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Examining the Determinants of Financial Flexibility: The Egyptian Case

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Abstract

This paper identifies the key determinants of financial flexibility (FF), measured by low debt (debt flexibility (DF)) and excess cash (cash flexibility (CF)) in the Egyptian context, using a panel data set of 75 Egyptian corporations listed on the EGX100 over the period 2007-2020. Logit regression results indicate that Egyptian firms' ability to generate cash flows enhances FF, while capital expenditures and tangibility have a negative impact. Moreover, dividend-paying firms prioritize FF. In addition to these key drivers, firm size and profitability influence DF, while CF is affected by firms' growth opportunities. Understanding how FF operates in Egypt enables financial managers to consider the factors that strengthen it, potentially leading to increased growth and a greater ability to capture profitable investments, ultimately contributing to enhanced firm value.

Keywords

capital structure, financial flexibility, low, debt, excess cash, emerging economies, Egypt

Article history

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1. Introduction

Based on Modigliani and Miller's (1958) assumptions of a perfect and frictionless market, firms have unlimited and unrestricted access to capital, facilitating fund raising without any additional costs. However, imperfect capital markets exist in the real world, and many factors can influence external financing costs. Thus, firms should wisely select financial policies that can maintain and enhance their resilience against unexpected events, and enable them to seize investment opportunities (Denis, 2011; Ferrando et al., 2017).

Trade-off theory and pecking order theory, as two capital structure theories, were developed to determine the capital structure that improve firm value. However, these theories failed to explain some observed financing behaviours, such as firms' tendencies to preserve debt capacity or accumulate high cash balance (Bancel & Mittoo, 2011; De Jong et al., 2012; Meier et al., 2013). Excess cash balance or low debt levels do not indicate invalidity of these theories; nevertheless, they cannot solely explain the observed capital structures in firms (Meier et al., 2013). Thus, the concept of FF was introduced to explain these observed financing behaviours.

Primarily, FF influences chief financial officers' (CFO's) capital structure decisions (Graham & Harvey, 2001; Bancel & Mittoo, 2004). De Angelo and De Angelo (2007) and Gamba and Triantis (2008) argued that CFO's desire to secure and restructure the firm's future low external financing costs motivates them to achieve FF. Financially flexible firms enjoy easier access to external financing to meet their capital needs and can respond in a timely, value-maximizing manner to unanticipated events (Bancel & Mittoo, 2011; Ang & Smedema, 2011; Denis, 2011).

Almeida et al. (2011) and Denis (2011) argued that firms can construct an intertemporal relationship between current financing decisions and future investment decisions by adopting an FF policy through managing their capital structure, cash holdings, and payout policies. Many studies were conducted to identify the determinants of FF; see for example, Marchica and Mura (2010), DeJong et al. (2012), Dang (2013), Kangarlouei et al. (2014), Ma et al. (2015), Setianto and Kusumaputra (2017), Mahmood et al. (2021), and Machokoto et al. (2021).

This study aims to identify FF and the potential firm-specific factors that significantly influence it. Thus, the focus of this study is twofold: to assess FF among Egyptian firms, and to examine the firm-specific factors that influence FF in the Egyptian context.

This research contributes to the FF literature in several ways. First, we used DF as one dimension to measure FF, and added CF as a second dimension, as they are both interrelated in influencing capital structure decisions. Second, we studied the common determinants that have an impact on both dimensions, based on the Egyptian market as an emerging economy.

Therefore, this study aims to provide managers with a clear understanding of the importance of FF and its crucial influence on financing and investment decisions. For shareholders and investors, this study assists them in classifying firms into financially

flexible and non-financially flexible, impacting the investment-related decision-making approaches.

The rest of the paper is organized as follows: the following section, Section 2, reviews the relevant literature and develops the hypotheses. Data and methodology are presented in Section 3. Empirical results are reported in Section 4, while Section 5 presents the main conclusions of the study.

2. Literature Review and Hypotheses Development

The capital structure decision is considered one of the most controversial decisions in finance, as it influences other decisions, such as investment decisions, and significantly affects a firm's profitability. The finance literature is rich with theories that aim at explaining the managerial approaches in determining capital structure. Among these theories, the trade-off theory and the pecking order theory are the most prominent. According to the trade-off theory, firms can trade off the costs and benefits of debt to reach optimal debt level. On the side of benefits, the key benefits of debt include tax deductibility through interest payments and reduction of agency costs of free cash flows (e.g., Modigliani & Miller (1963), Kraus & Litzenberger (1973), Scott (1976), and Jensen (1986)). On the side of costs, the primary costs of debt include potential bankruptcy and financial distress costs, in addition to agency costs arising from conflicts between debt holders and stockholders (Modigliani & Miller, 1963; Kraus & Litzenberger, 1973; Myers, 1977). Such trade-off between the benefits and costs of debt yields an optimal target debt ratio.

