier findings in hypothesis 1a. Thus, firms that issue equity (overvalued) are expected to record low returns whereas repurchase or debt issuing firms are expected to earn high returns ex post. *Hypothesis 1c* tests the stock returns to confirm the long run stock underperformance associated with firms that issue equity at high M/B. In testing *Hypothesis 1c*, we study the excess returns that equity issuing firm record, especially when they are overvalued. We perform event studies by choosing appropriate timing before and after the issuance transactions. The event window is set to 3 months before the issue and 3 months after the financing transaction (Dong et al, 2012). Further, we test the long run effects (underreaction) using the 6-month price activity (Womack, 1996).

Effectively we identify the following which we repeat with the 6-month window:

Excess Stock returns before the announcement of the security issue, $CAR_{(-30,-2)}$.This will proxy for the excess returns prior to the announcement and is estimated using the standard market model where total return on the FTSEALLSHARE index represent the market return.

Excess stock returns at the announcement of the security issue, $CAR_{(-1,1)}$. Again using the standard market model, we estimate cumulative abnormal return where FTSEALLSHARE index represent the market return.

Excess stock returns after the announcement of the security issue, $CAR_{(2,60)}$. We estimate this with the standard market model using total return on FTSEALLSHARE index represent the market return.

In response to the evidence presented in the literature, our expectation is that firms that issue equity when they are overvalued will earn lower post issue returns, whereas those that issue debt/repurchase equity yield higher post-issue returns, especially when they are undervalued.

As a robustness check, *CAR* will alternatively be substituted in the model with *BHAR* and we expect similar results. Overall, we expect negative sign for $MB_i * KZ_i$. The following is the model.

$$R_{(2,60)} = \beta_0 + \beta_1 * MB_{it} + \beta_2 * SIZE_{it} + \beta_3 * KZ_{it} + \beta_4 * ED_{it} + \beta_5 * INV_{it} + \beta_6 * \mathbf{MB}_{it} * \mathbf{KZ}_{it} + \varepsilon_i$$

$R_{(2,60)}$ represents the event window between 2 and 60 months after the event.

Again, we control for financial constraints and asymmetric information and also introduce interaction term to explain the simultaneous effects of valuation and financial constraints, $MB_i * KZ_i$.

MB is a measure of missvaluation, KZ is the proxy for financial constraints, SIZE is firm size given as log of market value of the company, *ED* which measures of asymmetric information, KZ*MB is the interaction term between financial constraints and market-to-book ratio and INV represents capital expenditure.

H2a: Firms have high probability to issue equity at low asymmetric information

If the pecking order and asymmetric information hypotheses hold, firms should issue equity at relatively low asymmetric information and issue debt/repurchase otherwise. This hypothesis basically tests the pecking order/asymmetric information theory. Again, this is not a new finding but it is appropriate for the subsequent hypotheses.

H2b: Overvalued firms are more likely to issue equity, especially at low asymmetric information

Following from the above findings, this hypothesis tests whether or not overvalued firms experience high asymmetric information effects yet issue equity because the benefits from mispricing outweigh adverse selection costs. Effectively, we look at the interaction between valuation and asymmetric information and establish the trend of the association.

Hypothesis 2b assesses the simultaneous impact of valuation and asymmetric information on financing choice. The conjecture we make is that high valuation combined with low asymmetric information should encourage equity issue. That is, while firms are taking advantage of mispricing to issue equity, the low asymmetric problems ensures limited possibility of severe stock price discount. Summarily, we expect firms that opt for equity over debt/repurchase should have negative sign for the interaction term $M/B * ED$. Again, we control for all other relevant factors as defined earlier. We modify the model to incorporate the new interaction term of our focus as follows:

$$R_{(i)} = \beta_0 + \beta_1 * MB_{it} + \beta_2 * SIZE_{it} + \beta_3 * KZ_{it} + \beta_4 * ED_{it} + \boldsymbol{\beta_5} * \mathbf{MB_{it}} * \mathbf{ED_{it}}$$
$$+ \beta_6 * TAN_{it} + \beta_7 * LEV_{it} + \beta_8 * PFT_{it} + \varepsilon_i$$

R_i denotes the choice between equity and debt on one hand; and equity and repurchase. In both cases R_i is 1 for equity and 0 otherwise.

