Product diversification, Capital structure and Dynamic adjustments: Empirical evidence from Tanzania

Saganga M. Kapaya, Proches Ngatuni
The Open University of Tanzania, Dar es Salaam
Tanzania
Tumaini Katunzi
Eastern Africa Statistical Training Centre (EASTC)
Dar es Salaam
Tanzania
Corresponding author contacts: saganga.mussa@out.ac.tz

Abstract: *This study assessed the role of product diversification on capital structure variability and its dynamic nature. It used static, dynamic and hierarchical regression techniques. Both fixed effects and general methods of moments' estimators were employed. Related product diversification was significantly negatively related to capital structure while unrelated and total product diversification was significantly positively related to it. Hierarchical regression indicated that product diversification had a significant share of contribution to capital structure variability. These findings highlight the significance of co-insurance and monitoring effects implicit to product diversification. Related diversification is risky and thus associated with internal financing. Unrelated product diversification is less risky. It highlights the fact that the type of product diversification has different effects on firm financing. The speed of adjustment of capital structures was low, indicating that firms are slowly adjusting their capital structures towards optimum levels.*

Keywords: Product diversification, Capital structure, Dynamic Adjustment, Tanzania

Introduction

Capital structure is the combination of debt and equity capital in the firm's financing (Abor, 2007). The issuance of bonds or long-term notes payable or long-term borrowing generate debt, while issuance of equity, such as ordinary shares and preferred shares create equity. The proportion of debt to equity financing is coined as leverage. (Fauz *et al*., 2013; Gul *et al*., 2013). The debate on capital structure is yet unresolved (Al-Najjar and Hussainey, 2011). Capital structure theory has its genesis in the pioneering work of Modigliani and Miller (1958). They were the first ever to theorize on capital structure (Gill *et al*., 2012). Their theory was later met by contentious theories, namely; the Trade-off theory, the Pecking-order theory, the Agency-theory, among others, which equally suffer from scholarly criticisms. A review of the capital structure mystery and its theories yield different and diametrically opposed conclusions and

outcomes (Barclay and Smith, 2005). Similarly, the empirical relevance of the predominant theories such as; the Trade-off theory, the Pecking-order theory, and the Agency theory, have been questioned (Fauzi *et al.,* 2013).

Various works (e.g. Modigliani and Miller, 1958; Myers, 1984; Jensen and Meckling, 1976; Wen *et al*., 2002; Abor and Biekpe, 2005; Bokpin and Arko, 2009; Morellec *et al*., 2012; Obradovichi and Gill, 2013, etc.) indicate that firm characteristics such as firm size, business risk, liquidity, profitability, growth rate, asset tangibility, corporate governance, among others, impact on capital structure. Although there is a copious research output in this area of study, extended since the seminal work of Modigliani and Miller (1963), many of such studies have been devoted to explaining the extent to which capital structure theories can be applied to different circumstances (Fauzi *et al*., 2013).

Another related strand of literature on capital structure, led by notable scholars (e.g. Jensen, 1986; Barton and Gordon, 1987; Titman and Wessels, 1988; Kaplan and Weisbach, 1992; Li and Li, 1996; Singh et al. 2003; Alonso, 2003; La Rocca *et al*., 2009) have delved into uncovering the role of diversification in its various conceptualizations, such as corporate, international and product diversification and how they affect capital structure. Few and prominent scholars (e.g. Menénde-Alonso, 2003; La Rocca *et al.*, 2009) have particularly devoted efforts into assessing the contribution of product diversification to capital structure particularly in the Spanish and Italian context.

The involvement of a firm in multiple business segments is referred to as product diversification (La Rocca *et al*., 2009). Product diversification is normally decomposed into several types based on various criteria. One such type, based on geographical categories, is local vs. international product diversification (Apostu, 2010) and the other, based on the degree of relatedness, is related vs. unrelated product diversification (La Rocca *et al*., 2009; Apostu, 2010). This paper focuses on the latter category, which is based on the degree of relatedness and how it affects capital structure, in which related product diversification is an involvement of a firm in similar but not same products based on the extent of resource sharing in production and services, while unrelated product diversification is an involvement of a firm in dissimilar or diverse products that do not share resources in their production (La Rocca *et al*., 2009). Similarly, a distinction is normally made between diversity and diversification. Diversity measures the degree of involvement of a firm in many distinct businesses, products or segments at a point in time. Diversification measures diversity across time and industry simultaneously (La Rocca *et al*., 2009).

Concerted attempts have been made to assess diversification and its effects on capital structure. La Rocca *et al*., (2009, p. 28) maintains that "… an assessment of capital-structure choices must take into account diversification…" They further argue that "it is equally important that it differentiates between related and unrelated product diversification". They insist, "This conclusion implies that diversification strategy is a feature that differentiates firms with respect to their financial behaviours." A common consensus among scholars indicates that the separate effects of both related and unrelated product diversification are vital. However, empirical evidence is mixed on how each type of diversification affects the capital structure (Menénde-Alonso, 2003; La Rocca *et al*., 2009; Apostu, 2010). Arguably, these evidence pose more

problems for research than they try to solve. An important question that arises is; which product diversification strategy should a firm undertake and in which circumstance (Benito-Osorio *et al.*, 2012). Such a question has raised interest in product diversification choices and their impacts on firm outcomes (Singh *et al*., 2003; Klein and Lien, 2009). The present study is yet another attempt to contribute to the debate on whether such choices matter in capital structure decisions, by providing evidence from a frontier capital market in Tanzania.

Diversification effects on firm outcomes have been studied over time(e.g. Menénde-Alonso, 2003; Singh *et al*., 2003; Klein and Lien, 2009; La Rocca *et al*., 2009; Apostu, 2010). Some of these outcomes are; opposing the bad effects on sales and earnings decline in the maturity stage of business cycle, defeating pressures from competition, diluting business risk, evading takeovers through expansion in order to maintain control and regulating consumer tastes among many. Anyone outcome from these is not without a financing sacrifice from the firm. One obvious research problem, which was the main focus of this study, is how firms should choose between debt and equity finances based on diversification decisions they make (Klein and Lien, 2009). There is scanty evidence from frontier capital markets, particularly Tanzania in this subject area. For instance, Bundala (2012) offer evidence for factors affecting capital structure among listed companies. He includes the traditional factors that affect capital structure, namely; firm size, profitability, growth rate, asset tangibility, liquidity and dividend pay-out. He documents evidence for firm profitability and asset tangibility as two key determinants of capital structure. He further maintains that firm size and liquidity are indicative determinants of capital structure.