Despite the trade-off theory's assumptions of an optimal target debt ratio, several empirical studies on firms' capital structure have documented some practices that do not support its predictions. For instance, DeAngelo and DeAngelo (2007) highlighted how the trade-off theory fails to explain why profitable firms have low debt, and consequently forgo benefits of interest tax shields. In a similar vein, Graham (2000) and Byoun (2007) observed that large profitable firms with lower distress costs used their debt conservatively to finance their future business expansions and investment opportunities, and absorb economic shocks. Similarly, Strebulaev and Yang (2013) and Serrasqueiro and Caetano (2015) reported that profitable, mature firms relied less on debt. These results raised the question of the validity of the trade-off theory as a stand-alone theory.

The pecking order theory, proposed by Myers (1984) and Myers and Majluf (1984), posits that firms finance their investments first with internal funds, then with debt, followed by convertible debt, and finally equity as a last financing resort, due to information asymmetry problems. The pecking order theory fails to recognize the dependence between the timing of corporate financing and investment decisions, as it overlooked how current financing decisions impact potential future investments (DeAngelo & DeAngelo, 2007). To empirically test the pecking order theory, studies by Frank and Goyal (2003) and Huang and Ritter (2009) reported findings that contradict its predictions, which are assumed to be most applicable to small and high-

growth companies that are expected to encounter significant information asymmetry problems. Based on the results reported by Frank and Goyal (2003), small and high-growth American companies did not follow the pecking order theory assumptions when making financing decisions. Moreover, their results for large firms aligned with those of the survey conducted by Graham and Harvey (2001). They found that large, dividend-paying firms also adhered to the pecking order theory financing hierarchy, despite their fewer information asymmetry problems. Fama and French (2005) and Huang and Ritter (2009) were consistent with Frank and Goyal (2003), from the perspective that equity issues were prevalent and common practice. Likewise, McLean (2011) found evidence that contradicted the pecking order theory, suggesting that firms tend to issue securities to retain issuance proceeds as cash reserves to act as a precautionary motive for unexpected financial needs.

Both the trade-off and the pecking order theories appear to have limitations which prevent them from comprehensively explaining the financing behaviour of certain companies, such as the prevalence of profitable firms with low debt and the observed accumulation of their cash balances (Byoun, 2011; Meier et al., 2013; Bessler et al., 2013). However, this does not invalidate these theories, but highlights their inability to explain the observed capital structures in firms, thus they cannot be considered stand-alone theories for financing decisions (Fama & French, 2005; Meier et al., 2013).

Consistently, Graham and Harvey (2001) introduced FF as the key determinant of capital structure, from the perspective of preserving a firm's debt capacity. Many studies, such as those by Bancel and Mittoo (2004) and Brounen et al. (2004), have supported this argument. In a similar vein, DeAngelo and DeAngelo (2007) and Gamba and Triantis (2008) found that FF is the critical missing link in capital structure theories. They mentioned that CFOs are motivated to pursue FF to ensure easier access to external financing in the future, in order to restructure their financing at low cost to meet their future capital needs.

Ang and Smedema (2011) and Denis (2011) examined the value of FF. Ang and Smedema (2011) reported that financially flexible, cash-rich firms are capable of confronting future recession by managing future shocks and seizing investment opportunities. Additionally, Denis (2011) stated that the response of financially flexible firms to unexpected changes in cash flows or investment opportunities should be in a timely and value-maximizing manner. Thus, firms adopting FF can mobilize their economic resources to implement proactive and preventive strategies to address uncertain future contingencies in order to avoid downsizing their business in case of economic downturn, and to pursue potential expansion and investment opportunities in profitable projects, ultimately contributing to the maximization of firm value (Byoun, 2007; Byoun, 2011; Islam et al., 2020; Machokoto et al., 2021)). Consequently, the intertemporal link between financing and investment decisions should be forward-looking, ensuring that the impact of the current decisions on a firm's future conditions is considered; therefore, recognizing how future financing requirements direct the current financing decisions is critical for comprehending the role of FF in capital structure decisions (Almeida et al., 2011; Byoun, 2021).

2.1. Dimensions of Financial Flexibility

In determining the dimensions of FF and how it can be measured, researchers have proposed different perspectives. Marchica and Mura (2010) defined financially flexible firms based on their spare debt capacity. This unused debt capacity was identified in the residual of the debt model estimated by Frank and Goyal (2009). Another approach to calculate unused debt capacity was employed by DeJong et al. (2012), which measures the difference between the maximum debt level a firm can acquire at investment-credit rate without encountering financial problems and its actual debt level. However, such detailed information on a firm's credit rating is difficult to obtain and may not be accessible. Thus, researchers such as Yung et al. (2015), Ferrando et al. (2017), and Setianto and Kusumaputraa (2017) adopted Marchica and Mura's (2010) regression model.