H3a: There is high probability for over-levered firms to issue equity

As a starting point, we test the trade off theory. Firms following the trade off theory are expected to issue equity when over-levered and debt/repurchase when they are under-levered.

H3b: Overvalued firms are likely to issue equity even when they are under-levered

Hypothesis 3b attempts to estimate how both leverage deviation and valuation effects combine to determine financing choice. We stress here that while trade off theory posits that firms work to achieve target debt ratio market timing opportunities can possibly influence the rate at which firms achieve the target ratio. Hence, we propose that if overvalued firms issue equity when they after less financially constrained, then such firms should issue equity even when they are under-levered. Our interaction term $M/B * LD$ is expected to be negative. Again, our modified model is stated as:

$$R_{(i)} = \beta_0 + \beta_1 * MB_{it} + \beta_2 * SIZE_{it} + \beta_3 * Z_{it} + \beta_4 * ED_{it} + \beta_5 * LD_{it} + \beta_6 * TAN_{it}$$
$$+ \beta_7 * LEV_{it} + \beta_8 * PFT_{it} + \beta_9 TAX_{it} + \mathbf{\beta_{10}} * \mathbf{MB_{it}} * \mathbf{LD_{it}} + \varepsilon_i$$

R_i denotes the choice between equity and debt/repurchase where R_i is 1 for equity and 0 otherwise.

References

- Allen, D. E., 1993, "The pecking order hypothesis: Australian evidence," Applied Financial Economics, 3, 101-112.

- Alti, A, 2006, "How persistent is the impact of market timing on capital structure," The Journal of Finance, 61, 1681-1710.

- Asquith, P., and D. W. Mullins, 1986, "Equity Issues and Offering Dilution," Journal of Financial Economics, 15, 61-89.

- Baker, M., and J. Wurgler, 2002, "Market Timing and Capital Structure," The Journal of Finance, 57, 1-32.

- Barclay,M.J., and C.W. Smith and R.L. Watts, 1995, "The determinants of corporate leverage and dividends policies," Journal of Applied Corporate Finance, 7, 4-19

- Brounen, D., A. de Jong, and K. Koedijk, 2006, "Capital Structure Policies in Europe: Survey Evidence," Journal of Banking and Finance, 30, 1409-1442.

- Cassell, C. A., Huang, S. X., Sanchez, J. M., and Stuart, M. D. (2012), "Seeking safety: The relation between CEO inside debt holdings and the riskiness of firm investment and financial policies", Journal of Financial Economics, 103, 588-610

- Cook, D. O., and Tang, T. (2010), "Macroeconomic conditions and capital structure adjustment speed", Journal of Corporate Finance, 16, 73-87

- De Jong, A., M. Verbeek, and P. Verwijmeren, 2010, "The Impact of Financing Surpluses and Large Financing Deficits on Tests of the Pecking Order Theory," Financial Management 39, 733-756.

- DeAngelo, H., L. DeAngelo, and R. Stulz, 2010, "Seasoned Equity offerings, Market Timing, and the Corporate Lifecycle," Journal of Financial Economics 95, 275-295.

- Dittmar, A., and A. Thakor, 2007, "Why do Firms Issue Equity?," The Journal of Finance, 52, 1-54.

- Donaldson, G., 1961, "Corporate Debt Capacity: A Study of Corporate Debt Policy and the Determination of Corporate Debt Capacity," Harvard Business School, Division of Research, Harvard University.

- Dong, M., I. Loncarski, J. ter Horst and C. Veld, 2012, "What Drives Security Issuance Decisions: Market Timing, Pecking Order, or Both?" Financial Management Forthcoming.