The motivation for this study came from the wide indication of product diversification among companies listed in Tanzania. The aim of the present study is to assess the effects of product diversification on capital structure using companies from Dar es Salaam Stock Exchange (DSE) in Tanzania. The innovation and contribution of this article is not based on finding the best combination of factors that explain a lot of effects on capital structure, but rather are fourfold. First, we offer empirical justification on how capital structure decisions are influenced by product diversification decisions among companies listed at DSE. Particularly, we demonstrate that related product diversification is related to internal financing, while unrelated product diversification is related to external financing. Second, we document panel data evidence for capital structure determinants from companies listed at DSE. Third, we offer empirical evidence, for capital structure dynamics from companies listed in Tanzania. Fourth, we offer capital structure determinants implications for researchers, managers and regulators in a Tanzanian and African business environment. This work was led by the following two specific objectives. One, to assess both separate and combined contributions of related and unrelated product diversification on capital structure of listed non-financial firms in Tanzania. Two, to assess the effects and speed of capital structure adjustment among listed non-financial firms in Tanzania.

Product Diversification Choices

The analysis of product diversification is based on business classification approaches. The Standard Industrial Classification (SIC) is one particularly popular classification approach based on United Kingdom business classification (Prosser, 2009). Product diversification is, therefore, the extent to which a firm is involved in more than a single business product or segment. The product or segment is taken as a proxy for core product types. For instance, an undiversified

business is one that is involved in only one type of product or segment. For example, a firm that sales furniture, household goods, hardware and ironmongery products, which all belong to SIC class (i.e. SIC code 46.15) is considered undiversified. Similarly, a firm that manufactures toys and games belonging to SIC 32.40 only, or manufactures electric motors, electric motors and transformers belonging to SIC code 27.11 only, is still considered as undiversified in its products. Conversely, a firm that, for example, produces products across two or more SIC codes is generally considered as diversified in its products (Menénde-Alonso, 2003; La Rocca *et al*., 2009; Prosser, 2009; Kapaya, 2017).

The degree of relatedness in product diversification is normally judged by the level of product classification diversity entailed in the industry classification approach of a researcher's choice. A participation of a firm in *similar* but not *same* products that are within four SIC code digits is referred to as related product diversification (La Rocca *et al*., 2009; Kapaya, 2017). For example, wholesale of sugar, chocolate and sugar confectionery (SIC code 46.36), and wholesale of coffee, tea, cocoa and spices (SIC code 46.37) are each four SIC digit codes. A firm producing in these both SIC codes, which vary only by at most the last two digits is considered related diversified in its products since the two SIC codes (i.e. 46.36 and 46.37 are considered *similar* or *related* but *not same.* The relatedness of a product is based on the degree of sharing of resources (such as technology, materials, labour and equipment) in products production or sale. The classes (i.e. 46.36 to 46.37) in this example share selling resources. Note as well that, this example does not refer to production or manufacturing of such same products in the example above, because that would be in other SIC classes. On a similar vein, for example, the manufacture of cocoa, cocoa butter, cocoa fat, cocoa oil is in SIC class 10.82, while the manufacture of ground coffee, soluble coffee, extracts, concentrates of coffee, tea and mate is in SIC class 10.83. In these classes (i.e. 10.82 and 10.83) grouping the sharing of resources is not based on selling resources but rather on manufacturing resources. These two SIC classes (i.e.10.82 and 10.83) are considered to be related since they are within four digits of SIC codes (Kapaya, 2017).

A participation of a firm in *dissimilar* or diverse products that vary within the first two digits of the SIC codes is considered as one with unrelated product diversification (La Rocca *et al*., 2009). In this case, the SIC codes vary by the first two digits of SIC codes. These represent a wide range of variations in the production, services or sale of the products. Such products require independent resources in production, service or sale which would not allow sharing of resources. For example, the manufacture of distilled, portable, alcoholic beverages such as whisky, brandy, gin and liqueur, belong to SIC code 11. While, the manufacture of tobacco, chewing tobacco and snuff belongs to SIC code 12. A firm participating in both of these two SIC codes (i.e. SIC codes 11 and 12) is considered unrelated diversified. These two ranges of products vary by the first two digits, they are thus unrelated products. On the other hand, total product diversification is normally a combination of both related and unrelated product diversification. On a similar vein, it is worth noting that, while product diversification considers product mix across industry and time, product diversity considers product mix across industry within a particular time only (Kapaya, 2017).

Theoretical and Empirical Perspectives

Capital structure dynamics have been explained from different angles. The capital structure of a firm is often represented by the capital structure ratio. Which is the proportion of debt to equity or total assets or total capital employed. This is often referred to as financial leverage. The effects product diversification on capital structure has been explained mostly through the co-insurance effects theory, the agency cost theory and the transaction cost theory.

The Co-Insurance Effect Theory

Lewellen (1971) pioneered the idea of *co-insurance effect* for corporate outcomes. He maintained that the merging of two or more firms whose earning streams were less-than-perfectly correlated reduce the risk of default for the merged firms. This results in a mutual insurance of the merged firms, thereby increasing the debt capacity or borrowing ability of the merged firms (Kim and McConnel, 1977; Monteforte and Stagliano, 2014). On a similar thought, an involvement of a firm, merged or unmerged, in two or more diverse business segments or products, would arguably yield the same comparative co-insurance effect. Particularly, the co-insurance effect results into a reduction of operating risk emanating from imperfect correlations between cash flows of a firm running diverse businesses (La Rocca *et al*., 2009). Debt capacity or borrowing ability and financial leverage would depend on the degree of the co-insurance effects present in the firm's product diversification strategy, such a firm should be able to absorb more debt (Singh *et al*., 2003; La Rocca *et al*., 2009; Kapaya, 2017).

The co-insurance effect present in a product diversified firm increases with the degree of product relatedness in the product diversification portfolio. The more unrelated a product diversification strategy is, the more the co-insurance effect that will result. Explicitly stated, it is expected that the co-insurance effect is more intense in a firm that follows on unrelated product diversification strategy. Therefore; co-insurance effect predicts a positive relationship between the degree of firm product diversification and capital structure variability.

The Agency Cost Theory

The Agency cost theory was first presented by Jensen and Meckling (1976) in explaining firm outcomes. The theory is rooted in the agency conflicts between firm's management and owners. In the presence of a corporate governance structure that does not serve the interests of shareholders (owners of the firm), they can use debt as governance tool to reduce the availability of free cash flows at the disposal of managers (Jensen, 1986; La Rocca *et al*., 2009; Apostu, 2010). Increases in debt obligations, decreases free cash flows, decrease agency costs and conflicts, by turning away management from investing in value-decreasing assets. In this sense, debt is endorsed as an effective corporate governance mechanism to regulate managerial opportunistic behaviour which is detrimental to owners' interest (Apostu, 2010; Kapaya, 2017).

