Corporate Debt and Equity: Another Look at their Determinants

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Abstract

Capital structure plays a significant role in the determination of the value of the firm. The literature is replete with studies that relate to mature capitalist economies in the western world. When the models are applied to less-structured countries of the Middle East, one would question whether the findings are consistent. How corporations in resource-rich Middle Eastern countries finance their operations have not been subject of serious academic scrutiny. This work looks at the difference in approaches, and identifies the gap in knowledge, and then attempts to consider capital structure of corporations operating within the confines of structured Sharia'h-compliant practices. It investigates and revisits the determinants of debt and equity decisions of firms operating in an Islamic environment.

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1 - Introduction

The factors associated with how corporations in resource-rich Islamic countries finance their operations have not been a subject of serious academic research. Anecdotal evidence exists. Therefore it becomes imperative to address capital structure of corporations operating within the confines of structured *Sharia'h*-compliant practices, where financing decisions of intermediaries are predicated on asset backing and specific credit participation in identified business risk. Khan (2006) contends that there are several Islamic modes of financing which serve as alternatives to interest-based financing, and he argues that the alternatives differ based on:

The extent of participation in management by the capital provider;

The different implications on uncertainty and variability of cost of the capital for the capital user;

The economics of different techniques for the capital provider and the capital user.

The Islamic Research and Training Institute of the *Islamic Development Bank* in Saudi Arabia holds the impression that the choice of debt and equity is of critical issue in strategic financial decision, and it continues to be enigmatic even in *Sharia'h*-compliant corporations. Corporations in Islamic economies traditionally complied with service to cultural and political ends, and they did not have to meet scientific standards of coherence, precision, or realism (Khan, 2006). In western economies, one will find investors are indeed keen in putting their capital at risk for the promise of a greater return. Traditionally, private firms in Islamic economies tend to use private equity to further socio-economic objectives at the expense of economic profit objectives. Islamic religious texts suggest that entrepreneurs should neither be lenders nor borrowers.

Frank and Goyal (2003) contend that private firms in the west tend to use retained earnings and bank debt heavily while small public firms make active use of equity financing and large public firms primarily use retained earnings and corporate bonds. An optimum debt to equity ratio is vitally important since it involves "trading off" costs and benefits. Classical economic theory would suggest that the optimum capital structure for a corporation is when the weighted average cost of capital is minimized. Following the work of two Nobel laureates (Franco Modigliani and Merton

Miller (MM, 1958)), one gets the proposition that the value of the firm is independent of its capital structure under the postulates of a frictionless economy with arbitrage and the assumption of equivalent return class of firms. Ghosh (1992) proves the contrary in a dynamic framework of capital asset accumulation.

In a recent piece (2012), Ghosh and Ghosh, taking the exact same static analytics of Modigliani and Miller regime, prove that the value invariance proposition does not hold good in general cases, - the Noble prize winning result that the value of a firm is independent of capital structure holds only in a *limited* situation. When, however, friction in the form of tax-deductible interest payments on long term debt instruments are factored in Modigliani and Miller (1963) – in their so-called *Correction* paper – they establish that the value of a levered firm (that is, the firm with some debt) *exceeds* the value of the unlevered firm (a firm with *no* debt in its capital structure). In other words,

$$V_L = V_U \qquad \text{MM (1958)} \qquad (1)$$

$$V_L = V_U + T_C.D \qquad \text{MM (1963)} \qquad (2)$$

Here, V_L, V_U, T_C, and D stand, respectively, for the value of levered firm, value of unlevered firm, corporate tax rate, total debt incurred by the firm. Ghosh and Ghosh (2012) prove what Modigliani notes in his *Presidential Address* to the *American Finance Association* in 1982 (the 1963 paper's "definitive corrections need never have been written"). Ghosh and Ghosh (2012) show that the expression (2) above should be the following:

$$V^I_{L(T_C)} = V_U + (\frac{r}{\rho^{T_C}}).T_C.D \qquad (2^*)$$

Here $V^I_{L(T_C)}$ is the value of the incompletely levered firm with corporate tax rate (T_C), $\rho^{T_C} = i_j(\frac{E_j}{V_j}) + r(1-T_C)(\frac{D_j}{V_j})$, and r is the rate of return earned by bondholder. ρ^{T_C} is the weighted average cost of capital when corporate tax rate is admitted of. E_j, D_j, V_j, i_j stand for equity, debt, value, and equity cost of firm j, respectively. Obviously, $\rho^{T_C} > r$, and hence $(\frac{r}{\rho^{T_C}}) < 1$. This signifies the reduced gains from leverage from what Modigliani and Miller incorrectly calculated in 1963. Next, if we

factor in the conclusions of Fama and French (2002), bankruptcy (Um, 2001), cash dividends, agency costs (Jensen and Meckling (1976)), frictions get magnified, and Modigliani-Miller's value invariance proposition falls flat.

Over the past five decades research has made some progress on the subject of debt to equity ratio, and yet very little is known about the empirical significance of the various practices. Rajan and Zingales (1995) who test the determinants of debt and equity in the G7 countries contend that empirical work has unearthed some stylized facts on capital structure choice, but this evidence is largely based on firms in the United States, and it is not at all clear how these facts relate to different theoretical models. There is, therefore, a need to test the robustness of these findings outside the environment in which they were formulated, and to consider whether the conclusions are merely spurious correlations. Booth *et al* (2001) have gone on with an attempt to examine the debt and equity decisions of firms operating in ten emerging markets. The literature shows that the debt and equity decision is heavily influenced by both firm-specific and market-wide factors such as the economic and institutional environment, corporate governance practices, tax systems, exposure to capital markets and the level of investor protection in the country in which the firm operates.

Further to the irrelevance theory of Modigliani and Miller, the two models that are often cited with capital structures are the trade-off theory and the pecking order theory. Empirical results prove that both these theories can explain some part of the capital structure (Zhang and Kanazaki, 2007). The static trade-off model identifies several determinants that affect firm leverage and the pecking order model displays similar movements between net debt retired and financial surplus. However, the static trade-off model fails to explain the negative correlation between profitability and firm leverage, and the pecking order model fails to explain the low deficit coefficient.

2 - The static trade-off theory

The static trade-off theory is used to show that firm leverage is affected by several determinants, and the theory is used to describe a family of related theories. In all of these theories, Frank and Goyal (2003) point out that a decision maker in a firm evaluates the various costs and benefits of alternative leverage plans. It has surfaced as a result of the original work of Modigliani and Miller (1958), who assume a perfect and frictionless capital market to prove their irrelevance theorem which holds that a corporation's financing policy should in no way affect the firm's value or its cost of capital,

and that suggests that there is no relationship between financing and investing decisions. According to the irrelevance theorem corporate valuation is therefore solely based by the investment decisions allowing one to analyze financing and investment decisions separately.

Furthermore, while the literature is rich in studies that examine the importance of firm-specific factors in determining a firm's financing choice, empirical evidence on the effect of stock market development in Islamic States on the debt and equity choice is virtually limited. In this regard there is a need to examine the effect of a stock market's development on the firms' financing choice and the extent to which the variation in aggregate debt-equity ratios can be explained by the level of development, macro-economic factors such as growth rate and the rate of inflation and micro-economic factors and other micro-economic factors particularly in Islamic countries.