Other researchers, such as Minton and Wruck (2001), Dang (2013), Kangarlouei et al. (2014), Mahmood et al. (2021), and Machokoto et al. (2021), implemented quite different techniques to identify financially flexible firms. Minton and Wruck (2001) defined low-debt firms—considered persistently financially flexible— as firms with an industry-adjusted debt ratio in the lowest 20% of the distribution for a period of five consecutive years. Kangarlouei et al. (2014) and Mahmood et al. (2021) defined a firm as financially flexible when its debt ratio was below the industry median for three consecutive years. Machokoto et al. (2021) measured FF by classifying firms as financially flexible if their debt ratio was equal to or less than 5% each year, while Dang (2013) selected firms with a zero-debt ratio in a given year to be classified as financially flexible.

Collectively, these studies provide important insights into the unused debt capacity to capture FF. However, the idea of focusing on debt conservative policy without considering cash conservative policy, and vice versa, can be misleading. Debt and cash financing decisions are strongly interdependent; a change in one policy necessitates a corresponding change (Arslan-Ayaydin et al., 2014). Therefore, FF is better viewed regarding debt-conservative policy and cash-conservative policy (Iona et al., 2004). Firms aim to accumulate significant cash reserves to minimize their reliance on debt financing and maintain their debt levels below their borrowing capacity, enhancing their flexibility to capture new investment opportunities without resorting to extreme debt levels or issuing equities at unfavourable prices (Iona et al., 2004; Meier et al., 2013). For considering both dimensions, Arslan-Ayaydin et al. (2014) divided their sample firms into subsamples based on the median values of cash ratio and debt ratio, so that firms with cash ratios above the sample median and debt ratios below the sample median were classified as financially flexible. Another approach, adopted by Bigelli et al. (2014) and Yasmin and Rashid (2019), which incorporated both cash and debt in determining FF, classified a firm as financially flexible if it belonged to the lowest quintile of the industry-adjusted net debt ratio for two successive years.

Since the definitions of FF mentioned in previous literature, such as those by Marchica and Mura (2010), DeJong et al. (2012), and Ferrando et al. (2017), are too

complex to be applied in the Egyptian context, the researchers propose a modified definition of FF that is consistent with data availability in Egypt. The researchers define FF using two dimensions: DF, as a low debt ratio below the sample median, and CF, as a high cash ratio above the sample median.

2.2. Firm-Specific Factors and Financial Flexibility

Previous studies have not sufficiently investigated the factors that influence FF in terms of low debt policy and high cash policy. Prior research has instead explored the determinants of CF and DF separately (e.g. Iona et al. (2004), Bigelli et al. (2014), Mahmood et al. (2021), Yasmin & Rashid (2019) & Machokoto et al. (2021)). Therefore, this study aims to analyse the determinants of DF and CF to identify the possible firm-specific factors that shape both dimensions of FF.

2.2.1. Firm Size and Capital Structure

The size of a firm has emerged as one of the most significant determinants of debt ratio as well as cash holdings. However, the findings on the impact of size on debt and cash holdings reflect two different perspectives. Rajan and Zingales (1995), Deloof and Overfelt (2008), Frank and Goyal (2009), and Öztekin (2015) contributed to the analysis of the positive relationship between firm size and debt level. Large firms are characterised by being more diversifiable, with a lower probability of bankruptcy, and can seek tax shields advantage on interest payments, which increases their preference for higher debt (Deloof & Overfelt, 2008; Frank & Goyal, 2009; Öztekin, 2015); thus, they are less likely to pursue FF. Similarly, Minton and Wruck (2001), Iona et al. (2004), Bigelli et al. (2014), Yasmin and Rashid (2019), and Machokoto et al. (2021) reported a negative relationship between a firm's size and its pursuit of low debt policy. This finding supports the view that large companies lack the incentives to maintain spare debt capacity, as they are more profitable and benefit from cash flow stability, which results in lower external financing costs compared to small firms, consequently allowing them to raise their debt levels. However, some studies argue that large firms should maintain lower debt levels, as they are less affected by information asymmetry, which enables them to issue equity securities at lower costs of equity (Rajagopal, 2011; Rajan & Zingales, 1995). This argument is supported by Handoo and Sharma (2014), Acaravci (2015), and Alipour et al. (2015), who also reported a negative relationship between firm size and debt ratio.

Regarding the relationship between firm size and cash levels, Ferreira and Vilela (2004) and Al-Najjar and Belghitar (2011) explained that small firms tend to accumulate cash reserves, as they are less likely to raise high-cost external fund, whereas large firms, being more diversified and less prone to bankruptcy, are less inclined towards reserving higher cash levels. On the contrary, Al-Najjar (2013) found that large Chinese firms with greater diversification and profitability could hold high cash levels. Consistently, Ozkan and Ozkan (2004) demonstrated that firm size has a positive impact on cash-holding decisions, attributing this to the higher profitability of large firms and their ability to generate high cash flows, thus accumulating more cash.