Agency cost theory and product diversification are related in the following ways. First, in line with conflict of interests between management and owners, the optimal balance between debt and equity is attained by increasing the benefits of debt against the cost of debt, by encouraging the use of debt in value-increasing product diversification investments against value-decreasing product diversification investments (Apostu, 2010). Explicitly stated, agency costs postulation indicates that product diversification, at times, can be considered as a value-decreasing

investment strategy. When this value-decreasing investments argument holds, the agency cost theory envisages a negative relationship between debt level and the degree of firm product diversification (La Rocca *et al*., 2009). Conversely, based on monitoring effect arguments, Jensen (1986) maintains that debt could be endorsed by shareholders to play the disciplining role on managerial behaviour.

Secondly, once debt is introduced into the capital structure, a second conflict of interest arises between firm ownership and its financial liability. In highly levered firms, Chen *et al*. (1998) argue, the inducements for shareholders to drive managers into following riskier product diversification projects can give rise to "an asset substitution effect", where equity instruments are substituted for debt instruments. Thus, a deterrent from shareholders for managers to use debt financing happens based on the need to protect ownership control. Therefore, the *agency costs theory,* based on the monitoring effect argument, predicts that to reduce agency conflicts and cost, shareholders may endorse product diversification investments in order to promote debt usage, thereby projecting a positive relationship between product diversification and capital structure. Conversely, in order to protect firm's value, based on the assets substitution effect argument and value-decreasing investment argument, shareholders may discourage debt usage, resulting into a negative relationship between product diversification and capital structure.

The Transaction Cost Theory

The transaction cost theory emerged from transaction cost economics, beginning with the works John R. Commons in 1931, it was popularised by Oliver Williamson in 1979 (Hartd, 2009; Valentinov, 2012). Basing on the theory's premises, Williamson (1988) contends that debt and equity are corporate governance substitutes and that the optimal capital structure depends on characteristics of firm's assets, particularly the level of re-deployability of assets in given situations. Debt, which closely proxy a market mode of organization is preferred when assets specificity is low, while equity, a proxy for internal organization, is inevitable when relationship specific investments are more prominent. The types of product diversification adopted by a firm rely on the nature of excess unutilised assets. Since the asset characteristics of a firm influence the financing decisions of a firm, it is possible to establish a relationship between product diversification and financing decisions through assets specificity effect arguments (La Rocca *et al.*, 2009; Kapaya, 2017).

When asset specificity is high, the assets of a firm are considered for specific or limited use only, inflexible, and thus illiquid.They are not easily re-deployable into alternative uses. Consequently, lenders will not be willing to offer loans to such a firm, as such the firm will inevitably use equity in its financing. In contrast, debt is the preferred possible financing tool in the presence of general use or flexible assets, which have low asset specificity level. They are more valuable as collateral and retain more of their value in the event of liquidation since they are highly solvent (Apostu, 2010). Similarly, firms diversify their activities in response to the presence of excess of unutilised assets. Firms will often adopt related product diversification strategy when they have excess of highly specific or inflexible assets because these are only easily transferable to similar or related business products. The presence of physical resources, intangible resources and internal financial resources are more associated with related product diversification. Conversely,

knowledge-based resources, other flexible resources, and external financial resources, are more associated with unrelated product diversification.

Transaction cost arguments suggest that, firms that are diversified across several business segments have a lower employment of specific assets and, hence, can support more debt (Chatterjee and Wernerfelt, 1991; Apostu, 2010). Therefore, related product diversification is associated with the availability of inflexible resources and it is related to internal financial resources. But, unrelated product diversification is associated with the availability of flexible resources. It normally attracts external financial resources, such as loans and bonds. Therefore, related product diversification is expected to be negatively related to capital structure ratios, while unrelated product diversification is expected to be positively related to capital structure ratios.

Diversification-Capital Structure Empirical Evidences

The relationship between product diversification and capital structure has limited evidence. Some studies have looked into this phenomenon within the developed economies context. One particular study is that of Kochhar and Hitt (1998), who showed that equity financing was associated with related product diversification, while debt financing was associated with unrelated product diversification. They documented that related product diversification brings in more specialised assets, whereas unrelated product diversification brings in assets less specialised to the firm. Their findings confirm the transaction cost theory postulations. They argue that less specialized assets have high liquidation value, and as a result, such assets attract more debt financing than specialized assets. They also indicate that related product diversification brings in more specialized assets whereas unrelated product diversification put in assets less specialized to the firm.

Menénde-Alonso (2003) empirically researched 480 Spanish firms between 1991 and 1994 using panel data analysis. For robustness of the results, he applied several measures of capital structure; i.e. total debt ratio, a logistic transformation of total debt ratio, short-term debt ratio, and long-term debt ratio. He also applied two separate proxies of product diversification strategies; the Barry-Herfindahl index and the Entropy index of total product diversification. He then controlled for firms' specific characteristics such as; growth opportunities, firm size, intangible assets and firm profitability. He reports no significant relationship between product diversification and capital structure ratios.

La Rocca *et al*. (2009) critically researched the effects of product diversification on capital structure. They used a panel data from 190 Italian firms, covering the period from 1980 to 2006, where 76 were listed in stock markets. They tested a target adjustment model, estimated using Generalized Method of Moments (GMM) approach. They report that total product diversification negatively affect capital structure ratios. They indicate that product relatedness is vital in determining the type of contribution of product diversification to capital structure ratios. Confirming the transaction cost hypothesis, they showed that related product diversification, based on business resource sharing, was negatively related to capital structure ratios. They also found that, unrelated product diversification based on co-insurance effects and synergies was positively related to capital structure ratios. Moreover, they showed that product diversification

type causes different speeds of influence on capital structure ratios towards optimum ones. That is, firms pursuing related product diversification and firms that are undiversified move towards their optimum capital structure ratios more slowly while firms pursuing unrelated product diversification move towards their optimum capital structure ratios more quickly.

They observe, at 1% significant level, that the previous year's capital structure ratio has a positive effect on the current capital structure ratio. The coefficient of the lagged capital structure ratios level variable, (1 - α), interpreted according to the direction was in the range of 0.29–0.65. As a result, the parameter α, which measures a firm's rate of adjustment of the existing debt ratio on the way to a target debt ratio, was in the range 0.35-0.71. Consistent with transaction cost arguments, the adjustment process was shown to be a trade-off between the adjustment (transaction) costs involved in moving towards a target ratio and the costs of being in disequilibrium. Thus, firms that have adopted related product diversification have greater transaction costs and they consequently adjust their capital structure ratios slowly towards optimum ones. Unrelated product diversified firm, on the other hand, have lesser transition cost and as a result, they quickly adjust their capital structure ratios towards optimum ones.