3 - Pecking order theory of leverage

Agents of the corporation are more informed of the true value of the corporation and have a greater knowledge of the risks that the corporation faces than the less-informed principals and other stakeholders. The underlying thinking behind the pecking order theory of capital structure, as developed by Myers and Majluf (1984), is that main source of a corporation's additional finance needed must be its own-earned profit which should be reinvested in business activities. Once this has been achieved, the corporation should consider raising debt and equity capital. Agents will seek to finance the new project using a security that is not undervalued by the market, such as internal funds or riskless debt. According to Frank and Goyal (2003), the key prediction of the pecking order theory is the strict ordering of financing. In this regard the pecking order theory establishes association between a corporation's capital structure, dividend and investment policies. The theory posits that corporations prefer to use internal equity to pay dividends and finance new investments. It ranks internal equity at the top of the pecking order, followed by debt and then hybrids of debt-equity, with external finance at the bottom of the pecking order. Essentially, pecking order theory of capital structure suggests that corporations have a preferred hierarchy for financing decisions.

Implicit in the pecking order theory are two key assumptions about financial managers. The first of these is *asymmetric information*, or the likelihood that a firm's managers know more about the company's current earnings and future growth opportunities than do outside investors. There is a

strong desire to keep such information proprietary. The use of internal funds precludes managers from having to make public disclosures about the company's investment opportunities and potential profits to be realized from investing in them. The second assumption is that managers will act in the best interest of the company's existing shareholders. The managers may even forgo a positive-net present value projects if it would require the issue of new equity, since this would give much of the project's value to new shareholders at the expense of the old. The pecking order theory is based on the idea of asymmetric information between managers and investors.

4 - Agency cost theory

Stockholders who are the true owners of public corporations exercise no control over the operating activities, investment activities and financing activities of the corporations. Instead, control is vested in the hands of agents. The separation of ownership and control is one of the characteristics of public corporations. Costs associated with this separation may produce a condition where the interests of the principals (providers of funds) and agents (controllers of funds) may deviate. The aggregate outcome of these deviations is referred to as agency costs. In this regard Jensen and Meckling (1976) in their seminal work, "Theory of the firm: managerial behavior, agency costs, and ownership structure," see the conventional justification for agent independence as being grounded not in their decision making efficiencies but in agency costs which Jensen and Meckling (1976) conventionally define as the sum of the monitoring and bonding costs, plus any residual loss. The authors go on to identify shirking to include decision making by a member of a production team that diverges from the interests of the team as a whole and include not only culpable cheating, but also negligence, oversight, incapacity, honest mistakes, errors of omission and errors of commission as shirking. The agency cost theory postulates that an optimal debt and equity will be determined by minimizing the costs arising from conflicts between the parties involved. Jensen and Meckling (1976) argue that agency costs play an important role in the financing decisions due to the conflict that may exist between shareholders and debt holders.

Graham and Harvey (2001) and Drobetz and Fix (2003) having conducted a survey on a group of US and Swiss firms respectively, document that managers seek a target debt-equity ratio. The main objective in setting debt and equity policy is not to minimise a firm weighted average cost of capital but rather to keep financial flexibility in the context of a pecking order

theory. They also find evidence that firms may temporarily deviate from their optimal debt and equity. De Miguel and Pindado (2001) also develop a target adjustment model that allow them to explain a firm's leverage ratio in terms of its leverage ratio in the previous period and its target leverage level, the latter being a function of well-known firm characteristics such as size, profitability and growth opportunities.

5 - Dynamic pecking order on leverage

It has been noted that the static trade-off theories do not explicitly treat effects of transaction costs and do not explain the policy of asymmetry between frequent small debt transactions and infrequent large equity transactions. These theories do not either explain why debt ratio is allowed to wander a considerable distance from its alleged static optimum, or how much of a distance should be tolerated. Bagley, Ghosh, and Yaari (BGY,1998) have offered a class of diffusion models that mimic this behaviour in a stochastically dynamic framework and show how to optimize a financing strategy by any static trade-off theory as input. It should be noted that Fischer, Heinkel, and Zechner (FHZ, 1989), and Mauer and Triantis (MT, 1994) have also provided the dynamic leverage policy which is different from Bagley, and Yaari (BY, 1996), and Bagley, Ghosh, and Yaari (BGY, 1998). Making use of Arrow, Karlin, and Scarf's (AKS, 1958), and particularly, Arrow-Harris-Marschak dynamic model (section III of AKS, 1958) and their (S, s) policy, we build the stochastic model of Weiner process with constant drift (μ) and diffusion parameter (σ) as follows:

$$dL = \mu dt + \sigma d\omega \qquad (3)$$

in which L is the state-control variable representing leverage index that is *monotonically* increasing with debt and decreasing with equity. It is postulated that L triggers a fixed transaction cost at each encounter with upper and lower barriers, as in (S, s), and generates an instantaneous penalty when on free traversal between barriers. The barrier points and the return point chosen to minimize expected total periodic cost are $L = \beta$ (upper barrier point) when the firm makes costly lump-sum readjustment in its debt equity position to the point, $L = r$, and issues stock and retires bonds in the amount of $\beta - r$. If the leverage index hits the lower barrier, $L = \alpha$, there will be readjustment back to $L = r$ by stock repurchase bankrolled by borrowing in the amount of $r - \alpha$.

The paradigm with endogenous barriers, symmetric quadratic penalty and transaction costs and no drift can be brought out as:

$$s(L) = e^{-\int \frac{2\mu(L)}{\sigma^2(L)} dL} = e^0 = 1 \text{s(L)} \tag{4}$$

and the scale function, S(L) is

$$S(L) = \int s(L) dL = L \tag{5}$$

The probability of hitting the upper barrier before lower barrier, $u(L)$, given that the process begins at an unspecified leverage, L is as follows:

$$u(L) = \frac{S(L) - S(\alpha)}{S(\beta) - S(\alpha)} = \frac{L - \alpha}{\beta - \alpha} \tag{6}$$

And the speed density, $\lambda(L)$, computed from (4), is

$$\lambda(L) = \frac{1}{\sigma^2 s(L)} = \frac{1}{\sigma^2} \tag{7}$$

From this value one can get the expected time to reach either barrier from any point *L* is $\upsilon(L)$, by use of expressions (5) – (7), and here then

$$\upsilon(L) = 2u(L)\int_L^\beta (S(\beta) - S(\xi))\lambda(\xi) d\xi + 2(1 - u(L))\int_\alpha^L (S(\xi) - S(\alpha)\lambda(\xi)) d\xi$$

$$= \frac{(L - \alpha)(\beta - L)}{\sigma^2} \tag{8}$$

Assuming penalty function, $\rho(L)$, centred on the ideal leverage, L_0, where

$$\rho(L) = q(L - L_0) \quad q > 0 \tag{9}$$

whose lowest value is $\rho(L_0) = 0$ measures the instantaneous penalty incurred by any deviation from the ideal leverage, L_0. However, the expected penalty incurred up to the first encounter with either barrier, $\omega(L)$, when starting from any point L is

$$\omega(L) = 2u(L)\int_L^\beta (S(\beta) - S(\xi)\lambda(\xi)\rho(\xi) d\xi + 2(1 - u(L))\int_\alpha^L (S(\xi) - S(\alpha))\lambda(\xi)\rho(\xi) d\xi$$

$$= \frac{q(L-\alpha)(\beta-L)(\alpha^2+\beta^2+\alpha\beta+\alpha L+\beta L+L^2-4\alpha L_0-4\beta L_0-4LL_0+6L_o^2}{6\sigma^2} \tag{10}$$

The objective minim and then is

$$\varphi(L,\alpha,\beta) \equiv \frac{(\omega(L)+\kappa))}{\upsilon(L)} = \frac{\kappa\sigma^2}{(\beta-L)(L-\alpha)} + q\left(\frac{\alpha^2+\alpha\beta+\beta^2+\alpha L+\beta L+L^2}{6} - \frac{2L_0(\alpha-\beta+L}{3}+L_0^2\right) \tag{11}$$

where $\kappa \geq 0$ is the fixed cost of transaction (assumed). A corporation's objective is to minimize the expected *excess* cost of capital by optimally choosing $\alpha = \hat{\alpha}, \beta = \hat{\beta}$ and $L = \hat{L}$. Because of the symmetry postulated, optimal return point is at the ideal leverage, L_0 - which is half-way between $\hat{\alpha}$ and $\hat{\beta}$, and $\hat{L} = \frac{\hat{\alpha}+\hat{\beta}}{2} = L_0$.

