
Asset Structure and Capital Structure Correlation: Evidence from Non-Finance firms in Nigeria

Mohammed Alhaji Audu

Department of Banking and Finance, Faculty of Management Sciences, University of
Maiduguri, Borno State, Nigeria
3maaudu@gmail.com

Abstract

The study investigates asset structure and capital structure correlation in Nigeria drawing samples from listed non-finance firms on the floor of the Nigerian Exchange Group market. While capital structure proxied by debt to asset ratio or leverage is the dependent variable, the independent variables adopted for this study includes asset tangibility, intangible asset ratio, non-current asset ratio and cash to asset. Data set employed in this study spans through the periods between 2014 and 2023. The econometric techniques adopted in this study are the Pearson correlation coefficient (correlation matrix). In the light of this, the empirical result of this study leads to the conclusion that out of the four independent variables adopted in this study, only intangible asset ratio and cash to asset ratio significantly correlate with capital structure. Specifically, we conclude that an increase in intangible asset ratio will significantly increase debt financing of listed non-finance firms in Nigeria. However, an increase in cash to asset ratio will significantly decrease debt financing of listed non-finance firms in Nigeria. Succinctly, we recommend that firms should invest more on intangible assets since large holdings of intangible assets may imply that a firm has a stable source of return, which provides more internally generated funds and discourages it from turning to external financing.

Keywords: capital structure, Asset Tangibility, cash ratio, debt

1. Introduction

The impact of a firm's composition of assets and how they explain its capital structure is an ongoing debate. Financial capital structure is an important issue for any company since the company's financial capital structure would have a direct effect upon its financial position. A company with a bad financial capital structure, such as one that carries a very large debt, would suffer a heavy financial burden. A company can achieve financial balance if it does not face any financial disturbances, or in other words when it achieves a balance between the amount of capital available and the amount of capital needed. There are two methods for managing a company's capital structure. The first method is to fulfill the need for capital with capital from an external source, known as "spending with debt." The second method is to fulfill the company's capital needs with its own internal resources, known as "spending its own capital." Funding decisions greatly determine the company's ability to perform its operations and would also affect the company's own risk profile.

Tangible assets are one of the key drivers for explaining the capital structure within firms (Charalambakis & Psychoyios, 2012). Tangible assets are generally more liquid than intangible assets. Therefore, tangible assets have a higher second market value, and in case of bankruptcy these could be quickly and easily sold. Furthermore, ownership of tangible assets should give companies with such assets an increased debt capacity. As Siblikov (2009) argues the question if tangible assets are negatively or positively associated with debt is not clear. The current divergence between existing studies and theories concerning the relationship triggered this study concerning if tangible assets is a significant variable in order to explain companies' debt

levels. The composition of tangible assets is of importance to explain the level of debt within firms (Giambona, Golec, & Schwienbacher, 2014). Tangible assets are divided into smaller and more specific assets groups, which are presented in the notes of the annual reports. Consequently, this division reveals in some extent the redeployability and liquidity of the assets.

Tangible assets that could be used within different industries should suggest higher debt capacity for the firm. Modigliani and Millers proposition from 1958 laid the foundation for modern corporate finance (Hillier, 2013). Since then, several theories have developed from their thesis, two of these are the trade-off- and pecking order theory. The trade-off- and pecking order theory are contradicting each other concerning if tangible assets have a positive or negative effect on debt level. The first mentioned theory predicts a positive relationship, while the second predicts a negative. The approach adopted in this study is different in several ways. First, it only focuses on a single capital structure determinant, i.e., the asset structure, instead of examining a series of factors. Second, the significance of this factor is verified on a sample of non-finance firms, unlike most studies which use mainly manufacturing and banking data. The aim of the study is to verify the significance and identify the direction of the way asset's structure correlate with capital structure. To achieve this goal, the correlation between several assets structure ratios and capital structure is examined for the whole data set.