Other empirical studies, e.g. Barton and Gordon (1988), Taylor and Lowe (1995), Kochhar and Hitt (1998), La Rocca *et al*. (2009), showed that firms pursuing unrelated product diversifications have higher capital structure ratios while those following related product diversifications have lower capital structure ratios. Their findings are consistent with the co-insurance effect and the transaction cost suggestions. That is, capital structure ratios increase with the *degree* of relatedness of product diversification. Similarly, the findings were consistent to the agency-cost theory which predicts that capital structure ratios decrease with the *degree* of relatedness level of product diversification, especially when the level of investments in product diversification detriments increases with the degree of relatedness of product diversification, based on value-decreasing investment arguments. However, studies by other researchers produced mixed results; Menénde-Alonso (2003) and Singh *et al*. (2003) established a negative but insignificant relationship between capital structure ratios and total diversification, and La Rocca *et al*. (2009) established a negative but significant relationship between total product diversification and capital structure ratios. Conversely, Apostu (2010) confirms that firms that are involved in product diversification investments use more debt than firms that are not involved in any type of diversification investments.

Therefore, kind of resources in a firm and possibility of resource sharing lead to the kind of product diversification likely to be adopted. The type of product diversification matters in the ongoing debate and analysis of separate product diversification effects on capital structure ratios. Theoretical as well as empirical evidence is mixed on how the types of product diversification affect capital structure ratios, due to various reasons such as, industry types, approaches in analysis and study focus. The directions of effects between the types of product diversification on capital structure ratio rely on the pattern of diversification adopted. But, a related conclusion is based on the fact that, the related-unrelated degree of diversification or what we have noted as the level of relatedness, influence the speed at which product diversified firms adjust their capital structure ratios towards their optima.

Research Hypotheses

The study was guided by the following hypotheses. They are stated based on the reviewed theories and empirical findings above. $H_{1:}$ The level of product relatedness influences capital structure leverage, among listed non-financial companies in Tanzania. H_{1A}: Related product diversification negatively affects capital structure ratios. Thus, related product diversification is influenced by internal financing. H_{1B}: Unrelated product diversification positively affects capital structure ratios. Thus, unrelated product diversification is influenced by external financing. H_2: Prior years' capital structure ratios influence subsequent years' capital structure ratios among listed non-financial firms in Tanzania. Thus, firms' capital structure ratios follow adjustment processes towards their optimal levels.

Methodology

Data and Variable Measurements

This study followed panel data regression modelling and analysis. It is argued that every time panel data is accessible, different scholars, practitioners, and students have been captivated by panel data modelling for the reason that this type of data has more variability and permit investigating more issues than do cross-sectional or time-series data alone (Park, 2011). Baltagi (2001) specifically argues that "Panel data give more informative data, more variability, less collinearity among the variables, more degrees of freedom and more efficiency" (p.6). The research study population panel is the firms listed on the Dar es Salaam Stock Exchange in Tanzania. It covers years from 1998 to 2014, where by 2015, 22 listed companies were listed on the stock exchange. The study was based on an unbalanced panel data design, running from 1998 to 2014, for a duration of 17 years to maximize the number of observations in the panel. The design excluded 11 highly regulated firms, particularly financial firms (banks and insurance firms), and included cross-listed non-financial companies. The final sample was made up of 8 non-financial local companies and 3 non-financial cross-listed companies. Therefore, the total design included 11 non-financial, both local and cross-listed companies (Dar es Salaam Stock Exchange, 2015, "Listed companies", para.1-2). Based on these exclusion and inclusion criteria, the maximum number of firm years (observations) was 128.

The data was mainly sourced from the Dar es Salaam Stock Exchange database. However, data on product diversification was obtained from the annual reports and complemented by management internal information on product diversification. The dependent variable was the ratio of total debt over total capital, defined as total debt plus equity), as this is considered to be the best estimate of past financing choices (e.g. Mayer and Whittington, 2003; Menénde-Alonso, 2003; La Rocca *et al*., 2009; Qian *et al.,* 2010). Consistent with dynamic adjustment arguments of capital structure which allows for measuring of speed of adjustment, the current study included lagged capital structure ratios. The study measured the dependent variables in book values rather than market values because of data limitations (Apostu, 2010).

The first group of independent variables included related unrelated and total product diversification. These variables were measured using *Entropy* measure, based on SIC codes categories and their respective products sales values. Entropy index as a measure of diversification is popularly used (e.g. Menénde-Alonso, 2003; La Rocca *et al*., 2009; Apostu,

2010). Thus, total product diversification (TDIVE) for a firm (i) and at a time (t), is given by $TDIVE_{i,t} = \sum_{j=1}^{n} P_j \ln\left(1/_{P_j}\right)$; where P_j is the proportion of business sales of business or segment j defined by the 4 digit SIC codes. Unrelated product diversification (UDIVE) for a firm (i) and at a time (t) is given by $UDIVE_{i,t} = \sum_{j=1}^{n} S_j \ln\left(1/_{S_j}\right)$; where S_j is the proportion of business (sales) of segment j defined according to the first 2 digits of the SIC code. Related product diversification (RDIVE) for a firm (i) and at a time (t) is given by $RDIVE_{i,t} = TDIVE_{i,t} - UDIVE_{i,t}$. It's worth noting that, as in La Rocca et al. (2009) and Apostu (2010), SIC business segments are used as proxies for product diversification.

A second group of independent variables included the lagged variable in the dynamic model (L.TGEAR) (e.g. La Rocca *et al.*, 2009; Apostu, 2010), and firm-specific characteristics as control variables in the models. These were; Asset tangibility (TANG): non-current assets to total assets (e.g. La Rocca *et al*., 2009; Apostu, 2010). Firm size (SIZE): natural logarithms of total assets (e.g. Menénde-Alonso, 2003; La Rocca *et al*., 2009). Profitability (PROF): the ratio of earnings before interests, taxes, depreciation and amortization to total assets (e.g. Apostu, 2010; Vries, 2010; Oh *et al*.,2014). Growth opportunities (GROP): sales annual growth rate (e.g. Apostu, 2010; Oh *et al.*,2014). Going concern (GOCO): age of the firm in number of years since incorporation (e.g. Menénde-Alonso, 2003; La Rocca *et al.,* 2009; Apostu, 2010). Non-debt tax shields (NDTS): the ratio of depreciation and amortization on total assets (e.g. Booth *et al*., 2001; Menénde-Alonso, 2003; La Rocca*et al*., 2009; Apostu, 2010).