Accordingly, the first hypothesis is:

H1: There is a significant negative relationship between firm size and FF.

2.2.2. Dividends and Capital Structure

Firms often accumulate cash, leading to low debt levels and the ability to pay dividends (Bigelli & Sánchez-Vidal, 2012). Therefore, dividend-paying firms with high cash levels and low debt ratios are more likely to be financially flexible. Bigelli et al. (2014) supported this view by stating that financially flexible firms which pursued low debt policy tended to accumulate cash, as they generated sufficient cash flows in order to pay dividends.

In a similar vein, Strebulaev and Yang (2013), as well as Yasmin and Rashid (2019), confirmed the positive relationship between dividends payouts and the possibility of following a low debt policy. They reported that low-debt firms were more profitable, generated greater cash flows, and maintained higher cash balances, thus enabled to pay higher dividends. Moreover, Byoun and Xu (2013) mentioned that low debt firms tend to pay dividends to reduce the cash under managerial control, thereby avoiding free cash flow problems. Furthermore, dividend-paying firms intentionally adopt low-debt policy to preserve FF and mitigate underinvestment problems (Dang, 2013).

Additionally, Maheshwari and Rao (2017) observed a positive relationship between dividend payouts and corporate cash holdings, suggesting that dividend-paying firms maintained high cash holdings to be committed for dividend payments to their investors. Another perspective was provided by Al-Najjar (2013), who explained that less profitable firms—incapable of raising fund from external resources—tend to hold more cash to strengthen their financial position and continue paying dividends in order to maintain their reputation in the market.

Thus, the second hypothesis is proposed as follows:

H2: There is a significant positive relationship between dividend policy and FF.

2.2.3. Growth Opportunities and Capital Structure

Existing research recognises the critical role of growth opportunities in financing decisions and maintaining FF. For instance, Fama and French (2002) and Frank and Goyal (2009) highlighted that firms with more investments have lower debt ratios. They explained that growth is likely to increase financial distress costs and can exacerbate debt-related agency problems between bondholders and shareholders, potentially resulting in underinvestment issues. However, Handoo and Sharma (2014) and Acaravci (2015) stated that growth opportunities have a significant positive impact on debt ratios, indicating that firms with high growth opportunities utilize more debt financing.

Regarding the relationship between cash holdings and growth opportunities, Opler et al. (1999), Ferreira and Vilela (2004), and Kim et al. (2011) noted a positive relationship between growth opportunities and cash levels. Firms with increasing

growth opportunities typically have better future investment opportunities, which is an indicator for them to hold more cash to be prepared to seize these opportunities when they arise (Kusnadi & Wei, 2011; Lin, 2007).

Thus, the third hypothesis is as follows:

H3: There is a significant positive relationship between growth opportunities and FF.

2.2.4. Capital Expenditures and Capital Structure

Few studies have examined the impact of capital expenditures (CapExp) on either debt levels or cash holdings. Yasmin and Rashid (2019) and Machokoto et al. (2021) explored CapExp as one of the determinants of low-debt policy. They reported a negative impact of CapExp on firms' adoption of low-debt policy in emerging markets. They explained that firms with high current capex were more inclined to use debt financing to meet their financial needs. According to their findings, especially large firms with the advantage of lower financial distress and bankruptcy costs could resort to debt to finance their investments.

From another perspective, Kusnadi and Wei (2011) and Maheshwari and Rao (2017) examined the effect of Capex on cash holdings. Maheshwari and Rao (2017) revealed that firms with high Capex were more likely to enhance debt capacity through efficient production, which increases earning capacity, thus reducing the reliance on cash holdings. However, Kusnadi and Wei (2011) observed that firms funded their current Capex by depleting internal funds.

Thus, the fourth hypothesis states:

H4: There is a significant negative relationship between Capex and FF.

2.2.5. Tangibility and Capital Structure

Asset tangibility, as a determinants of capital structure, is expected to provide debt capacity and collateral value to creditors (Handoo & Sharma, 2014; Alipour et al., 2015). However, prior literature presents mixed results. Frank and Goyal (2009), Öztekin (2015), Handoo and Sharma, (2014), and Alipour et al. (2015) observed a positive association between asset tangibility and long-term debt ratio, implying that firms tend to finance their fixed assets with long-term debt.

On the contrary, Titman and Wessels (1988) reported a negative association between tangibility and debt levels. They claimed that mangers' ability to exercise privileges exceeding the optimal level may lead to an inverse relationship between collateralizable assets and debt levels. Another explanation of this negative relationship is that firms operating in unique industries that produce durable products and employ more specialized labour are imposed to higher bankruptcy and financial distress costs; therefore, they should maintain less debt in their capital structure (Titman, 1984).

Thus, the fifth hypothesis is that:

H5: There is a significant negative relationship between tangibility and FF.