2. Conceptual Literature

2.1 Asset Structure

Asset structure refers to systematic approach to the governance and realization of value from the things that a group or entity is responsible for, over their whole life cycles. It may apply both to non-current assets and current assets (Vanier, 2001). Put differently, asset management is a systematic process of developing, operating, maintaining, upgrading, and disposing of assets in the most cost-effective manner (including all costs, risks, and performance attributes (Okwo, Ugwunta & Nwese, 2012). Going by these descriptions, it therefore enlightens those assets management is indispensable to the growth and profitability of firms, especially those in the manufacturing sectors. Asset management refers to applying performance management principles to the management of physical assets in firms and provides a strategic approach for the preservation, rehabilitation, and maintenance of these assets (Mutungi, 2010).

Asset structure management is one of the most advanced examples of the application of performance management principles in firms. The analytic tools, data, and experience in applying performance management principles are more advanced in asset management than in many other aspects of firms. Because most of the firms' facilities have long service lives, asset management must have a long-term focus. Many asset management programs focus primarily on performance measures that reflect the key metrics related to the physical health of the facilities. However, there are other physical assets that support a range of performance goals that need to be incorporated into a comprehensive asset management program. These other performance goals include safety, operations as well as other support facilities and equipment. It must be noted that the core principles of performance management apply to all aspects of firm performance.

2.2 Intangible Asset

Under IFRF (International Financial Reporting Foundation, 2004) of IAS 38 (International Accounting Standard), intangible asset is an identifiable nonmonetary asset without physical substance. Hence, intangible assets are future economic benefits controlled by the entity as a result of past transactions or other past events, but just do not have a physical form. According to the International Accounting Standard (IAS) 38, intangible assets include patented technology, computer software, licensing, franchise agreements and trademarks, etc. However, according to People's Republic of China Generally Accepted Accounting Principles (PRC

GAAP), trademarks can be recognized only if the trademarks are purchased from external. However, land use rights are realized as intangible asset in China. Intangible assets reflect core competitive competence of firms. Tsai et al. (2012) stated that intangible assets represent the future profitability and growth opportunities that promote increasing firm value.

2.3 Asset Tangibility

Conventionally, tangible assets (e.g., buildings, land, and plants), given their low information asymmetry in valuation and high recovery rates, have served as the primary form of collateral in external financing (Hart and Moore, 1994; Shleifer and Vishny, 1992; Liberti and Sturgess, 2016). Firms with low asset tangibility generally face costly external financing and are prompted to build up precautionary savings (Bates, Kahle, and Stulz, 2009; Lyandres and Palazzo, 2016). Bernanke and Gertler (1989) and Kiyotaki and Moore (1997) note that the collateral role played by tangibles in determining firms' financial capacity could have important implications for a country's economic growth because corporate investment often relies on asset-based financing. Chaney, Sraer, and Thesmar (2012) indeed find that a representative US firm reduces investment by \$0.06 for a one dollar decrease in its real estate value.

2.4 Cash to Asset Ratio

Cash is that amount of cash set aside by an organization or firm to meet up with its financial need. It is useful to firms in cases when financing through external sources is more expensive than internally generated funds. In a world of perfect capital markets there would be no transaction costs for raising cash, thus holding of liquid assets would be irrelevant and would not affect a firm's value. But markets are far from perfect and transaction costs are relevant. Once capital market imperfections are introduced, firms are not necessarily able to pursue all value-increasing investment opportunities. For instance, capital market frictions increase the cost of outside capital relative to internally generated funds (Myers and Majluf, 1984). Consequently, some firms that have attractive growth opportunities invest less than the first-best optimum, leading to lower future growth and reduced operating performance and firm value. Hence, cash holdings can be valuable when other sources of funds, including cash flows, are insufficient to satisfy firms' demand for capital. Therefore, these imperfections do exist and are more relevant to firms with a lot of opportunities investment