Regression Models

The analysis relied on panel data regression techniques. The fixed effect (FE), random effects (RE) and general methods of moments (GMM) techniques were employed in the search for the best model that fits the data better as research analysis would require. The model incorporated industry and time dummies to control for threat of omitted variable biases and to facilitate pooling of different firms into a single sample. The analysis used both the static regression model (1) and dynamic regression model.

$$\boldsymbol{D_{i,t}} = \mu_{\boldsymbol{i}} + \boldsymbol{\beta X_{i,t}} + \boldsymbol{\gamma Z_{i,t}} + \boldsymbol{d_t} + \boldsymbol{v_i} + \boldsymbol{\varepsilon_{i,t}} \ldots\ldots (\mathbf{1})$$

$$\boldsymbol{D_{i,t}} = \mu_{\boldsymbol{i}} + \boldsymbol{\delta D_{i,t-1}} + \boldsymbol{\beta X_{i,t}} + \boldsymbol{\gamma Z_{i,t}} + \boldsymbol{d_t} + \boldsymbol{v_i} + \boldsymbol{\varepsilon_{i,t}} \ldots\ldots (\mathbf{2})$$

Where;

$\mu_{\boldsymbol{i}}$: A constant term of each firm i.

$\boldsymbol{D_{i,t}}$: The capital structure {TGEAR} of firm i at time t.

$\boldsymbol{D_{i,t-1}}$:A lagged dependent variable for firm i at time t-1.

$\boldsymbol{X_{i,t}}$: Diversification variables {DIVE}, decomposed into; (related diversification {$RDIVE_{it}$}, unrelated diversification {$UDIVE_{i,t}$}, or total diversification {$TDIVE_{i,t}$} for firm i at time t).

$\boldsymbol{Z_{i,t}}$: Conventional variables ($TANG_{i,t}$, $SIZE_{i,t}$, $PROF_{i,t}$, $GROP_{i,t}$, $GOCO_{i,t}$, $NDTS_{i,t,}$) for firm i at time t.

$\boldsymbol{\beta}$: A vector of coefficients for all diversification strategies.

$\boldsymbol{\gamma}$: A vector of coefficients for conventional variables.

$\boldsymbol{\delta}$:A coefficient for lagged dependent variable.
$\boldsymbol{d_t}$: Time-effect dummies for time t.
$\boldsymbol{v_i}$:Industry-effect dummies for firm i.
$\boldsymbol{\varepsilon_{i,t}}$: The error term for unobserved heterogeneity conditions for firm i at time t.

Model (1) is a static regression model while Model (2) is a dynamic regression model.

Data Analysis, Techniques and Estimation

The analysis involved descriptive statistics and tests of differences between the related and unrelated diversified firms. ANOVA and T-test were done for a robust comparison of the groups. This as in La Rocca *et al.* (2009) helped establish if firms are following separate product diversification based on firms' characteristics. The regression analysis was in three parts. First, the analysis compared the static model's specifications and performance to meet the assumptions of regression modelling. The F-test confirmed firm and time effects. The Breusch-Pagan Lagrange multiplier (LM) test confirmed the absence of random effects. Further, the Hausman test confirmed the choice of a fixed effect model (FEM) for our regression analysis. Due to the presence of fixed effects, the regression was initially based on the FEM, which employed least square dummy variable one approach (LSDV1). Its name underscores its procedure, in that it applies dummy variables, but in its calculation, drops the first dummy. The method is a good way to understand fixed effects and how they are controlled (Park, 2011). The dummy variables were statistically significant, indicating that they were useful in absorbing the unobservable heterogeneities, which results from differences in firms' characteristics and time conditions. This way pure effects of independent variables on dependent variables were reliably estimated. Since results were sensitive in the way robust standard errors were computed, standard errors autocorrelation across panels, contemporaneous correlations in the error term and heteroscedasticity, to control for these additional issues, the FEM was improved through the use of Prais-Winsten Clustered Standard Errors (PCSE).

Second, previous studies (e.g. Kremp *et al*., 1999; Ozkan, 2001; La Rocca *et a*l., 2009; Apostu, 2010) have put emphasis on the dynamic adjustment effects in the capital structure. Following the recommendations by La Rocca *et al.,* (2009) and empirical evidence from these studies, the dynamic effects of previous year capital structure ratios on current capital structure ratios were analysed. Since there is no one single comprehensive technique that can address all known regression limitations and assumptions, two different techniques were used to analyse the dynamic effects, namely; the lagged PCSE estimator and the General Method of Moments (GMM) estimator, the latter being a comprehensive method that further developed by Arellano-Bond (1991). This estimator, used by for example, La Rocca *et al*. (2009) and Apostu (2010), is considered to be more robust because, it eliminates firms' non-observable specific effects given the estimates in first difference; it controls for possible endogeneity since lagged values are used as instruments, and it eliminates correlations between lags of the dependent variable and the error term. Particularly, La Rocca *et al*. (2009) noted that, panel data and the GMM estimator, when used in studies of the dynamic capital structure at firms' level, help to eliminate unobservable heterogeneity and control for endogeneity problems in the analysis. Third, the amount of factors contribution to effects on capital structure ratios was accounted for through the use of hierarchical regressions analysis.

Findings and Discussion

Product Diversification

Centered on the study's 128 observations, results in Table 1 showed that total product diversification (TDIVE) had a mean of 0.528 with standard deviations of 0.307 demonstrating a considerable amount of variableness across firms and over the years. Related product diversification (RDIVE) was lower at a mean of 0.458 while unrelated product diversification (UDIVE) was much lower at mean of 0.114.Their individual standard deviations were respectively 0.332 and 0.222, which specify substantial variableness in these types of product diversification over time and between firms. La Rocca *et al.* (2009) used 2,085 observations, a much large panel and found that the mean for total, related and unrelated product diversification were 0.391, 0.172 and 0.219 separately. Their individual standard deviations were 0.445, 0.298 and 0.358 separately.

Table 1. Descriptive Analysis

	Count	Mean	Std. Dev	Min	Max
TGEAR	128	0.4690	0.2494	0.1312	1.0884
RDIVE	128	0.4580	0.3328	0.0000	1.6321
UDIVE	128	0.1148	0.2227	0.0000	0.6919
TDIVE	128	0.5289	0.3076	0.0000	1.6321
TANG	128	0.5449	0.1657	0.1953	0.8786
SIZE	128	24.390	1.6830	20.649	27.610
PROF	126	0.2884	0.2329	-0.3206	1.0910
GROP	116	0.1490	0.1979	-0.6870	1.1140
GOCO	128	39.875	20.410	1.0000	84.000
NDTS	123	0.0625	0.0530	0.0064	0.3954
N	128				

The variability was not very diverse from this study's panel, signifying that product diversification has been changing over time and among companies and is probably not based on a stochastic process or random chance. Such a changeability helps to point to the fact that companies listed at DSE have been wilfully selecting product diversification strategies for numerous drives and returns which product diversification offers. These returns are such as firm expansion, profit-making, acquisitions, shareholders controlling the management, responding to market needs, reducing business risk, responding to the presence of unutilized resources in the firms, beating and timing the competition and the need to expand and grow.