Upon further simplification because of underlying assumption of symmetry, one can have the following:

$$\varphi(L) = \frac{\kappa\sigma^2}{(L_0-\alpha)^2} + \frac{(L_0-\alpha)^2}{6}q \tag{11*}$$

Minimization of $\varphi(L)$ with respect to α yields:

$$\hat{\alpha} = L_0 - \sqrt{\left\{\frac{6\kappa\sigma^2}{q}\right\}} \tag{12}$$

and

$$\hat{\beta} = L_0 - \sqrt{\left\{\frac{6\kappa\sigma^2}{q}\right\}} \tag{13}$$

Substitution of $\hat{\alpha}, \hat{\beta},$ and $\hat{L}$ in the objective function results in:

$$\hat{\varphi} = \sqrt{\frac{2\kappa q\sigma^2}{3}} \tag{14}$$

which signifies that the cost of capital includes flotation and stock repurchase costs in stochastic structure and the cost of stochastic deviation from L_0. Generalization of this basic paradigm into a model of leverage indifference

with exogenous barriers, symmetric transaction costs and positive drift parameter gives rise to optimum return point:

$$L^* = \frac{1}{\varepsilon}\ln\left(\frac{e^{\beta\varepsilon} - e^{\alpha\varepsilon}}{\varepsilon(\beta-\alpha)}\right) \tag{15}$$

and the optimal mean leverage is defined by:

$$\hat{L}^* = \frac{A+B}{C} \tag{16}$$

where

$$A \equiv e^{\alpha\varepsilon}(1+\beta\varepsilon)^2 - e^{\beta\varepsilon}(1+\alpha\varepsilon)^2,\ B \equiv -(e^{\beta\varepsilon} - e^{\alpha\varepsilon})\left((\alpha+\beta)\varepsilon + 2 + \left\{1+\ln\left[\frac{e^{\alpha\varepsilon}-e^{\beta\varepsilon}}{(\alpha-\beta)\varepsilon}\right]\right\}^2\right)$$

$$C \equiv 2\varepsilon\left((\beta e^{\alpha\varepsilon} - \alpha e^{\beta\varepsilon}) + (e^{\alpha\varepsilon} - e^{\beta\varepsilon})\left\{1-\ln\left[\frac{e^{\alpha\varepsilon}-e^{\beta\varepsilon}}{(\alpha-\beta)\varepsilon}\right]\right\}^2\right),$$

where $\varepsilon \equiv -\frac{2\mu}{\sigma^2}$. (17)

Since there is no general agreement as to what determines the capital structure, firm-specific determinants, economic, social, religious and political issues further exacerbates debt to equity decisions. While the three identified models have solid grounding in value maximization arguments and capital market equilibrium theory, it nonetheless fails to explain several commonly observed - and reported - practices in Islamic corporate finance settings. Data obtained from the Kuwait Stock Market - an emerging Islamic market in the Gulf was used as a proxy data representing Islamic economies. In finance literature, the two models, the static trade-off theory and the pecking order theory – try to explain the financing decisions in firms. Initially, the relevant theories of debt and equity are introduced in the light of these three models and then considered in the light of Islamic principles. Given the special socio-cognitive style of financial management in Islamic countries that are bounded by a different sense of rationality and intuition, one needs to consider whether the behavioral variables have a higher explanatory power than the two traditional models.

6 - The empirical model

To assess the determinants of debt and equity in Islamic economies, the leverage ratios of individual firms are modelled as a function of several firm specific factors in a cross sectional framework. Specifically, the following relationship is estimated using ordinary least squares **(**OLS) as a method for estimating the unknown parameters in a linear regression model. This method minimizes the sum of squared vertical distances between the observed responses in the dataset, and the responses predicted by the linear approximation. The resulting estimator can be expressed by the formula:

$$\mathrm{LVR}_{i,t} = a + \sum_{j=1}^{n} b_j \mathrm{X}_{i,j,t} + \varepsilon_{i,t} \qquad (18)$$

where $\mathrm{LVR}_{i,t}$ is the leverage ratio for the *i*th firm at time *t*, and $\mathrm{X}_{i,j,t}$ is the *j*-th set of explanatory variables of *i*-th firm at time t, and *a* is the intercept. A cross sectional analysis of leverage ratios alone would not be adequate to understand the dynamism of debt and equity. It is important to explicitly account whether firms react to new conditions that occur in financial markets and how quickly they revert to their target debt and equity, assuming that they have one, when moved away by external shocks. This is especially important in emerging markets like economies in the Gulf where stock markets go through regular changes and thus firms may have to move faster in the light of market changes.

Extending the dynamism of debt and equity in the models of leverage, as can be seen in equation (18), the optimal leverage level is allowed to vary across firms and over time. Since the factors that determine a firm's optimal leverage change over time, it is likely that the optimal leverage ratio moves over time even for the same firm. In a perfect frictionless world, with no adjustment costs, the firm would immediately respond to a variation in the independent variables by varying its existing leverage ratio to equal its optimal leverage (complete adjustment). Thus at any point of time, the observed leverage of firm i, (LVR_{it}) should not be different from the optimal level of leverage i.e. $\mathrm{LVR}_{it} = \mathrm{LVR}^{*}_{it}$. This implies that the change in the existing leverage from the previous to the current period should be exactly the change required for the firm to be at optimal leverage at time t, namely:

$$\mathrm{LVR}_{it} - \mathrm{LVR}_{it-1} = \mathrm{LVR}^{*}_{it} - \mathrm{LVR}_{it-1} \qquad (19)$$