2.5 Capital Structure

There are many definitions given to capital structure of companies. Brealey and Myers (1991) defined capital structure as comprising of debt, equity or hybrid securities issued by the firm. VanHorn (1989) defined capital structure as the proportion of debt to the total capital of the firms. Pandey (2005) defined capital structure as a choice of firms between internal and external financial instruments. From the definitions given by many previous researchers, capital structure of a firm describes the way in which a firm raise capital needed to establish and expand its business activities. It is a mixture of various types of equity and debt capital a firm maintains, resulting from the firm's financing decisions. The amount of debt that a firm uses to finance its assets is called leverage. A firm with a lot of debt in its capital structure is said to be highly levered. A firm with no debt is said to be unlevered. Capital structure essentially refers to a firm's combination of debt and equity financing (Brealey et al. 2007). A major distinction between the two instruments is that the former creates a financial obligation to repay a principal sum plus an interest thereupon, while the latter accrues any residual earnings to its holders.

Capital structure of a firm describes the way in which a firm raises capital needed to establish and expand its business activities. It is a mixture of various types of equity and debt capital a firm maintains resulting from its financing decisions. Financial leverage denotes the debt

intensity of a company. A broad measure of leverage vastly used in literature is the ratio of financial debt to asset; variations arise from whether long term or total debt is used and whether book or market values are used. According to Megginson and Smart (2005) while capital structure assessment by market values which measure investors' valuation of securities appeal to economists, corporate practitioners prefer book value measurements since they are not subject to market fluctuations. Fernandez (2007) also argues that firm's set target capital structure based on book values which are more realistic. Rajan and Zingales (1995) and more recently Welch (2011) noted a subtle flaw in the common measurement of leverage; comparing financial debt to asset which has elements of non-financial liabilities (like accounts payable which is normally used for transaction purposes) will tend to understate leverage.

2.6 Theoretical Review

2.6.1 Pecking Order Theory

The pecking order theory tries to explain capital structure decisions by a firm's preferences in financing options. The theory states that a hierarchy in financing preferences exist. Internal financing stands at the top of the hierarchy, but if the amount of internal financing is insufficient, external financing is used. If firms seek to use external financing, debt is preferred over equity. Equity is only used if all else lacks the availability or is not enough (Frank and Goyal, 2003; Myers, 1984). According to the pecking order theory, the hierarchy in financing is caused by adverse selection, which in turn is explained by information asymmetry costs and transaction costs (Fama and French, 2002). For example, transaction costs are costs which arise from equity or debt issues. These costs are found to be higher for equity than for debt and internal financing lacks these costs (Baskin, 1989). Therefore, transaction costs are one of the explanations for the hierarchy. Information asymmetry costs can be explained by people having different information about firms. For example, managers know more about the firm they work for than most outsiders do. They have more knowledge on the future risks and income of a firm and show less willingness to give this information to outsiders (Fama and French, 2002). Taking these costs into account, internal financing is preferred over external financing. Another reason for the preference of debt over equity has to do with the amount of information firms must give away. In case of a bankruptcy, debtholders are paid before equity holders, therefore asking less information than equity holders do. So, debtholders are more secure, leading again to equity being less preferred than debt (Myers, 2001). An optimal leverage ratio is not present, instead the need for external funding drives the leverage ratio of a firm (Myers and Sunder, 1999). Therefore, firms do not try to reach a target debt to equity ratio.