Table 2. Anova and T-test

		Means for each variable			Test statistics	
Variables	Count	Related [means]	Unrelated [means]	Mean [diff.]	ANOVA [F]	T-test [T]
TGEAR	128	0.383607	0.650314	-0.26671	42.21***	-6.4972***
RDIVE	128	0.575717	0.208224	0.36749	46.03***	6.7843***
UDIVE	128	0.003582	0.350849	-0.34727	144.10***	-12.004***
TDIVE	128	0.579300	0.421912	0.15739	7.68***	2.7708**
TANG	128	0.501945	0.635923	-0 .13398	21.11***	-4.5948***
SIZE	128	24.79804	23.52403	1.27401	18.12***	4.2568***
PROF	126	0.362085	0.130005	0.23208	34.34***	5.8598***
GROP	116	0.152251	0.142046	-0.01021	0.07	0.2577
GOCO	128	39.41379	40.85366	-1.43987	0.14	-0.3711
NDTS	123	0.059138	0.070455	-0 .01132	1.18	-1.0872
N	128	87	41			

$^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$

On the other hand, in the univariate analysis in Table 2, companies' characteristics or factors indicated statistically significant differences. The treatment involved two groups i.e. companies that followed related product diversification and companies that followed unrelated product diversification. The differences were in terms of capital structure or gearings for total gearing usages. Also in terms of differences in assets structures, tangibility of assets, size of the firms and firms' profitability. Such differences point to the fact that firms embarking on related product diversifications were constrained by factors which only allow them to diversify in similar or related business lines. While, on the other hand, firms that adopted unrelated product diversification were few and were only probably able to do so, across unrelated business segments. The findings confirmed that related product diversified firms were less levered while the unrelated product diversified firms were more levered, although they were few in number. The related diversified firms did not have much of a combination of the two type of product diversification, while the unrelated product diversified firms had more of the combination of the two types of product diversifications, based on their means.

Supporting the co-insurance hypothesis argument, related product diversification (Table 3) is negatively related to capital structure ratio as expected, indicating that it is more associated with internal financial resources than debt. Similarly, unrelated product diversification is positively related to capital structure ratio, indicating that it is more associated with external financing particularly debt than internal financing. The latter case, support the monitoring effect argument based on agency cost theory. The negative relationship between profitability and capital structure ratio indicate a possible substitutionary financing effects between debt and retained profit. Size is

negatively associated with capital structure ratio indicating that it is not key to increasing debt usage. Conversely, tangibility is positively associated with capital structure ratio indicating that it is increasing debt financing. Related and unrelated product diversification are negatively related, confirming that they are two possible dimensions of product diversification with differentiated effects on firms' outcomes. Profitability is positively (negatively) associated with related (unrelated) product diversification as expected. Against the Transaction cost hypothesis, tangibility which proxies assets inflexibility is negatively (positively) associated with related (unrelated) product diversification.

Table 3. Correlation Analysis

	TGEAR	RDIVE	UDIVE	TDIVE	TANG	SIZE	PROF	GROP	GOCO	NDTS
TGEAR	1									
RDIVE	-0.225*	1								
UDIVE	0.525**	-0.377**	1							
TDIVE	0.00869	0.910**	-0.0374	1						
TANG	0.484**	-0.327**	0.322**	-0.180*	1					
SIZE	-0.203*	0.0212	-0.152	-0.0819	-0.0570	1				
PROF	-0.596**	0.297**	-0.479**	0.112	-0.397**	0.429**	1			
GROP	0.0266	-0.0483	-0.0597	-0.0885	-0.0217	0.115	0.213*	1		
GOCO	-0.0983	-0.0862	-0.0344	-0.0702	0.154	0.401**	0.229*	-0.0316	1	
NDTS	0.138	0.160	0.0287	0.204*	0.0569	-0.156	0.130	-0.0283	0.0610	1
N	128									

*p< 0.05, **p< 0.01, ***p< 0.001

In the multivariate regression analysis, the results indicated that total product diversification is positively related to capital structure ratio in both the static and dynamic models. The relationship was significant for all models (Table 4). This is consistent with the agency cost

monitoring effect argument. This is contrary to the findings of La Rocca *et al*. (2009) and Apostu (2010) who found a negative and significant relationship between the two. As noted earlier, the *agency costs theory* predicts that debt will be used for monitoring purposes against self-interests oriented management. Consequently, shareholders will promote the use of debt through value-enhancing investments, such as product diversification, as a device to discipline managerial behaviour up to the point when their objective is realised. Hence, we expect a positive relationship between total product diversification and capital structure ratios up to that realization. Thus, founded on theoretical notion and findings, it appears that owners of companies listed at DSE are not considering total product diversification strategy employed as detrimental to the interests of the firms. Similarly, based on co-insurance postulation; the positive relationship between unrelated product diversification and capital structure ratio confirms the existence of co-insurance effects from investments that yield uncorrelated cash flows. Such sorts of cash flows reduce business risk and thereby making the firm more attractive to lenders. Conversely, this effect is not possible in related product diversified firms as witnessed by the negative relationship between related product diversification and capital structure ratio.

Table 4. Regression Model Estimations

	(1) LSDV1		(2) PCSE		(3) dPCSE		(4) GMM_ab	
CONSTANT	4.064*	(2.17)	4.064***	(3.50)	3.594***	(4.58)	1.892**	(2.78)
L.TGEAR					0.660***	(10.20)	0.689***	(11.87)
RDIVE	-0.234	(-1.50)	-0.234**	(-2.64)	-0.114	(-1.73)	-0.106*	(-2.35)
UDIVE	0.0277	(0.21)	0.0277	(0.24)	0.147**	(2.71)	0.146***	(4.35)
TDIVE	0.370*	(2.22)	0.370***	(4.49)	0.252***	(3.77)	0.197***	(6.32)
TANG	0.0528	(0.33)	0.0528	(0.70)	0.101	(1.56)	0.119	(1.26)
SIZE	-0.0832	(-1.13)	-0.0832	(-1.76)	-0.127***	(-3.46)	-0.0923*	(-2.46)
PROF	-0.175	(-1.63)	-0.175*	(-2.08)	-0.362***	(-5.58)	-0.404**	(-2.75)
GROP	0.120	(1.60)	0.120*	(2.57)	0.187***	(5.16)	0.197***	(5.23)
GOCO	-0.123	(-0.99)	-0.123*	(-2.24)	-0.0407	(-1.36)	0.0109**	(2.65)
NDTS	0.737**	(2.90)	0.737**	(2.74)	0.700***	(4.52)	0.419***	(3.76)
N	112		112		112		100	
DF			33		34			
R^2	0.868		0.868		0.936			
R^2_adjusted	0.807							
RMSE	0.110		0.110		0.0768			
MSS	6.040		6.040		6.519			
RSS	0.921		0.921		0.443		1.104	
F	14.23							
Chi2			343318.5		511479.9		341062.7	
SARGAN:	*Sargan test of overidentifying restrictions:*						chi2(90)=95.48814	
	H0: overidentifying restrictions are valid						Prob >chi2=0.3262	