In practice, the existence of significant adjustment costs (legal fees in case of issuing new debt or equity) means that the firm will not completely adjust its actual leverage to LVR^*. With less than complete adjustment, the firm's observed leverage ratio at any point in time would not equal its optimal leverage ratio. Following previous work in this field De Miguel and Pindado (2001), Hovakimian, Opler and Titman (2001) and Drobetz and Wanzenried (2006)) the dynamic debt and equity model can be represented as follows:

$$LVR_{it} - LVR_{it-1} = \alpha_{it}(LVR^*_{it} - LVR_{it-1}) \quad (20)$$

Where α_{it} is the coefficient of adjustment or the speed of adjustment. Equation (19) postulates that the actual change in leverage ratio at any point in time for firm *i*, is the same fraction α of the optimal change for that period. If $\alpha_{it} = 1$, it means that the actual leverage ratio is equal to the optimal leverage, that is, the actual leverage adjusts to the target leverage instantaneously and continuously, for all t a firm will consistently be at its target leverage. If α_{it} is less than one, then the adjustment from period t-1 to t falls short of the adjustment required to attain the target. However, if α_{it} is greater than one, then the firm makes an adjustment that is more than necessary, but still is not on the target level (over-adjustment). The above dynamic debt and equity model can alternatively be written as:

$$LVR_{it} = \alpha LVR^*_{it} + (1-\alpha)LVR_{it-1} \quad (21)$$

Assume that the target debt level LVR^*_{it} is a linear function of a proxy variable, as specified in the regression analysis in equation (1). Denote the *j*-th (*j*=1, 2…n) proxy variable including a constant of firm i, at time t, as X_{ijt} and insert into equation (19) to obtain:

$$LVR_{it} = \alpha\ \beta_1 + (1-\alpha)LVR_{it-1} + \alpha \sum_{j=2}^{n} \beta_j X_{ijt} + d_t + \eta_i + \upsilon_{it} \quad (22)$$

where d_t is a time specific effect, η_i is a firm specific effect and υ_{it} is a white disturbance. Panel data allows the estimation of the model in equation (21), thereby studying the dynamic nature of debt and equity decisions. In fact, this model is preferable to previous specifications because it does not rely on target debt levels, which are externally determined. Since equation (17) represents the optimal or long-run firm leverage, equation (22) represents the short-run firm leverage since the actual leverage ratio may not be equal to its optimal leverage. When an equation in the form of (21) is estimated, the

coefficient of the observed lagged leverage ratio, LVR_{it-1}, gives the estimate of one minus the partial adjustment. If the coefficient value of the lagged leverage ratio is greater than zero, it can be inferred that the adjustment from period t-1 to t falls short of the adjustment required to attain the target, but if the coefficient is less than zero then the firm over adjusts in the sense that it makes more adjustment than is necessary and still does not reach the target. The coefficients of the remaining explanatory variables are estimates of the long-run impact multiplied by the partial adjustment.

7 - Measurement of the dependent and independent variables

Titman and Wessels (1988) contend that the choice of suitable explanatory variables is potentially contentious. In order to identify which of the debt and equity theories is relevant in the context of firms operating in Islamic countries, the paper concentrates on a group of variables identified in the previous literature (Deesomsak, Paudyal and Pescetto, 2004). The selected explanatory variables are firm size, liquidity, profitability, tangibility and growth opportunities. These variables were used for two fundamental reasons: First, these factors have shown up most consistently as being correlated with leverage in previous studies (Rajan and Zingales, 1995). Secondly, data availability severely limits the inclusion of other factors. The variable definitions and their expected signs are listed in Appendix A.

The specific choice depends on the objective of the analysis. Rajan and Zingales (1995) apply four alternative definitions of leverage. The first and broadest definition of leverage is the ratio of total liabilities to total assets. This can be viewed as a proxy of what is left for shareholders in case of liquidation. This measure does not provide a good indication of whether the firm is at risk of default in the near future. In addition, since total liabilities include items like accounts payable, which are used for transaction purposes rather than for financing, it is likely to overstate the amount of leverage. The second definition of leverage is the ratio of debt (both short and long term) to total assets. This measure of leverage only covers debt in a narrow sense (interest bearing debt) and excludes provisions. However, it fails to incorporate the fact that there are some assets that are offset by specific no-debt liabilities. The third definition of leverage is the ratio of total debt to net assets, where net assets are total assets less accounts payable and other current liabilities. This measure of leverage is unaffected by non-interest bearing debt and working capital management. However, it is influenced by factors that

have nothing to do with financing. For example, assets held against pension liabilities may decrease this measure of leverage. A fourth definition is the ratio of total debt to capital, where capital is defined as total debt plus equity. This measure of leverage looks at the capital employed and thus represents the effects of past financing decisions. It relates more directly to the agency problems associated with debt. Moreover, one needs to ascertain whether leverage should be computed as the ratio of the book or market value of equity.

Size is an important consideration in the ability of firms to raise capital through debt or equity from the capital markets. The majority of studies suggest a positive relation between leverage and size. The most important argument is that informational asymmetries are less severe for larger firms than for smaller ones. Larger firms can diversify their investment projects on a broader basis and limit their risk to cyclical fluctuations in one particular line of production. Financial distress risk can be considered lower for larger firms.

The trade-off theory states a positive relation between firm size and leverage, since larger firms have been shown to have lower bankruptcy risk and relatively lower bankruptcy cost. In addition, large firms have lower agency costs of debt, relatively smaller monitoring costs, less volatile cash flows, easier access to credit market, and require more debt to fully benefit from the tax shield. Furthermore, Titman and Wessels (1988) argue that larger firms tend to be more diversified and fail less often, so size may be an inverse proxy for the probability of bankruptcy, which means a positive relation between size and debt capacity of the firm.

Profitability effects on leverage present conflicting theoretical predictions. According to the pecking order theory of Myers and Majluf (1984), firms prefer raising capital, first from retained earnings, second from debt and third from issuing new equity. If a firm has more retained earnings, it will be in a better position to finance its future projects by retained earnings, instead of external debt financing. This behaviour is due to the costs associated with new equity issues in the presence of information asymmetries between managers and outside investors. Debt typically grows when investment exceeds retained earnings and falls when investment is less than retained earnings. Accordingly, the pecking order predicts a negative relation between leverage and profitability. Jensen (1986) and Williamson (1988) define debt as a discipline device that ensures that managers pay out profits rather than build empires. Most empirical studies, ranging from 1988 to 2007, show that leverage is negatively related to profitability, which confirms the pecking order hypothesis. (Friends and Lang (1988), and Titman and Wessels

(1988), Rajan and Zingales (1995), Wald (1999), Booth et al (2001) and Antoniou et al (2007)). However, in the trade-off theory, agency costs and bankruptcy costs push more profitable firms toward higher book leverage.

Total assets (tangibility) should be an important factor for leverage. According to the trade-off hypothesis, tangible assets act as collateral and provide security to lenders in the event of financial distress. Jensen and Meckling (1976) argue that stockholders of levered firms are prone to over invest, which gives rise to the classical shareholder-bondholder conflict. However, if debt can be secured against assets, the borrower is restricted to using debt funds for specific projects. Creditors have an improved guarantee of repayment and recovery rate is higher resulting in assets retaining more value in liquidation. Without collateralised asset such guarantees do not exist: The debt capacity should increase with the proportion of tangible assets on the balance sheet. Hence, the trade-off theory predicts a positive relationship between measures of leverage and the proportion of tangible assets. Conversely, Grossman and Hart (1982) argue that the agency costs of managers consuming more than the optimal level of perquisites is higher for firms with lower levels of assets that can be used as collateral.

Expected growth of a firm and its leverage ratio is predicted to be negative for two reasons. First, the cost of financial distress increases with expected growth, forcing managers to reduce the debt in debt and equity (trade-off theory). Second, firms issue equity, instead of debt, when overvaluation leads to higher expected growth (information asymmetry). Sometimes internal sources of firms may not be sufficient to finance their investment opportunities and hence may have to raise external funds. If firms require external finance, they issue debt before equity (pecking order theory). Hence, growth opportunities should be positively associated with leverage (Kremp, *et. al*. 1999). Jensen and Meckling (1976) and Myers (1984) argue that when firms issue debt, managers have an incentive to engage in asset substitution and transfer wealth away from bondholders to shareholders. It is generally known that associated agency costs are higher for firms with substantial growth opportunities. Thus, the trade-off model predicts that firms with more investment opportunities have less leverage because of stronger incentives to avoid underinvestment and asset substitution that can arise from stockholder-bondholder agency conflicts. This prediction is strengthened by Jensen's (1986) free cash flow theory, which predicts that firms with more investment opportunities have less need for the discipline effect of debt payments to control free- cash flow. Thus, the trade off theory predicts a negative relation between leverage and growth opportunities since the market value grows at least in proportion with investment outlays. The market to book

ratio is used by Rajan and Zingales (1995) as a proxy for the level of growth opportunities available to the firm. Liquidity, the level of interest rates, stock market activity and the turnover ratio namely the value of total shares traded divided by the value of shares listed have also been included as independent variables.