3. Empirical Literature and Hypotheses Development

3.1 Intangible Asset and Capital Structure Correlation

In their study, Daskalakis and Thanou (2010) investigated determinants of capital structure of Greek SMEs in the period between 2003 and 2007. They found that the firms' debt ratio is negatively related to intangible asset ratio. They concluded that firms that generate relatively high internal funds tend to avoid debt financing. Thus, firms that rely more on intangible assets tend to use less debt than firms with relatively fewer intangible assets. Psillaki and Daskalakis (2008) investigated the capital structure of Greek, French, Italian and Portuguese small and medium-sized enterprises. They argue that the costs of financial distress depend on the types of assets that a firm employ. If a firm retains large investments in intangible assets, it will have smaller costs of financial distress than a firm that relies on tangible assets. Thus, firms with more intangible assets should issue more debt. On the other hand, large holdings of intangible assets may imply that a firm has already a stable source of return, which provides more internally generated funds and discourages it from turning to external financing. So, the negative relationship between leverage and asset structure indicates that firms employ lots of

intangible assets and seem to rely more on internal funds generated from these assets, which is predicted by the pecking order theory. They found that asset structure is significant and negatively correlated with leverage. A possible explanation is that firms with lots of intangible assets may have already found a stable source of return, which provides them more internally generated funds and discourages them from turning to external financing. Thus, our first hypotheses are as follows:

H0₁: Intangible Asset has no significant correlation with Capital structure of listed non-finance firms in Nigeria

3.2 Asset Tangibility and Capital Structure Correlation

Harris and Raviv (1991) argue that the larger share of tangible assets increases the liquidation value of a company. This is due to the fact that the tangible assets constitute collateral for the debt in case of bankruptcy. Morellec (2001) argues that when a firm is solvent, asset sales increase the firm value by allocating assets to better uses. He also argues that when the firm is in distress, asset sales represent the cheapest source of funds for the firm. Moreover, asset sales allow the firm to finance continued operation of its remaining assets without requiring external capital. Sanyal and Mann (2010) examined the financial structure of start-up firms. They found that start-ups with more tangible assets as potential collateral are more likely to use external debt in the financial structure, since these assets have a high liquidation value. As the authors above concluded, collateral value of assets was found to be an important determinant in capital structure. Recent papers confirmed either a negative or positive relation between tangibility and capital structure. Koksall et al. (2013) investigated the factors that determine the capital structure choices in Turkey. They used tangibility as a proxy for the type of assets. They found that tangibility appears to be the key determinant of long-term leverage (positive relationship) but is not important for short-term leverage (negative relationship). Their empirical findings suggested that the trade-off theory is a better description of the capital structure of Turkish firms than the pecking order theory. Thus, our second hypotheses are as follows:

H0₂: Asset tangibility has no significant correlation with Capital structure of listed non-finance firms in Nigeria

3.3 Cash Ratio and Capital Structure Correlation

Campello and Giambina (2011) examined the relation between corporate asset structure and capital structure by exploiting variation in the salability of assets. They argued that assets that are often liquid such as cash show that they are the main determinant of corporate leverage for firms that are more likely to face credit frictions, especially during periods of tight credit. Their evidence shows that cash assets drive capital structure to the extent that they are redeployable. Only the component of asset tangibility that responds to salability has explanatory power over firm leverage. They found that the relation between redeployability and leverage is important and pronounced in firms for which the collateral resource is particularly important in the borrowing process. For large firms, in contrast, redeployability is an irrelevant driver for leverage. La Rocca et al. (2009) examined the strategic financing choices of small businesses through the lens of the business life cycle. They conclude that tangibility has a positive relationship with debt, but its intensity varied across a firm's life cycle. Their research shows that young firms have less-tangible assets in the form of stock, which makes them more reliant on collateral assets to secure debt and obtain credit under better terms. In the growing and mature stages of a firm's life cycle, this effect decreases, but is still relevant. Degryse et al. (2010) expected cash asset to be positively correlated with debt as it provides collateral. They found strong support concerning the positive relationship between total debt and collateral. The positive effect on total debt came entirely from long-term debt, as short-term debt is negatively affected by the collateral. Thus, our first hypotheses are as follows:

H0₃: Cash Asset Ratio has no significant correlation with Capital structure of listed non-finance firms in Nigeria