2.2.6. Cash Flows and Capital Structure

Ozkan and Ozkan (2004), Al-Najjar (2013), Maheshwari and Rao (2017) examined the relationship between cash flows and cash holdings, and reported that firms with high cash flow tend to hold larger amounts of cash. Such firms prefer internal financing to external financing in order to pursue valuable investment opportunities when they arise (Ozkan & Ozkan, 2004; Maheshwari & Rao, 2017). This perspective aligns with Minton and Schrand's (1999) research, which indicated that firms with high cash flow volatility often forgo growth opportunities. They argued that cash flow shortfalls in an imperfect capital market increase firms' costs of accessing external capital, which eventually creates a negative impact on the level of investment.

Similarly, the positive relationship between cash flows and firms' cash levels emphasizes the positive impact of cash flows on firms pursuing low-debt policy (Minton & Wruck, 2001; Kangarlouei et al., 2014; Bigelli et al., 2014). Yasmin and Rashid (2019) highlighted that the likelihood of firms adopting a low-debt policy rises significantly with increasing cash flows, enabling them to preserve their spare debt capacity for use when necessary to seize future investment opportunities.

Thus, the sixth hypothesis is that:

H6: There is a significant positive relationship between cash flows and FF.

2.2.7. Profitability and Capital Structure

Regarding the impact of profitability on firms' debt levels, Sheikh and Wang (2011), Handoo and Sharma (2014), Acaravci (2015), Alipour et al. (2015) reported a negative relationship. They explained that this negative relationship reflects firms' adherence to the financing pattern of the pecking order theory, suggesting that firms prefer internal financing to external financing when funding their projects. This is probably attributed to the focus on emerging countries such as Turkey, Iran, India, and Pakistan. Supporting this view, Sheikh and Wang (2011) stated that the high cost of raising funds compelled firms in emerging markets to rely on internal financing due to relatively limited equity markets.

Regarding the impact of profitability on firms' cash levels, Dittmar et al. (2003) and Al-Najjar (2013) observed a positive relationship, confirming that profitable firms are more capable of accumulating cash holdings and consequently paying dividends.

Thus, the seventh hypothesis is that:

H7: There is a significant positive relationship between profitability and FF.

Based on the above-mentioned review and considering that most of these studies examined the determinants of FF separately and in developed economies, this paper aims to investigate these determinants collectively in an emerging economy, especially the Egyptian market.

3. Methodology

3.1. Sample and Data Collection

The research population included all companies listed on the Egyptian Stock Exchange (EGX) during the period 2007- 2020. The researchers focused on the highest-performing and most active firms listed on the EGX, specifically those listed in the EGX 100, which constituted the initial study sample. Financial institutions were excluded due to the uniqueness of their capital structure. Moreover, firms with missing data and those with less than two years of data observations were also excluded to comply with the panel regression requirements (Allam, 2018; Stock & Watson, 2011). As a result, the final sample comprised 736 firm-year observations for (CF) and 741 firm-year observations for (DF), representing 75 non-financial listed firms.

Secondary data were used to identify FF. Financial statements were obtained from Thomson Reuters Eikon database, while data required to calculate market-to-book (MTB) ratio were obtained from Egypt for Information Dissemination (EGID).

3.2. Study Variables

3.2.1. Dependent Variable

The two dimensions of FF, namely DF and CF, are utilized in this study. Mahmood et al. (2021) measured corporate DF as a dummy variable equal to 1 if a firm's debt ratio was below the industry median ratio; however, this study used the sample median instead, following Panda et al. (2023). Thus, the DF was measured as a dummy variable equal to 1 if a firm's debt ratio was below the sample median, and 0 otherwise. Following Panda et al. (2023), CF was measured as a dummy variable equal to 1 if a firm's cash holdings ratio was above the sample median, and 0 otherwise.

3.2.2. Independent Variables

The firm-specific determinants employed in this study are as follows: firm size, measured as the natural log of total assets; cash flow ratio, which is the ratio of operating cash flow to total assets; profitability ratio, measured by the ratio of net profit to total assets; growth opportunities, measured by the MTB; Capex ratio, which is the ratio of capital expenditures to total assets; tangibility, measured by the ratio of net fixed assets to total assets; and finally, dividends payout ratio, representing the ratio of dividends paid out to total assets. The measurement of the variables are presented in Table I.