8 - Data and summary statistical analysis

The data set utilised consists of 59 proxy firms operating in Kuwaiti Stock Exchange during the period 1998-2005. The source of this data was the Gulf Investment Guide issued by Zughaibi and Kabbani Financial Consultants in Jeddah. Banks are excluded from the sample as their financial characteristics and uses of leverage are substantially different from other companies. Table 1 provides a summary of descriptive statistics for the variables used in the paper. On average, the book and market leverage ratios are 34% and 26% respectively. Finally, it is evident from the higher moments of distribution (namely, skewness and kurtosis) and the Jarque-Bera statistics that the data are not normally distributed.

Table 1
Descriptive Statistics

	BL	ML	SIZE	LIQ	PROF	TANG	GROW	LR	TR	MC	VT
Mean	0.3448	0.2667	4.7323	5.9363	0.0822	0.5229	1.5882	0.0728	57.366	0.9887	0.6366
Median	0.3610	0.2387	4.7300	2.5000	0.0720	0.5283	1.3250	0.0706	61.146	0.8515	0.5057
Maximum	0.8750	0.8638	6.3120	170.40	0.5540	0.9887	11.005	0.0906	91.938	1.6608	1.3041
Minimum	0.0016	0.0021	3.5845	0.1000	-0.3700	-2.3644	-2.4921	0.0529	21.203	0.5381	0.1141
Std. Dev.	0.2069	0.1979	0.4681	12.545	0.0848	0.2925	0.9529	0.0131	22.532	0.3662	0.4220
Skewness	0.1634	0.7030	0.0230	7.8531	0.0464	-2.1102	3.4283	-0.0471	-0.1714	0.5529	0.3840
Kurtosis	2.1324	2.7707	3.1798	86.074	8.3851	21.543	27.503	1.6454	1.9060	1.9680	1.6391
Jarque-Bera	16.903	39.916	0.6779	139388.0	570.50	7112.56	12732.7	36.257	25.848	45.001	48.024
Probability	0.0002	0.0000	0.71249	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Table 2 presents a matrix of the correlation coefficients for the variables used in the estimation. Consistent with the predictions of the pecking order theory, the results of correlation analysis reveal a negative association between both book and market leverage ratios and profitability. Also, the results show that growth and size are positively related to profitability, while tangibility has a negative relationship with profitability. This implies that larger companies and growing companies tend to have higher profitability; and profitable companies tend to have fewer tangible assets. Furthermore, while the size variable has a positive correlation with both book and market leverage ratios, profitability is negatively correlated with them. This implies that firms employ more debt as their size increases but reduce their debt as their profitability improves. However a correlation analysis does not give the complete picture of the relationship between leverage ratios and the determinants of debt and equity. Therefore, leverage ratios are modelled as a function of different variables.

Table 2
Matrix of the Correlation Coefficients

	BL	ML	SIZE	LIQ	PROF	TANG	GROW	LR	TR	MC	VT
BL	1.0000										
ML	0.8517	1.0000									
SIZE	0.4262	0.3904	1.0000								
LIQ	-0.2259	-0.1208	-0.0872	1.0000							
PROF	-0.2753	-0.4540	0.0699	-0.0237	1.0000						
TANG	-0.0508	0.0168	0.1032	-0.2333	-0.0633	1.0000					
GROW	-0.1785	-0.4465	-0.0826	-0.0799	0.4579	-0.0435	1.0000				
LR	-0.1117	0.0636	-0.1556	0.1460	-0.2121	-0.1318	-0.2004	1.0000			
TR	0.1285	-0.1041	0.2271	-0.1660	0.2745	0.1020	0.2737	-0.7379	1.0000		
MC	0.1504	-0.0822	0.3066	-0.1677	0.3452	0.1199	0.2435	-0.5722	0.8438	1.0000	
VT	0.1448	-0.0946	0.2859	-0.1685	0.3400	0.1167	0.2628	-0.6417	0.9296	0.9726	1.0000

9 - Empirical results

The cross-sectional results from estimating equation (1) namely:

$$LVR_{i,t} = \beta_1 + \beta_2 SIZE_{i,t} + \beta_3 LIQ_{i,t} + \beta_4 PROF_{i,t} + \beta_5 TANG_{i,t} + \varepsilon_{i,t}$$

are reported in Table 3 which also shows the results of regressions of both book and market leverage ratios on firm-specific variables using cross-section analysis (static model). The book and market leverage ratios are regressed on the following independent variables: firm size, liquidity, profitability and tangibility. In general, the results are consistent with the theoretical predictions and previous empirical studies. As predicted, the signs of liquidity, tangibility and profitability are consistently negative and highly significant; while firm size appears positive and consistently significant. The adjusted R squares is reasonably acceptable at about 40% suggesting that the model can explain 40% of the variations in the dependent variable. The F-statistics confirm the validity of the estimated model.

Size: These results are consistent with the theoretical prediction that larger firms tend to be more diversified, less prone to bankruptcy with smaller direct cost for issuing debt or equity. If size is a proxy for the inverse probability of bankruptcy, then the positive relation between size and leverage, complies with the predictions of the trade-off theory. This is because larger firms can diversify their investment projects on a broader basis and limit their risk to cyclical fluctuations in any one particular line of production. Moreover, informational asymmetries tend to be less severe for larger firms than for smaller ones; hence, larger firms find it easier to raise debt finance.

Table 3
Firm-Specific Determinants of Debt and Equity:
Cross-Section Analysis using Static Model

Variable	BL	ML
C	.742* (.000) [4.043]	.423* (.036) [2.099]
SIZE	.272* (.000) [8.221]	.336* (.000) [9.254]
LIQUIDITY	-.403* (.000) [-11.77]	-.346* (.000) [-9.216]
PROFITABILITY	-.135* (.000) [-3.72]	-.368* (.000) [-9.218]
TANGIBILITY	-.201* (.000) [-6.76]	-.189* (.000) [-4.001]
Adj R	.40	.41
OBSERVATIONS	432	432
F-statistics	70.19	78.41

*significant at the 1% level, **significant at the 5% level,***significant at the 10% level.

Liquidity: The coefficient values for liquidity are consistently negative and significant for both measures of leverage. This result suggests that firms with higher liquidity tend to avoid raising external loan capital. As discussed earlier, a negative relation may indicate that firms operating in such market finance their activities according to the financing hierarchy of the pecking order theory.

Profitability: Firm profitability seems to have a statistically negative and significant relationship with both the book and market leverage. The negative coefficient of profitability is indicative of the presence of

informational asymmetries which could lead to higher external financing premiums and pecking order behaviour under which firms prefer internal financing from external, but it may also support the view that the lack of well-developed financial markets forces firms to rely mostly on internal financing. The latter explanation is consistent with Booth et al (2001) who report the same results for the profitability variable and argue that the importance of profitability is related to the significant agency and informational asymmetry problems in developing countries. They indicate that it is also possible that profitability is correlated with growth opportunities so that the negative correlation between profitability and leverage, proxies the difficulty in borrowing against intangible growth opportunities. Thus, firms that generate relatively high internal funds, generally tend to avoid gearing. The results are also consistent with previous studies by Rajan and Zingales (1995).