- Elliott, W.B., J. Koëter-Kant, and R.S. Warr, 2008, "Market Timing and the Debt-Equity Choice," Journal of Financial Intermediation, 17, 175-197.

- Fama, E.F., and K.R. French, 2005, "Financing Decisions: Who Issues Stock?" Journal of Financial Economics, 76, 549-582.

- Faulkender, M., Flannery, M. J., Hankins, K. W., and Smith, J. M. (2012), "Cash flows and leverage adjustments", Journal of Financial Economics, 103, 632-646

- Frank, M.Z., and V.K. Goyal, 2003, "Testing the Pecking Order Theory of Capital Structure," Journal of Financial Economics, 67, 217-248.

- Giot, P; and M. Petitjean, 2009, "Short-term market timing using the bond-equity yield ratio," The European Journal of Finance, 15, 365-384.

- Gomes, A. and G. Phillips, 2007, "Why Do Public Firms Issue Private and Public Securities?"AFA 2008 New Orleans Meeting Paper. Available at SSRN: http://ssrn.com/abstract=972723

- Helwege, J., and N. Liang, 1996, "Is There a Pecking Order? Evidence from a Panel of IPO Firms," Journal of Financial Economics, 40, 429-458.

- Hovakimian, A., 2006, "Are Observed Capital Structure s Determined by Equity Market Timing?" Journal of Financial and Quantitative Analysis, 41, 221-243.

- Hovakimian, A., T. Opler, and S. Titman, 2001, "The Debt-Equity Choice," Journal of Financial and Quantitative Analysis, 36, 1-2.

- Ikenberry, D., Lakonishok, J., and Vermaelen, T., 1995. "Market Underreaction to Open Market Share Repurchases," Journal of Financial Economics, 39, 181-208.

- Jalilvand, A., and R.S. Harris, 1984, "Corporate behavior in adjusting to capital structure and dividend targets: An econometric study," Journal of Finance, 39, 127-45

- Jung, K., Y.-C. Kim, and R.M. Stulz, 1996, "Timing, Investment Opportunities, Managerial Discretion, and the Security Issue Decision," Journal of Financial Economics, 42, 159-185.

- Kaplan, S.N., and L. Zingales, 1997, "Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?" The Quarterly Journal of Economics, 112, 169-215.

- Kayhan, A., and S. Titman, 2007, "Firms' Histories and Their Capital Structures," Journal of Financial Economics, 83, 1-32

- Kim, W., and M. Weisbach, 2008, "Motivations for public equity offering: An international perspective," Journal of Financial Economics, 87, 281-307

- Lamont, O., C. Polk, and J. Sa´a-Requejo, 2001, "Financial Constraints and Stock Returns," The Review of Financial Studies, 14, 529-554.

- Lemmon, M.L. and J.F. Zender, 2010, "Debt Capacity and Tests of Capital Structure Theories," Journal of Financial Quantitative Analysis, 45, 1161-1187.

- Marsh, P. 1982, "The Choice between Equity and Debt: An Empirical Study", Journal of Finance, 37, 121 – 144.

- Myers, S.C., and N.S. Majluf, 1984, "Corporate financing and investment decisions when firms have information that investors do not have," Journal of Financial Economics, 13, 187–221.

- Opler, T. and S. Titman, 1993, "The Determinants of Leveraged Buyout Activity: Free Cash Flows vs. Financial Distress Costs", Journal of Finance, 48, 1985 – 1999

- Rajan, R., and L. Zingales, 1995, "What do i know about capital structure? Some evidence from international data," Journal of Finance, 50, 1421-1460

- Shyam-Sunder, L., and S.C. Myers, 1999, "Testing Static Tradeoff Against Pecking Order Models of Capital Structure," Journal of Financial Economics, 51, 219–244

- Stein, J., 1996, "Rational Capital Budgeting in an Irrational World," Journal of Business, 69, 429–455.