ABOND:	*Arellano-Bond test for zero autocorrelation in first-differenced errors* *H0: no autocorrelation*	z	Prob > z
Order(1)		-2.2361	0.0253
Order(2)		-1.1472	0.2513

t statistics in parentheses, level of significance $^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$

Capital Structure Ratios Levels and Adjustments

In this study's analysis, the level of capital structure is evidently variable. The standard deviation of 0.249 for capital structure ratio shows a considerable economy in variation (Table 1). This variability from 112 (note that there is a loss of observations from 128 to 112 for models 1, 2 and 3, and 100 for model 4, this is due to lagging of variables) observations is close to that of La Rocca *et al*. (2009) who documented a standard deviation of 0.235 from 2085 observations. Latridis and Zaghmour (2013) based on a comparative study for Moroccan and Turkish firms find standard deviations of 0.1693 and 0.1741 respectively. In this study's findings, capital structure ratio was at the mean of 47% and standard deviation of 0.249 compared to the means of 9.19% and 13.75% respectively for Latridis and Zaghmour (2013) in their two countries sub-samples. Akinyomi and Olagunju (2013) based on a sample of 240 observations found a mean gearing of 57.6% and standard deviation of 0.074 for firms listed in Nigeria. Kodongo *et al.* (2014) based on Kenyan listed firms found the mean for gearing was 57% with a standard deviation of 0.233. Similarly Hove and Chidodo (2012) employing 84 observations from listed companies in Zimbabwe found equivalent results, where total gearing was at the mean of 23.8% with a standard deviation of 0.2187. Thus, DSE firms are in range with other comparable countries in terms of variability and level of capital structure ratio. This points to the fact that this variability in capital structure ratio is not inadvertent or accidental. There are influences that can be accredited to it.

Capital Structure Ratios Speed of Adjustments

A further aspect of capital structure variability is measured by considering the speed of adjustment of capital structure ratio across firms and time concurrently as recommended by Abor (2007; 2008), La Rocca *et al*. (2009) and Apostu (2010). The dynamic regression analysis has an added important advantage; it can depict this speed. If the coefficient (1 - α) is close to 1, the adjustment process is slow; if it is close to 0, then adjustment occurs rapidly (La Rocca *et al* 2009). The lagged total debt variable coefficient (L.TGEAR) was 0.660 and significant at 0.001 level (in model 3, Table 4), indicating that for a 1 unit increase in prior year's gearing there is a 0.660 increase on proceeding years' gearing. According to Moyo *et al.* (2013), firms have target leverages towards which they adjust over time. Based on the procedure suggested by La Rocca *et al.* (2009) and Apostu (2010) for extracting alpha values (α), which measures the speed of adjustment or transaction costs of debt, it was found to be in the range 0.311 to 0.340 (i.e. 1-α=lagged debt coefficient) thus 1-lagged debt coefficient= alpha (α), i.e. 1-0.66=0.34 for dPCSE estimator and 0.311 for GMM_ab estimator (model 4, Table 4). Therefore based on this finding by considering the lowest and the highest alpha values in the dynamic models, alpha is in the range of 0.311-340 and below 0.5 and is approaching 0, it is evident that firms at DSE do not adjust their capital structure ratios (total debt) automatically, capital structure ratios also seem to

stay close to their previous years values (i.e. 0.660, 0.689), there are high transaction costs associated with increasing total debt, the costs associated with being in disequilibrium are low and thus firms slowly adjust their capital structure ratios.

Moyo *et al.* (2013) maintain that if the speed of adjustment is zero, firms have no leverage targets and therefore do not follow an adjustment process. But in cases where the speed of adjustment is greater than zero, then firms have capital structure target levels that they adjust to. Therefore, firms listed in DSE seem to have target debt levels to which they struggle to adjust to. These firms seem to slowly adjust to their total gearing due to their low adjustment coefficients. Moyo *et al.* (2013) further indicate that, in a perfect market, firms always sustain their target or optimal ratio; but in an imperfect market, firms merely slowly adjust because of information asymmetries, transaction and adjustment costs. A similar conclusion can be inferred in our results (Table 4). The results depict the following facts which support findings of Moyo *et al.* (2013) that the speeds of target adjustment differ between countries, reflecting the disparity in various factors. Countries such as Tanzania, with unpredictable legal systems, unfavourable institutional features and unstable or stagnant or slowly growing economies will exhibit a low speed of adjustment. These characteristics increase adjustment costs and hence hinder faster and more frequent adjustment.

Influence of Product Diversification on Capital Structure Ratios

Related product diversification was negatively related to capital structure ratios, the results were significant in the GMM_ab estimator (Table 4). This finding is consistent with that of La Rocca *et al.* (2009) and Apostu (2010). It is consistent with the *co-insurance effects theory*, which suggests that product diversification in related business segments results into correlated returns, this does not lower returns volatility. This in turn discourages lenders from offering loans, and vice versa. Therefore, internal financing, that is retained profit, is more connected to related product diversification (Table 3). A negative and significant relationship between related product diversification and capital structure ratio was expected and consequently supported by the findings. The positive and significant correlation between profitability and related product diversification (Table 3) highlights the fact that retained profits services a financing role for related product diversification in our panel.

Unrelated product diversification was consistently positively related to capital structure ratios. The results were significant in the dynamic regression models. The positive relationship highlights the fact that investment in unrelated products results in uncorrelated cash flows thus reducing the risk of business, thus easily attracting external financing particularly debt. This is consistent with the co-insurance theory. On the other hand, unrelated product diversification investments lower cash flow risk and consequently lending costs. Thus, unrelated product investments are attractive to lenders due to increased debt capacity projected by such firms. Total product diversification was positively significantly related to total gearing. The effects of unrelated product diversification outweighed that of related product diversification in the total product diversification index. Thus, total product diversification investments seem to be attractive to lenders. Such a scenario can be attributed to perceived reduced risk that is offered by product diversification advantages. The monitoring effect argument based on agency cost theory

is supported by the findings, hence lending an alternative explanation to the results. Shareholders seem to endorse debt financing to curtail management self-interest motives.