4. Methodology

In relation with extant literature, we employed the firm-level approach based on an expo-facto and non-experimental research design. The study is longitudinal covering a period of ten (10) years. That is, from 2014 to 2023 employing listed non-finance firms on the floor of the Nigerian Exchange Group (NGX). The sampling technique employed is purposive since firms were included in the sample on certain selection criteria. These criteria were based on the view that the firms are listed on the Nigerian Exchange Group (NGX) market from 2011-2020; there were access to their annual financial reports within the period and they were not firms operating subsidiaries in Nigeria that are not listed in the Nigerian Exchange Group (NGX). Newly listed firms and delisted firms were excluded from the study. Thus, only non-finance firms that had all relevant data due to continuous existence were included in the sample. Our final sample size consists of 30 non-finance firms that was arrived at based on the availability of data for ten years for all the research variables. We express our econometric model as

$$p(\text{Asset Structure/Capital}) = 0$$

Thus, our apriori expectations are stated as; $X_1-X_3>0$: which means that a rise in the determinant variables of asset tangibility, intangible asset ratio, non-current asset ratio and cash to asset will lead to a rise in capital structure of listed non-finance firms in Nigeria. The econometric techniques adopted in this study are the Pearson correlation coefficient (correlation matrix).

4.1 Empirical Results

The study investigates asset structure and capital structure correlation in Nigeria drawing samples from listed non-finance firms on the floor of the Nigerian Exchange Group market. While capital structure proxied by debt to asset ratio or leverage is the dependent variable, the independent variables adopted for this study includes asset tangibility, intangible asset ratio, non-current asset ratio and cash to asset. Data set employed in this study spans through the periods between 2014 and 2023. Table 4.1 below describes the data in terms of the companies which they belong. Overall, the descriptive statistics provides some insight into the nature of the selected Nigerian listed non-finance companies that were employed in this study.

4.2 Descriptive Analysis

In this section, we examine the descriptive statistics for both the associating and dependent variables of interest. Each variable is examined based on the mean, standard deviation, maximum and minimum. Table 1 below displays the descriptive statistics for the study.

Table 1: Descriptive Statistics

Variables	MEAN	SD	MIN	MAX	NO OBS
DETA	56.35	18.98	4.28	123.35	299
TANG	36.78	20.47	3.49	87.19	299
ITAR	1.55	4.60	0	28.24	299
NCAR	48.43	21.71	6.03	92.34	299
CTAR	14.56	14.73	-4.65	68.75	299

Source: Author (2024)

The table above shows the summary of the descriptive statistics of the study. From the table it is observed that debt to asset ratio (DETA) on the average is 56.35 with a standard deviation of 18.98. Asset tangibility (TANG) on the average is observed to be 36.78 with a standard deviation of 20.47. Intangible asset ratio (ITAR) had a mean of 1.55 with a standard deviation of 4.60. We also find that non-current asset ratio (NCAR) had a mean of 48.43 with a standard

deviation of 21.71. The table also shows that cash to asset ratio (CTAR) had a mean of 14.56 with a standard deviation of 14.73.

4.3 Correlation Analysis

In examining the correlation between asset structure and capital structure, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in the table below.

Table 2: Correlation analysis

	DETA	TANG	ITAR	NCAR	CTAR
DETA	1.00				
TANG	0.03 {0.58}	1.00			
ITAR	0.26 {0.00} ***	0.11 0.05} **	1.00		
NCAR	-0.03 {0.60}	0.75 {0.00} ***	0.19 {0.01} **	1.00	
CTAR	-0.14 {0.00} ***	-0.42 {0.00}	-0.08 {0.18}	-0.54 {0.00} ***	1.00

Note: (1) bracket { } are p-values

(2) **, ***, implies statistical significance at 5% and 1% levels respectively

Author's computation (2024)

In the case of the correlation between the variables of asset structure and capital structure, the above results show that there exists a positive and weak association between asset tangibility and capital structure (0.03). There exists a positive and weak association between intangible asset ratio and capital structure (0.27). There exists a negative and weak association between non-current asset ratio and capital structure (-0.03). Finally, we find that there exists a negative and moderate association between cash to asset ratio and capital structure (-0.25). Following the above, the below is a specific analysis of the association between asset structure and capital structure using the Pearson correlation coefficient.