Table I *Measurement of Variables*

Variables	Calculation	Reference
Dependent Variables		
Cash Flexibility	Dummy variable that takes the value of 1 when a firm's corporate cash holdings [1] ratio (cash & short-term investments / total assets) is higher than the sample median, and 0 otherwise.	Panda et al. (2023)
Debt Flexibility	Dummy variable that takes the value of 1 when firm's total debt ratio (total debt / total assets) is lower than the sample median, and 0 otherwise.	Mahmood et al. (2021); Panda et al. (2023)
Independent Variables		
Size	Natural logarithm of total assets.	Frank & Goyal (2009); Acaravci (2015); Alipour et al. (2015)
Cash Flows	Ratio of operating cash flow to total assets.	Lin (2007); Maheshwari & Rao (2017); Yasmin & Rashid (2019)
Profitability	Net profits to total assets.	Sheikh & Wang (2011); Handoo & Sharma (2014); Acaravci (2015)
Growth Opportunity	Ratio of (book value of total assets - book value of equity + market value of equity), (the closing share price is multiplied by the number of outstanding shares) to book the value of total assets.	Adam & Goyal (2008), Frank & Goyal (2009); Maheshwari & Rao (2017)
Capex	Ratio of capital expenditures (annual change in net fixed assets + depreciation) to total assets.	Kusnadi & Wei (2011); Maheshwari & Rao (2017); Yasmin & Rashid (2019)
Tangibility	Ratio of net fixed assets to total assets.	Frank & Goyal (2009); Handoo & Sharma (2014); Alipour et al. (2015)
Dividends	Ratio of dividend payout to total assets.	Dang (2013); Bigelli et al. (2014); Yasmin & Rashid (2019)

3.3. Research Regression Models

Two regression models were utilized to identify the firm-specific determinants of firms' FF in terms of CF and DF. These two models are as follows:

$$Cash\ Flexibility_{i,t} = \alpha + \beta 1\ Size_{i,t} + \beta 2\ Cash\ Flows_{i,t} + \beta 3\ Profitability_{i,t} + \beta 4\ Growth\ Opportunity_{i,t} + \beta 5\ Capital\ Expenditures_{i,t} + \beta 6\ Tangibility_{i,t} + \beta 7\ Dividends_{i,t} + Error_{i,t} \quad (1)$$

$$Debt\ Flexibility_{i,t} = \alpha + \beta 1\ Size_{i,t} + \beta 2\ Cash\ Flows_{i,t} + \beta 3\ Profitability_{i,t} + \beta 4\ Growth\ Opportunity_{i,t} + \beta 5\ Capital\ Expenditures_{i,t} + \beta 6\ Tangibility_{i,t} + \beta 7\ Dividends_{i,t} + Error_{i,t} \quad (2)$$

This study followed Mahmood et al. (2021) by employing an unbalanced panel logistic regression model. Logistic regression is designed for predicting and elucidating variables that can only take two distinct categories (0 or 1), instead of variables that depend on metric measures (Hair et al., 1998). From a practical standpoint, logistic regression is often favoured for two main reasons. First, it differs from discriminant analysis as it does not require strict adherence to the assumptions of multivariate

normality and equal variance-covariance matrices across groups, increasing its applicability across various contexts. Second, even when these assumptions are satisfied, numerous researchers prefer logistic regression to other methods as it resembles multiple regression. It also offers clear statistical tests, similar methods for managing both metric and non-metric variables, and a broad selection of diagnostic tools (Hair et al., 1998).

4. Analysis

4.1. Descriptive Statistics

Table 2 presents a summary of the descriptive statistics for the variables used in this study.

Table 2 *Descriptive Statistics*

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
Cash Holdings (%)	12.84	8.29	59.25	0	0.131473
Total Debt (%)	15.04	9.42	71.26	0	0.165125
Cash Flexibility (0 or 1)	0.5	0.5	1	0	0.500284
Debt Flexibility (0 or 1)	0.5	0.5	1	0	0.500284
Size (000 le)	5770000	1630000	118000000	19458.8	12200000
Cash Flows (%)	4.04	3.29	40.31	-38.05	0.106646
Profitability (%)	1.39	0.96	14.46	-10.18	0.032457
Growth Opportunity	1.574636	1.159753	7.509225	0.270689	1.097547
Capital Expenditures (%)	2.89	1.05	21.46	0	0.040627
Tangibility (%)	31.70	30.53	99.67	0	0.24893
Dividends (%)	3.4	0.51	36.58	0	0.062956

The reported statistics demonstrate that on average, the Egyptian firms hold approximately 13% of their assets as cash holdings. The mean value of the total debt ratio is 15% and the median is 9%, reflecting that the sample firms do not rely heavily on debt. Moreover, it is noteworthy that large-sized companies predominate among the Egyptian listed firms, where the mean firm size is approximately L.E 5.8 billion. The average cash flow ratio is 4%, ranging from -0.38 (minimum) to 0.40 (maximum), while the average profitability ratio is nearly 1.4%, ranging from -0.10 (minimum) to 0.14 (maximum), demonstrating a wide distribution for both ratios. Growth opportunities have a mean value of 1.6, indicating that the average market value of the sample firms is 1.6 times their book value. This suggests significant investment opportunities in the Egyptian market. The tangibility ratio has an average value of 32%,

illustrating that fixed assets of Egyptian listed firms represent approximately 32% of their total assets on average.