Tangibility: The stylized fact that the tangibility variable is positively related to the availability of collateral and leverage is not consistent with the findings in this paper, where tangibility is negative and statistically significant in relation to both book and market value of leverage. In general, this negative association between leverage and tangibility can be explained by the fact that those firms that maintain a large proportion of fixed assets in their total assets tend to use less debt than those which do not. This can be due to the fact that a firm with an increasing level of tangible assets may have already found a stable source of income, which provides it with more internally generated funds and avoid using external financing. Another explanation for this relationship could be the view that firms with higher operating leverage (high fixed assets) would employ lower financial leverage. Overall the results are consistent with that of Cornelli et al (1996), Hussain and Nivorozhkin (1997), Booth et al (2001), Nivorozhkin (2002) who also suggest a negative relation between tangibility and debt ratio.

On the basis of these findings, it can be concluded that the proxies of the determinants of debt and equity chosen have a relatively good explanatory power of the behaviour of leverage ratios. It is important to note that the variables that influence the debt and equity choice of firms are similar (with the exception of tangibility) to those in other emerging and developed countries and thus despite the specific circumstances of the countries investigated, firms in general behave in a similar fashion. It is also worth noting that such relationships hold in tax-free environments and thus the MM proposition that an optimal debt and equity exists only in the presence of taxation is not confirmed. In other words, in line with modern theories of debt and equity, optimal debt and equity may exist due to market imperfections other than taxes.

10 - Target leverage and speed of adjustment

Table 5 shows the results of regressions of both book and market leverage ratios on firm-specific variables and stock market development indicators using cross-section analysis (dynamic model).
This is based on the results of the estimation of the dynamic equation (4), namely:

$$LVR_{i,t} = \beta_1 + \beta_2 LRV_{i,t-1} + \beta_3 SIZE_{i,t} + \beta_4 LIQ_{i,t} + \beta_5 PROF_{i,t} + \beta_6 TANG_{i,t} + \beta_7 GROW_{i,t} + \beta_8 LR_{i,t} + \beta_9 Market_{i,t} + \varepsilon_{i,t}$$

In addition to investigating the determinants of debt and equity, the paper aims at exploring the dynamism of debt and equity and the impact of stock market development on firms' financing choice. It is assumed that each firm dynamically adjusts its debt and equity towards the optimal level. For this purpose, lagged values of book and market leverage ratios are included as independent variables. The set of explanatory variables in the regression is also expanded to include growth opportunities, the three market indicators and the lending rate in order to test the consistency of the results in the static model. The results reveal significant and positive coefficients for the one-period lagged dependent variables. These positive effects of the one-period lagged dependent variable of leverage on the debt and equity are consistent with the results reported by De Miguel and Pindado (2001), Frank and Goyal (2003) and Antoniou et al (2007) and allow the assessment of whether firms' observed leverage is different from their target leverage and whether firms indeed move towards their target leverage ratio and at what speed.

Table 4
Stock Market Development Influences on Debt and Equity Choice: Cross-section Analysis Using Dynamic Model

	Book Leverage			Market Leverage		
Variable	1	2	3	1	2	3
C	.6829* (.012) [2.524]	.1337 (.595) [.531]	-.0888 (.729) [-.346]	.0774 (.782) [.275]	-.3851 (.136) [-1.492]	-.5738 (.029) [-2.192]
BL(-1)	.3914* (.000) [10.843]	.3884* (.000) [10.662]	.3896* (.000) [10.745]			
ML(-1)				.3531* (.000) [10.353]	.3526* (.000) [10.269]	.3526* (.000) [10.304]
SIZE	.4916* (.000) [7.421]	.4900* (.000) [7.016]	.4928* (.000) [7.226]	.5484* (.000) [8.326]	.5478* (.000) [7.914]	.5498* (.000) [8.120]
LIQUIDITY	-.2752* (.000) [-9.753]	-.2758* (.000) [-9.692]	-.2756* (.000) [-9.728]	-.2793* (.000) [-9.793]	-.2795* (.000) [-9.741]	-.2795* (.000) [-9.771]
PROFIT-ABILITY	-.0810* (.000) [-3.406]	-.0812* (.000) [-3.388]	-.0810* (.000) [-3.395]	-.0923* (.000) [-3.818]	-.0925* (.000) [-3.803]	-.0923* (.000) [-3.807]
TANG-IBILITY	-.2054* (..000) [-4.465]	-.2053* (.000) [-4.435]	-.2053* (.000) [-4.449]	-.1957* (.000) [-4.196]	-.1955* (.000) [-4.172]	-.1956* (.000) [-4.184]
GROWTH	.3439* (.000) [5.226]	.3420* (.000) [5.113]	.3438* (.000) [5.180]	-.4389* (.000) [-6.368]	-.4400* (.000) [-6.318]	-.4389* (.000) [-6.332]
LR	-.9504* (.000) [-4.461]	-.2974* (.014) [-2.463]	-.6025* (.000) [-3.758]	-.6383* (.004) [-2.887]	-.0892 (.4780) [-.708]	-.3470** (.037) [-2.078

TR	-.5143* (.000) [-5.004]			-.4338* (.000) [-4.131]		
MC		-.4377* (.000) [-4.538]			-.3724* (.000) [-3.786]	
VT			-.2384* (.000) [-4.778]			-.2020* (.000) [-3.966]
Adj R	.8825	.8810	.8818	.9014	.9006	.9010
Obs	386	386	386	386	386	386
F-statistics	44.84	44.20	44.52	54.37	53.89	54.14

. p-values are in parentheses. t-statistics are in brackets.
*significant at the 1% level, **significant at the 5% level,***significant at the 10% level.

BL is the book leverage defined as the ratio of book value of total debt to book value of total assets. ML is the market leverage defined as the ratio of book value of total debt to market value of equity plus book value of total assets. SIZE is the firm size defined as the natural logarithm of total assets. LIQ is Liquidity defined as the ratio of current assets to current liabilities. PROF is the profitability defined as the ratio of operating profit to book value of total assets. TANG is Tangibility defined as the ratio of tangible assets to total assets (book value). GROW is the growth opportunities defined as the ratio of book value of total assets less book value of equity plus market value of equity to book value of total assets. LR is the maximum lending rate charged by commercial banks as recommended by international financial statistics. TR is the turnover ratio defined as the ratio of value traded to market capitalisation. MC is the market capitalisation as ratio of GDP. VT is the value trade as ratio of GDP

Table 4 shows that the coefficient values of lagged book and market leverage ratios are positive, statistically significant and take values between zero and one. Specifically, the value is 0.38 when book value is used as the dependent variable and 0.35 when market leverage ratio is used as dependent variable. This implies that the leverage ratios converge to their desired level

over time and confirm the existence of dynamism in the debt and equity decision of firms operating in these markets, in the sense that firms adjust their leverage ratio in order to achieve their target. Moreover, the explanatory power of the model increases remarkably from about 40% in the static model to 90% when the dynamic model is used. This means that about 90% of the variations in both book and market leverage ratios could be explained by the dynamic model.