4.4 Discussion of Findings

Since, the study is an extension of existing studies, only few findings in literature are not in agreement with the current positions of this study. Specifically, we find that asset tangibility (Pearson correlation = 0.03 (0.58)) as an independent variable to capital structure appears to have a positive and insignificant association with capital structure proxied by debt to asset ratio. This therefore means we should accept the null hypothesis {H0₁: Asset tangibility has no significant correlation with capital structure of listed non-finance firms in Nigeria}. This suggests that an increase in asset tangibility will insignificantly increase debt financing of listed non-finance firms in Nigeria. This result agrees with prior empirical results which show that asset tangibility positively correlate with capital structure (Harris and Raviv, 1991).

However, we fail to agree with the studies of Koksai et al. (2013) who concluded that asset tangibility has a negative association with capital structure. We also document that intangible asset ratio (Pearson correlation = 0.27 (0.00)) as an independent variable to capital structure appears to have a positive and significant association with capital structure proxied by debt to asset ratio. This therefore means we should reject the null hypothesis {H0₂: Intangible asset ratio has no significant correlation with capital structure of listed non-finance firms in Nigeria}. This suggests that an increase in intangible asset ratio will significantly increase debt financing of listed non-finance firms in Nigeria. This result agrees with prior empirical results which show that intangible asset ratio positively correlate with capital structure (Daskalakis and Thanou, 2010). However, we fail to agree with the studies of Psillaki and Daskalakis (2008) who concluded that intangible asset ratio has a negative association with capital structure. For the variable of non-current asset ratio, we find that non-current asset ratio (Pearson correlation

= -0.03 (0.60)) as an independent variable to capital structure appears to have a negative and insignificant association with capital structure proxied by debt to asset ratio. This therefore means we should accept the null hypothesis {H0₃: Non-current asset ratio has no significant correlation with capital structure of listed non-finance firms in Nigeria}. This suggests that an increase in non-current asset ratio will insignificantly decrease debt financing of listed non-finance firms in Nigeria. This result agrees with prior empirical results which show that non-current asset ratio negatively correlate with capital structure (Harris and Raviv, 1991). However, we fail to agree with the studies of Psillaki and Daskalakis (2008) who concluded that non-current asset ratio has a positive association with capital structure. Finally, our results find that cash to asset ratio (Pearson correlation = -0.25 (0.00)) as an independent variable to capital structure appears to have a negative and significant association with capital structure proxied by debt to asset ratio.

This therefore means we should reject the null hypothesis {H0₄: Cash to asset ratio has no significant correlation with capital structure of listed non-finance firms in Nigeria}. This suggests that an increase in cash to asset ratio will significantly decrease debt financing of listed non-finance firms in Nigeria. This result agrees with prior empirical results which show that cash to asset ratio negatively correlate with capital structure (Campello and Giambina, 2011). However, we fail to agree with the studies of La Rocca et al. (2009) who concluded that cash asset ratio has a positive association with capital structure.