4.2. Correlation Analysis

Pearson's correlation matrix[2] was employed to assess multicollinearity among the study variables. The results revealed that the strongest positive correlation occurred between profitability and dividends, with a correlation coefficient of 0.549. This 55% correlation is less than 90%, reflecting the absence of multicollinearity issues among the independent variables (Tabachnick & Fidell, 2007). Additionally, the variance inflation factor (VIF)[2] analysis further confirmed these findings, with the highest VIF value below 2 for both models, indicating no multicollinearity (Hair et al., 2013).

4.3. Results and Discussion

Table 3 presents the results of the logit regression analysis of both the CF and DF models. The reported results demonstrate that the cash flow ratio has a significant positive impact on CF; thus, firms with higher cash flows are inclined to accumulate higher cash levels. This result aligns with the conclusions of Ozkan and Ozkan (2004) and Maheshwari and Rao (2017), who identified a positive relationship between cash flows and CF. Additionally, a significant positive relationship is observed between growth opportunity and CF. This implies that firms with high growth opportunities, as measured by the MTB ratio, tend to sustain elevated cash levels. This finding is consistent with Opler et al. (1999), Ferreira and Vilela (2004), Lin (2007), Kim et al. (2011), and Kusnadi and Wei (2011), who reported a positive influence of growth opportunities on the cash holdings levels, thus influencing CF.

Table 3 *Determinants of Cash Flexibility and Debt Flexibility*

Model	Total Sample (cash flexibility)	Total Sample (debt flexibility)
Constant	0.721	10.034***
Size	-0.110	-1.025***
Cash Flows	2.726***	2.880**
Profitability	5.134	6.596*
Growth Opportunity	0.366***	-0.019
Capital Expenditures	-3.701*	-5.489**
Tangibility	-1.923***	-2.940***
Dividends	13.689***	8.783***
Observations	736	741
McFadden R-squared	0.163	0.224
LR-Statistic	166.280***	229.815***
***, **, and * reflect significance at 0.01, 0.05, and 0.10 levels respectively.		

Conversely, Capex has a significant negative influence on CF. Firms with larger Capex are less likely to maintain substantial cash balance. This may be attributed to investment in fixed assets that serve as collateral, which would encourage firms to rely

more on debt (Yasmin & Rashid, 2019; Machokoto et al., 2021) than on cash. Thus, these firms are less likely to be cash flexible. Similarly, tangibility has a significant negative association with CF. Therefore, firms with higher tangibility tend to hold lower cash balances.

The results reveal a significant positive relationship between dividend payouts and CF. Dividend-paying firms are significantly more inclined towards preserving high cash levels to be capable of meeting their dividend payments to their shareholders. This finding is consistent with Al-Najjar (2013) and Maheshwari and Rao (2017). Notably, the results demonstrate that cash-holding is not influenced by either firm's profitability or size. This implies that a firm's decision to hold cash is independent of its profitability and size.

With respect to the determinants of DF, the results in Table 3 show that large firms are less likely to reduce their debt levels, as indicated by the significant negative relationship between firm size and a firm's adoption of low debt policy. This is consistent with the findings of Machokoto et al. (2021), Yasmin and Rashid (2019), Minton and Wruck (2001), Iona et al. (2004), and Bigelli et al. (2014), who concluded that large firms lack incentive to pursue a low-debt policy due to their easier access to external financing. Regarding the impact of cash flows and profitability on DF, the results revealed a significant positive relationship of both variables with the adoption of a low-debt policy. The significant positive relationship between cash flows and DF aligns with Milton and Wruck (2001), Bigelli et al. (2014), and Kangarlouei et al. (2014). Moreover, the significant positive relationship between profitability and DF is consistent with the findings of Acaravci (2015), Alipour et al. (2015), Handoo and Sharma (2014), and Sheik and Wang (2011), who established that profitability contributed to firms' maintenance of low debt levels.

Capex shows a significant negative association with DF, since firms with higher Capex are more likely to rely on debt as a source for financing their expenditures. This finding aligns with Yasmin and Rashid (2019) and Machokoto et al. (2021), who reported a negative impact of CapExp on low-debt policy. Moreover, tangibility appears to have a significant negative relationship with low-debt policy, indicating that firms with more tangible assets tend to increase their borrowing capacity, which might be due to the collateral nature of these assets. Among the studies that are consistent with this result are Frank and Goyal (2009), Oztekin (2015), and Alipour et al. (2015), who observed a positive association between tangibility and debt levels.

The significant positive impact of dividends on debt capacity implies that dividend-paying firms have less incentive to utilize their debt capacity, thereby establishing their DF. These results are consistent with the findings of Strebulaev and Yang (2013), Byoun and Xu (2013), Dang (2013), and Yasmin and Rashid (2019).

5. Conclusion

This study examined the determinants of FF among the Egyptian firms. Several firm-specific characteristics, including size, cash flow, profitability, growth

opportunities, Capex, tangibility, and dividends were used. Prior literature did not provide a well-defined empirical measure of FF; consequently, this paper aimed at employing the most utilized measures of FF.