The speed of adjustment varies slightly across the regressions, the lagged value of book leverage has a coefficient value of 0.39 corresponding to a partial adjustment of 0.61 (the partial adjustment is one minus the estimated coefficient of the lagged dependent variable, 1-.39 = 0.61). These results are considerably higher than those reported in Antoniou et al (2007) for Germany (0.24), Japan (.12), the UK (0.32) and USA (0.33) but similar to those reported in other emerging markets. The closer the speed of adjustment is to one, the faster the adjustment process is towards optimal debt and equity. In such cases it is possible that banks serve as the primary source of debt financing for listed firms. The results can be justified by the fact that sampled firms have small, illiquid and less developed corporate bond markets. This could also be due to (1) the more "conservative" financing policies adopted in Islamic economies and the imposition of stricter exposure controls. The results also strengthen the previous argument that a firm's optimal debt and equity is influenced by the environment in which it operates and support the findings of Antoniou et al (2007) among others. Thus overall, the results reveal the presence of dynamism in the debt and equity decisions of firms used in this study adjust relatively quickly towards their target and seem to adjust slightly more quickly towards market value targets than book value targets since as expected, stock markets place more pressure on firms. In addition, the book market is reported annually, while the market value is adjusted daily.

With regard to the firm specific characteristics as determinants of debt and equity, it is observed that the results of the dynamic model have more explanatory power as compared to the results from the static model. The coefficient values of the size variable is positive and are statistically significant in relation to both book and market leverage ratios These results confirm the importance of the size variable as a determinant of the debt and equity decisions of firms in this study. Given the underdeveloped corporate bond markets, pecking order considerations in Islamic economies would mean that large firms are able to get bank credit, whereas small firms are obligated to depend on internal financing sources. The coefficient values of the liquidity variable has significance and negative signs which confirm previous

discussion that firms with high liquidity do not use much debt in their debt and equity.

The coefficient value of profitability is significant. This result seem to support the pecking order assumption that high profit firms use internal financing; while low profit firms use more debt because their internal funds are not adequate. These findings, however, are in contrast to those reported in Cornelli *et al* (1996) who argue that the use of retained earnings by profitable firms in the European economies should be considered as a bad signal and can be interpreted that firms are unable to achieve their optimal debt and equity due to credit rationing. This result could also be related to the absence of taxation and thus the Cornelli (1996) argument does not apply in tax-free countries. The coefficient values of tangibility are negative and significant. The negative relationship between tangibility and leverage ratio is not in line with the trade-off theory expectations as discussed earlier.

Most variables show consistency in their signs and level of significance for book and market leverage ratios. The only difference between the BL and ML results is the influence of the market to book ratio variable (growth opportunities) which changes from positive for BL to uniformly negative and higher coefficients for ML. These results are consistent with Booth et al (2001) who find similar phenomena in 10 developing countries. They argue that this phenomenon is due to spurious correlation introduced by having market values in the numerator of the market to book ratio and the denominator of the market long-term debt ratio. For example, short-term market movements and non-instantaneous reaction by corporations will automatically induce a negative correlation between the two. Similar findings are reported by Rajan and Zingales (1995) who study the debt and equity determinants of firms operating in seven industrialized countries. They report that the market to book ratio, a proxy for a firm's growth opportunity has negative and significant relationship with debt ratio in almost all countries. They justify this conclusion by the strong negative correlation between the number of equity issuance and market to book ratio. Furthermore, they find a significant negative relation between leverage and growth when leverage is measured at market value.

Generally, a negative relation between growth opportunities and leverage is consistent with the predictions of the agency theory that high growth firms use less debt, since they do not wish to be exposed to possible restrictions by lenders. The normal explanation is that growing firms have more options of choosing between risky and safe sources of funds and managers as agents to shareholders go for risky projects in order to maximize the return to their shareholders. Creditors, however, would be reluctant to

provide funds to such firms as they will bear more risk for the same return. They would thus demand a higher premium from growing firms. Faced with this prospect and in order to avoid the extra cost of debt, growing firms will tend to use less debt and more equity. Hence, the relatively large magnitude of the growth coefficient may be indicative of a higher degree of information asymmetries in these markets, restricting the ability of managers to raise external debt capital. It is also important to note that the firm-specific (such as size, liquidity, profitability and tangibility) coefficients are almost identical. However, variables such as market to book ratio reflect the capital market valuation of the firm, which in turn is affected by the conditions of the capital market. Consequently, the market to book ratio is most closely associated with external country factors. This could partially explain the difference in the sign and magnitude of the coefficients.

Since firms are not operating in vacuum, they are operating in growing stock markets. It is thus, essential to test the impact of stock market development in the firms' financing choice. For this purpose, three market development indicators (market capitalisation, value traded and turnover ratio) are included. Results show that these indicators are negatively and highly significant. A negative relation between leverage ratios and stock market indicators means that firms decrease debt issues as the stock market becomes more developed. The results imply that as the equity market in Islamic economies become more develop, they become a more viable option for corporate financing and hence, firms make less use of debt financing. Overall, the findings here are consistent with the results reported in Demirguc-Kunt and Maksimovic (1996) and Deesomsak, Paudyal and Pescetto (2004) who find that the relation between the financial activity of stock markets and leverage is negative and significant. Consistent with the theoretical predictions, the lending rate is negative and significant in this study.

Finally, there are several inferences that can be drawn from this study. Firstly, in a cross-sectional framework, the determinants of debt and equity are similar across developed, developing markets and Islamic markets. Secondly, the same factors affect the debt and equity decisions of firms that operate in tax-free environments and thus the MM proposition that an optimal debt and equity exists only in the presence of taxation is not supported. In other words, in line with the modern theories of debt and equity, optimal debt and equity may exist due to market imperfections other than taxes. Thirdly, stock market developments in Islamic economies seem to have an impact on the firms' financing choice. Fourthly, the dynamism of debt and equity is present in these firms, in the sense that they set a target debt and equity and move gradually towards it. Finally, there is strong support for the pecking order

theory and there is also some support for the non-tax aspects of trade-off theory i.e. agency issues.

Conclusion

How corporations in resource rich Islamic countries finance their operations have not been a subject of academic rigor and consequently anecdotal evidence exists. This study addresses the gap in knowledge and considers capital structure of corporations operating within the confines of structured *Sharia'h* compliant practices. Unlike most previous debt and equity studies on the determinants of debt and equity, the paper employs a dynamic adjustment model to shed light on whether firms move towards a target leverage ratio and the speed at which they do so. Results presented confirm the presence of dynamism in the debt and equity decision of firms. Firms adjust their leverage ratio in order to achieve their target level. The dynamic model is found to provide more insights into the behaviour of companies than the simple static model and increases the explanatory power of the model significantly. Using a database of firms listed in Kuwait Stock Exchange as a proxy firms operating in an Islamic economy, the data shows that the leverage ratio in this study is still below that found in developed countries. The empirical results indicate that the financing decisions of these companies can be explained by the determinants suggested by much of the empirical literature. Specifically, it is found that liquidity, tangibility and profitability are negatively and significantly related to the leverage ratios; while firm size is positively and significantly related to leverage ratio of firms. Finally, growth opportunities are positively related to book leverage and negatively related to market leverage. The findings of the paper show that tax considerations are of less importance, since the investigation was carried out in markets where there is no taxation. Thus factors other than taxes influence the debt and equity decisions of firms. Equally important, the study ascertained that stock market indicators are negatively and significantly related to the leverage ratios, implying that as equity markets in Islamic countries become more developed and their liquidity improves their importance as tools for corporate financing increase by allowing firms to issue more equity and reduce their reliance on debt. This finding strengthens the argument that he debt and equity decisions of firm are not only determined by their own characteristics, but are also influenced by the external environment in which they operate.