Table 5. Hierarchical Regression Models for R-Squared Change

Model	Added variable(s)	R^2	p-values	R^2 change	p-values
1:	(TANG SIZE PROF GROP GOCO	0.858***	0.000		
	(L.TGEAR)	0.928***	0.000	0.070***	0.000
	(RDIVE)	0.929***	0.000	0.000	0.522
	(UDIVE)	0.932***	0.000	0.004*	0.040
2:	(TDIVE)	0.936***	0.000	0.004*	0.034
3:	(RDIVE UDIVE TDIVE)	0.936***	0.000	0.008*	0.027

$^{*}p< 0.05$, $^{**}p< 0.01$, $^{***}p< 0.001$

A point on the economic contribution of factors is highlighted by the hierarchical regression analysis. It indicated that the contribution of product diversification to capital structure variability was 0.041 (4.1%). This finding was statistically significant (Table 5). It indicates that this factor, when taken in its totality, has a large and significant contribution which needs to be accounted for during capital structure decisions. Prior years' capital structure ratios seem to have a substantial impact (7.0%) as well on capital structure ratios, significant at 0.1%.

Conclusions, Recommendations and Future Research

Conclusions

The findings point to the importance of product diversification in its various types in influencing financing choices of firms at DSE. It contributes to the understanding of motivations behind firms financing. The difference in the directions of effects for related and unrelated product diversification helps to points to the fact that the type of product diversification adopted by the firm matters in capital structure choices. The separate effects of related and unrelated product diversification on capital structure help to point to the fact that the nature of firm cash flows prescribes the kind of product diversification to be considered by a particular firm in order to attract the desired financing option.

The negative relationship between related product diversification and capital structure indicate that related product diversification is associated with internal financing; such as retained profits. Firms are forced to use internal financing to finance related product diversification investments. Such investments do not attract lenders due to high risks resulting from highly correlated returns. These investments discourage managers to borrow due to high debt transaction costs reflected by debt markets. The high costs are due to high risks from such correlated cash flows. Conversely, the positive relationship between unrelated product diversification and capital structure helps to point to the fact that, the presence of uncorrelated cash flows projected by unrelated product diversification investments reduces a firm's risk profiles thus attracting more debt financing among such firms. The varying and increasing levels of product diversification over time and across firms help to point to the presence of conscious diversification policies employed by firms to take advantages of various benefits that product diversification entails, such as business risk reduction, staying competitive, expansion motives and trying to grow big among others.

Capital structure ratios adjustments point to the fact that firms are trying to adjust their capital structure to reflect the costs and advantages of each financing choice. The speed of adjustment helps to depict the fact that firms are trying to move their capital structures towards optimum ones. The low speed of adjustment of capital structure ratios indicates that the cost of adjustment is rather high among DSE firms. Thus, transaction costs (such as legal, litigation, interests, listing and information) both direct and indirect seem to be high among DSE companies. Prior years' capital structure ratios are closely predicting proceeding years' debt levels. As noted previously firms are cautiously adjusting their debt levels, keeping them in line with prior years' levels. Such capital structure ratios are adjusted so cautiously towards optimum ones due to the risk eminent from debt usage.

The huge R^2 in the range of 0.868—0.936 and the adjusted R^2 at 0.807 (Table 4) account for a very large and substantial effects of these factors under study on capital structure ratios. This evidences the importance of these factors during capital structure decisions. In Table 5, the R^2 change for L.TGEAR was big (0.07) and significant followed by TDIVE, UDIVE and RDIVE (0.041) when entered together, but it is 0.04 when only TDIVE is entered alone. Since the changes were large and significant, it indicates that these factors are crucial and critical in capital structure decisions. Thus, managements, policymakers, regulators and investors need to account for these factors when making policy, regulating the financial markets, and investing in these listed companies.

Recommendations

Due to high transaction costs that are indicative from the dynamic adjustment analysis, it is important that transaction cost resulting from information asymmetry, listing requirements, information flow, legal litigation and interests' obligations be studied and monitored to reduce transaction costs, to improve transparency, to improve the flow of correct and reliable information to investors and lenders. This will help firms easily adjust their capital structure ratios to maximize their financing choices.

Companies at DSE are evidently product diversified. Specifically, they are following both related and unrelated product diversification strategies. Thus, investors need to invest among firms that are embarking on unrelated product diversification due to reduced business risk from uncorrelated cash flows. But, similarly, when constructing their investment portfolios, it is significant that they choose firms according to a combination of related and unrelated product diversification, rather than investing only on companies with only related product because that would signal high risk in their investments portfolios. Companies that are well diversified in unrelated products normally exhibit uncorrelated cash flows, which normally result in low business risk and high profitability. Therefore, banks and lenders need to consider product diversification as a criterion for screening debt candidates.

Investments through product diversifications have both implicit and explicit effects on capital structure of firms. Therefore, the management needs to undertake such investments with informed practices on how product diversification and its types affect their companies' capital structure and consequently cash flow, profitability and value. Consequently, the types of product

diversification adopted by the management matters in capital structure choices. The study recommends that companies should diversify across projects as a way to make cash flows more predictable thereby decreasing the agency costs of decision-making prudence.

Further, with a possibility of business synergies and resources sharing in the presence of resources such as skills, machinery, equipment and finance; companies should not hesitate to diversify their business. But, equally important is the fact that related product diversification is more related to internal financing while unrelated product diversification in more related to external financing. Therefore, it is prudent to finance related product diversification with internal financing and finance unrelated product diversification with external financing. Firm-specific factors, such tangibility, size, profitability, non-debt tax shield, going concern and growth opportunity seem to account for a large share of variability on capital structures of these firms. Thus, these factors need to be taken into serious account when considering capital structure decisions.

Future Research

Studies need to look at the possible interactive effects of related and unrelated product diversification on capital structure and other firm outcomes. A separate analysis could be for related and unrelated product diversification within large samples to help verify these findings. More samples based on the industry could be involved in the analysis for comparative purposes. The research needs to extend into other types of product diversification by identifying international diversification and how it impacts capital structure ratios and other firm outcomes. In line with the co-insurance effects hypothesis, research on cash flow volatility need to be done to ascertain the nature of firms' cash flows and product diversification and how they impact capital structure ratios and other firms outcomes. Based on transaction cost hypothesis, more research needs to look at nature and structure of firm resources and how they influence product diversification and consequently capital structure and other firm outcomes. The agency cost offers a green field in which corporate governance factors in conjunction with product diversification decisions could be studied to establish the role of shareholders through boards of director could influence product diversification investments and therefore capital structure decisions and other firm outcomes.

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