The results demonstrated a significant negative relationship between firm size and DF. Since large firms are more diversified and profitable, with stable cashflows and less volatile earnings, they benefit from lower external financing costs than smaller firms, reducing their likelihood of pursuing DF (Rajan & Zingales, 1995; Deloof & Overfelt, 2008; Frank & Goyal, 2009; Öztekin, 2015). However, firm size did not exhibit a significant impact on CF.

The significant positive impact of cash flows on both CF and DF implies that Egyptian firms with high cash flows tend to rely more on CF, and thus can attain low debt policy, which consequently enhances their FF. Moreover, the observed positive relationship between cash flows and DF complemented the former results. This contends that Egyptian firms with high cash flows have precautionary motive to hold more cash and preserve their debt capacity to seize promising projects and avoid the costs of foregone opportunities.

The relationship between profitability and DF is significantly positive, reflecting profitable firms' high tendency to seek DF to preserve their debt capacity for potential future capital needs. However, the relationship between profitability and CF was reported to be insignificant.

The study findings revealed a significant positive relationship between Egyptian firms' growth opportunities and their CF. This suggests that Egyptian firms with high growth opportunities are motivated to hold more cash in order to avoid missing promising investments and mitigate underinvestment problems.

Regarding the impact of Capex, the analysis indicated a significant negative effect on both CF and DF. This likely means that with an increase in the Egyptian firms' Capex, referring to their investments in fixed assets, they consume their debt and cash capacity, reducing the ability to maintain low debt levels or high cash holdings.

The current study documented the negative relationship of tangibility with CF and DF. This finding suggests that Egyptian firms with high tangibility are less inclined to adopt low-debt policy and preserve high cash holdings, as they can finance their fixed assets through reliance on debt, contradicting with the concept of DF, with respect to preserving debt capacity. Such an approach is due to the fact that fixed assets, given their identifiable values, possess debt capacity and can be presented as collateral to creditors to raise additional debt (Sheikh & Wang, 2011; Alipur et al., 2015; Acaravci, 2015). Therefore, these firms are less likely to establish their DF and CF.

The results showed a significant positive relationship between dividends and both measures of FF. The positive relationship between profitability and cash flows (as sources of internal funds) and the adoption of CF and DF clarifies the positive association between paying dividends and FF. Egyptian firms that prioritize preserving their debt capacity and maintaining low debt levels tend to be profitable and capable of generating high cash flows. This practice enhances their ability to pay dividends,

reduces the cash held by managers, ensures commitment for dividend payments to their investors (Byoun & Xu, 2013), and mitigates the possible agency problems of maintaining high cash levels. Therefore, dividend-paying firms that follow a policy of high cash holdings and low debt are able to preserve their flexibility to avoid underinvestment problems (Dang, 2013).

Accordingly, after exploring the key firm-specific factors that determine FF among Egyptian firms, stakeholders interested in the research results may benefit from this knowledge. For example, financial managers should deliberately consider these factors when establishing FF, since this may lead to greater growth and an enhanced ability to capture profitable investments, ultimately contributing to increasing firm value. By understanding how FF operates in Egyptian firms, financial managers should prioritize factors such as profitability and cash flows, as both contribute to firms' preservation of their debt capacity as well as increasing their cash holdings to facilitate raising funds at a low cost for future capital needs. Furthermore, growth opportunities play a significant role in strengthening FF in relation to CF.

Financial institutions can provide facilities and ease access to funding for assisting financially flexible firms to finance their promising projects. These firms are distinguished from financially constrained ones by their ability to preserve their debt capacity for future capital needs, enabling FF to facilitate ease of access to additional debt when it is required to raise funds for promising investments. Moreover, financial institutions can streamline their processes to offer services such as loans, and can design appropriate products, such as low fees and advantageous loan rates that are convenient for firms pursuing FF.

Investors may prefer investing in high-growth firms that maintain their FF to capitalize on their growth opportunities. Since growth opportunities reflect the market value of financially flexible firms and the results show a positive impact of growth opportunities on financially flexible firms, investors can build their wealth based on the capital gains earned from these high-growth, financially flexible firms.

This study was limited to the Egyptian market, specifically the EGX100 index, as one of emerging economies. Furthermore, the determinants of FF were limited to firm-specific factors, excluding macroeconomic factors. Another limitation is the dimensions of FF, which focused solely on excess cash levels and low debt levels, without incorporating other measures of debt, cash, or equity issuances.

Thus, future studies can be conducted to address these limitations by examining the impact of country-specific factors in addition to firm-specific factors on FF. Further research could explore the determinants of FF in the MENA region, including the role of FF in enhancing the performance and investment levels of Egyptian companies or firms across the MENA region.

Notes

1- According to the Thomson Reuters database, cash and short-term investments include cash, cash equivalents, and short-term investments.

2- Tables of Pearson's correlation matrix and VIF are not presented in the text, but can be provided upon request.

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