Appendix A
List of Abbreviations

Expected sign	Definition	Variables	
		Dependent Variable	
	Ratio of book value of total debt to book value of total assets	**Book Leverage**	**BL**
	Ratio of book value of total debt to market value of equity plus book value of total assets	**Market Leverage**	**ML**
		Independent Variables	
+	Natural logarithm of total assets	**Size**	**SIZE**
-	Ratio of current assets to current liabilities	**Liquidity**	**LIQ**
-/+	Return on assets	**Profitability**	**PROF**
+	Ratio of tangible assets to total assets	**Tangibility**	**TANG**
+	Ratio of book value of total assets less book value of equity plus market value of equity to book value of total assets	**Growth**	**GROW**
-/+	Interest rate charged by commercial banks	**Lending rate**	**LR**
-	Ratio of market capitalisation /GDP	**Market capitalisation**	**MC**
-	Ratio of value traded/GDP	**Value traded**	**VT**
-	Value traded/market capitalisation	**Turnover ratio**	**TR**

References

Antoniou, A., Y., Guney and K., Paudyal (2007). "Determinants of Corporate Debt and equity: Capital Market Oriented versus Bank Oriented Institutions," *Journal of Financial and Quantitative Analysis, Forthcoming.*

Arrow, Kenneth, J.**,** Samuel Karlin, and Herbert. E. Scarf (eds). Studies in the Mathematical Theory of Inventory and Production**,** Stanford University Press, 1958.

Bagley, Charles N., and Uzi Yaari (1996), "Financial Leverage Strategy with Transaction Costs," Applied Mathematical Finance, Vol. 3, pp. 191-208.

Bagley, Charles N., Dilip K. Ghosh, Uzi Yaari (1998), Pecking Order as a Dynamic Leverage Theory," *The European Journal of Finance*, Vol 4, pp.157-183.

Booth, L., V. Aivazian, A. Demirguc-Kunt, and V., Maksimovic (2001). "Debt and equitys in Developing Countries," *Journal of Finance*, 56, 87-130.

Chen, J. (2004). "Determinants of Debt and Equity of Chinese Listed Companies," *Journal of Business Research,* 57, 1341-1351.

Cornelli, F., R. Portes, and M. Schaffer (1996). "The Debt and Equity of Firms in Central and Eastern Europe," CEPR Discussion Paper No. 1392, London: Centre for Economic Policy Research.

De Miguel, A., and J. Pindado (2001). "Determinants of Debt and Equity: New Evidence from Spanish Data," *Journal of Corporate Finance*, 7, 77-99.

Deesomsak, R., K. Paudyal, and G. Pescetto (2004). "The Determinants of Debt and equity: Evidence from the Asia Pacific Region," *Journal of Multinational Financial Management*, 14, 387-405.

Dernirguc-Kunt, A., and V. Maksirnovic (1996). "Stock Market Development and Financing Choice of Firms," *World Bank Economic Review,* 10, 341-369.

Drobetz, W., and R. Fix (2003). "What are the Determinants of Debt and equity? Some Evidence from Switzerland," *Swiss Journal of Economics and Statistics, forthcoming.*

Drobetz, W., and G. Wanzeried (2006). "What Determines the Speed of Adjustment to the Target Debt and equity?," *Applied Financial Economics*, 16, 941-958.

Fama, E.F. and K.R., French (2002)."Testing Trade-off and Pecking Order Predictions about Dividends and Debt," *The Review of Financial Studies,* 15, 1-33.

Frank, M.Z. and V.K. Goyal (2003). "Debt and Equity Decisions," *Working Paper*, SSRN.

Friend I. and L. Lang (1988). "An Empirical Test of the Impact of Managerial Self-Interest on Corporate Debt and equity," *Journal of Finance*, 43, 271-281.

Graham, J., and C. Harvey (2001) "The Theory and Practice of Corporate Finance: Evidence from the Field," *Journal of Financial Economics*, 60, 187-243.

Ghosh, D.K.(1992), "Optimum Capital Structure Redefined," *Financial Review*, August.

Ghosh, D. K., and D. Ghosh (2012), "The Value Invariance Proposition of Modigliani and Miller: A Clarification and an Extension," *mimeo.*

Grossman S. J., and O. Hart (1982). "Corporate Financial Structure and Managerial Incentives," in McCall, (ed.) The Economics of Information and Uncertainty, University of Chicago Press, Chicago.

Hussain, Q. and E. Nivorozhkin (1997). "The Debt and equity of Listed Companies in Poland" IMF Working Paper, WP/97/175, December

Hsiao, C. (1986). Analysis of Panel Data, Cambridge University Press, Cambridge, England.

Jalilvand, A., and R. Harris (1984). "Corporate Behaviour in Adjusting to Debt and equity and Dividend Targets: An Econometric Study," *Journal of Finance*, 39, 127-144.

Jensen, M. C., and W. H., Meckling (1976). "Theory of the Firm: Management Behavior, Agency Costs and Ownership Structure," *Journal of Financial Economics*, 3, 305-360.

Jensen, M.C. (1986). "Agency Costs of Free Cash Flows, Corporate Finance, and Takeovers," *American Economic Review*, 76, 323-329.

Khan, M.F., (2006), Comparative Economics of Some Islamic Financing Techniques, *Saudi Arabian Research*, Islamic Research and Training Institute, Islamic Development Bank, Jeddah, Saudi Arabia.

Kremp, E., E. Stoss and D. Gerdesmeier (1999). "Estimation of a Debt Function: Evidence from French and German Firm Panel Data," in Sauve, A and Scheuer, M. (eds.), Corporate Finance in Germany and France, A Joint Research of the Deutsche Bundesbank and the Banque de France, 139-194.

Modigliani, F., and M. H. Miller (1958). "The Cost of Capital, Corporation Finance and the Theory of Investment," *American Economic Review, 48*, 261-297.

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.

Myers S. (1984). "The Debt and Equity Puzzle," *Journal of Finance,* 39, 575-592.

Nivorozhkin, E. (2002). "Debt and Equities in Emerging Stock Market: The Case of Hungary," *The Developing Economies,* 40,166-187.

Rajan, R. and L. Zingales (1995). "What Do We Know About Debt and Equity? Some Evidence from International Data," *Journal of Finance,* 50(5), 1421-460.

Titman, S., and R. Wessels (1988), "The Determinants of Debt and Equity Choice," *Journal of Finance,* 43(1), 1-19.

Um, T., (2001), "Determination of Debt and Equity and Prediction of Bankruptcy in Korea," Unpublished PhD Dissertation, Cornell University.

Wald, J. (1999), "Debt and Equity with Dividend Restrictions," *Journal of Corporate Finance,* 5, 193-208.

Wald, J. (1999). "How Firm Characteristics Affect Debt and Equity: An International Comparison," *Journal of Financial Research,* 22(2), 161-187.

Williamson, O, (1988). "Corporate Finance and Corporate Governance," *Journal of Finance* 43, 567-591

Zhang, R., and Kanazaki, Y. (2007). "Testing Static Trade-off against Pecking Order Models of Capital Structure in Japanese Firms," *International Journal of Accounting and Information Management, 15(2),* 24-36.