5. Conclusions and Recommendations

The impact of a firm's composition of assets and how they explain its capital structure is an ongoing debate. Financial capital structure is an important issue for any company since the company's financial capital structure would have a direct effect upon its financial position. A company with a bad financial capital structure, such as one that carries a very large debt, would suffer a heavy financial burden. A company can achieve financial balance if it does not face any financial disturbances, or in other words when it achieves a balance between the amount of capital available and the amount of capital needed. There are two methods for managing a company's capital structure. The first method is to fulfil the need for capital with capital from an external source, known as "spending with debt." The second method is to fulfil the company's capital needs with its own internal resources, known as "spending its own capital." Funding decisions greatly determine the company's ability to perform its operations and would also affect the company's own risk profile. In the light of this, the empirical result of this study leads to the conclusion that out of the four independent variables adopted in this study, only intangible asset ratio and cash to asset ratio significantly correlate with capital structure. Specifically, we conclude that an increase in intangible asset ratio will significantly increase debt financing of listed non-finance firms in Nigeria. However, an increase in cash to asset ratio will significantly decrease debt financing of listed non-finance firms in Nigeria. Succinctly, we recommend that firms should invest more on intangible assets since large holdings of intangible assets may imply that a firm has a stable source of return, which provides more internally generated funds and discourages it from turning to external financing.

References

- Bates, T. W., Kahle, K. M., & Stulz, R. M. (2009). Why do US firms hold so much more cash than they used to? *The journal of finance*, 64(5), 1985-2021.
- Chaney, T., Sraer, D., & Thesmar, D. (2012). The collateral channel: How real estate shocks affect corporate investment. *American Economic Review*, 102(6), 2381-2409.
- Charalambakis, E. C., & Psychoyios, D. (2012). What do we know about capital structure? Revisiting the impact of debt ratios on some firm-specific factors. *Applied Financial Economics*, 22(20), 1727-1742.

- Daskalakis, N., & Thanou, E. (2010). An analysis of the capital structure decisions of micro, small and medium firms: The case of Greece. In *Pobrane z: [http://www. eefs. eu/conf/Warsaw/Papers/616. doc](http://www.eefs.eu/conf/Warsaw/Papers/616.doc)*.
- Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. *The review of financial studies*, 15(1), 1-33.
- Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of financial economics*, 67(2), 217-248.
- Gertler, M., & Bernanke, B. (1989). Agency costs, net worth and business fluctuations. In *Business cycle theory*. Edward Elgar Publishing Ltd.
- Giambona, E., Golec, J., & Schwenbacher, A. (2014). Debt capacity of real estate collateral. *Real Estate Economics*, 42(3), 578-605.
- Harris, M., & Raviv, A. (1991). The theory of capital structure. *the Journal of Finance*, 46(1), 297-355.
- Hart, O., & Moore, J. (1994). A theory of debt based on the inalienability of human capital. *The Quarterly Journal of Economics*, 109(4), 841-879.
- Kiyotaki, N., & Moore, J. (1997). Credit cycles. *Journal of political economy*, 105(2), 211-248.
- Liberti, J. M., & Sturgess, J. (2018). The anatomy of a credit supply shock: evidence from an internal credit market. *Journal of Financial and Quantitative Analysis*, 53(2), 547-579.
- Lyandres, E., & Palazzo, B. (2016). Cash holdings, competition, and innovation. *Journal of Financial and Quantitative Analysis*, 51(6), 1823-1861.
- Morellec, E. (2001). Asset liquidity, capital structure, and secured debt. *Journal of financial economics*, 61(2), 173-206.
- Mutungi, M. W. (2010). *The relationship between working capital management policies and financial performance of oil marketing firms in Kenya* (Doctoral dissertation, University of Nairobi, Kenya).
- Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of financial economics*, 13(2), 187-221.
- Psillaki, M., & Daskalakis, N. (2009). Are the determinants of capital structure country or firm specific? *Small business economics*, 33(3), 319-333.
- Rajan, R. G., & Zingales, L. (1995). What do we know about capital structure? Some evidence from international data. *The journal of Finance*, 50(5), 1421-1460.
- Shleifer, A., & Vishny, R. W. (1992). Liquidation values and debt capacity: A market equilibrium approach. *The journal of finance*, 47(4), 1343-1366.
- Vanier, D. D. (2001). Why industry needs asset management tools. *Journal of computing in civil engineering*, 15(1), 35-43.