Determinants of Capital Structure in Egypt: A Behavioral Approach

محددات هيكل التمويل في مصر: مدخل سلوكي

A Thesis Submitted in Partial Fulfilment of the Requirements for Doctor of Philosophy Degree in Business Administration

By

Nebal Madgi Kamel Mourad

Under the Supervision of

Prof. Mahmoud Sobh
Professor of Finance & Financial Management

Prof. Nader Alber
Professor of Finance & Financial Management

2017
Acknowledgments

Looking back, I am very grateful for all I have accomplished throughout these years in the PhD program. It has certainly shaped me as a person and led me to where I am now.

My heartfelt gratitude and appreciation goes to my dissertation committee. To my supervisor, Prof. Dr. Mahmoud Sobh, I express my thanks for mentoring and encouraging me from the very first year, and guiding my development. Thank you for all the knowledge you have instilled in me; I could not have imagined having a better supervisor.

My sincere gratitude is due to Prof. Dr. Nader Alber, whose expertise added considerably to my work, and whose continuous support, encouragement, guidance and patience are very much appreciated.

I am also grateful to Prof. Dr. Tarek El Domiaty for participating in the examination committee of this dissertation. Hopefully this thesis meets his expectations.

Furthermore, I would like to thank Prof. Dr. Hussein Eissa for participating in the examination committee of this dissertation, and for his valuable time.

My sincere thanks also go to my family for continuous support. Special thanks for my dad, who has always believed in me and supported all my decisions. I thank my mom for her never-ending love, support, and encouragement.
# Table of Contents

Chapter One: Research Framework ........................................................................................................ 6

1.1 Introduction ...................................................................................................................................... 7
1.2 Capital Structure in Egypt ................................................................................................................ 11
1.3 Research Problem ........................................................................................................................... 12
1.4 Hypotheses ....................................................................................................................................... 13
1.5 Research Importance ....................................................................................................................... 13
1.6 Research Objectives ......................................................................................................................... 14
1.7 Data and Methodology ..................................................................................................................... 14
1.8 A Proxy for Overconfidence ............................................................................................................ 15
1.9 A Proxy for Optimism ....................................................................................................................... 15
1.10 The Research Model ....................................................................................................................... 16
1.11 Variable Definitions ......................................................................................................................... 17
1.12 Data Source and Sample .................................................................................................................. 19

Chapter Two: Literature Review ............................................................................................................. 20

2.1 Behavioural Corporate Finance ....................................................................................................... 21
2.2 Managerial Traits ............................................................................................................................. 23
2.3 Optimism and Overconfidence ......................................................................................................... 23
2.4 Optimism, Overconfidence and Capital Structure ........................................................................ 23
2.5 Determinants of Capital Structure .................................................................................................. 27
2.6 Firm Specific Variables ..................................................................................................................... 28
2.7 Country Specific ................................................................................................................................. 29
2.8 Determinants of Capital Structure in Egypt .................................................................................... 30
2.9 Overconfidence and its Effect on Managerial Decision ................................................................. 32
2.10 Optimism and Its Effect on Managerial Decisions ......................................................................... 37

Chapter Three: Research Methodology and Conceptual Framework ..................................................... 40

3.1 Introduction ...................................................................................................................................... 41
3.2 Procedures and Statistical Analysis Techniques ................................................................................ 42
3.2.1 Data .........................................................................................................................43
3.2.2 Dependent Variables ..............................................................................................44
3.2.3 Independent Variables .........................................................................................44
Chapter Four: Statistical Analysis and its Results ................................................................49
  4.1 Statistical Tests ...........................................................................................................49
    4.1.1 Descriptive statistics ............................................................................................49
    4.1.2 Linearity versus Nonlinearity ................................................................................51
    4.1.3 Normality ...............................................................................................................52
    4.1.4 Johansen Cointegration Test ...................................................................................53
    4.1.5 Structural Equation Model (SEM) ........................................................................58
    4.1.6 Granger Causality ...............................................................................................68
Chapter Five: Robustness Check (2015-2016) .................................................................73
Chapter Six: Conclusion and recommendations ...............................................................92
  6.1 Conclusion ................................................................................................................93
  6.2 Recommendations ....................................................................................................95
References ......................................................................................................................96
### List of Figures

<table>
<thead>
<tr>
<th>Figure #</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>Comparison of leverage ratio (Total Liabilities / Total Assets)</td>
<td>9</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Comparison of debt-equity ratio (Total liabilities / Total equity)</td>
<td>10</td>
</tr>
<tr>
<td>Figure 3</td>
<td>Research model</td>
<td>14</td>
</tr>
<tr>
<td>Figure 4</td>
<td>The adopted model</td>
<td>43</td>
</tr>
<tr>
<td>Table #</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Table 1</td>
<td>Descriptive statistics for Firm specific variables</td>
<td>49</td>
</tr>
<tr>
<td>Table 2</td>
<td>Descriptive statistics for Country specific variables</td>
<td>50</td>
</tr>
<tr>
<td>Table 3</td>
<td>Descriptive statistics for capital structure variables</td>
<td>50</td>
</tr>
<tr>
<td>Table 4</td>
<td>The results for Johansen Cointegration Test between managerial optimism and firm-specific variables</td>
<td>53</td>
</tr>
<tr>
<td>Table 5</td>
<td>The results for Johansen Cointegration Test between managerial optimism and macroeconomic variables</td>
<td>55</td>
</tr>
<tr>
<td>Table 6</td>
<td>The results for Johansen Cointegration Test between managerial overconfidence and firm-specific variables</td>
<td>56</td>
</tr>
<tr>
<td>Table 7</td>
<td>The results for Johansen Cointegration Test between managerial overconfidence and macroeconomic variables</td>
<td>57</td>
</tr>
<tr>
<td>Table 8</td>
<td>Firm-specific determinants of managerial behaviour</td>
<td>59</td>
</tr>
<tr>
<td>Table 9</td>
<td>Country-specific determinants of managerial behaviour</td>
<td>65</td>
</tr>
<tr>
<td>Table 10</td>
<td>Overconfidence determinants of capital structure (firm specific)</td>
<td>66</td>
</tr>
<tr>
<td>Table 11</td>
<td>Optimistic determinants of capital structure (firm specific)</td>
<td>67</td>
</tr>
<tr>
<td>Table 12</td>
<td>Overconfidence determinants of capital structure (country specific)</td>
<td>68</td>
</tr>
<tr>
<td>Table 13</td>
<td>Optimistic determinants of capital structure (country specific)</td>
<td>69</td>
</tr>
<tr>
<td>Table 14</td>
<td>The results of Granger causality between debt/assets ratio and managerial optimism</td>
<td>70</td>
</tr>
<tr>
<td>Table 15</td>
<td>The results of Granger causality between debt/assets ratio and managerial overconfidence</td>
<td>71</td>
</tr>
<tr>
<td>Table 16</td>
<td>The results of Granger causality between debt/equity ratio and managerial optimism</td>
<td>72</td>
</tr>
<tr>
<td>Table 17</td>
<td>The results of Granger causality between debt/equity ratio and managerial overconfidence</td>
<td>73</td>
</tr>
<tr>
<td>Table 18</td>
<td>Descriptive statistics for Firm specific variables</td>
<td>75</td>
</tr>
<tr>
<td>Table 19</td>
<td>Descriptive statistics for Country specific variables</td>
<td>76</td>
</tr>
<tr>
<td>Table 20</td>
<td>Descriptive statistics for capital structure variables</td>
<td>76</td>
</tr>
<tr>
<td>Table 21</td>
<td>Descriptive statistics for Behavioural variables</td>
<td>77</td>
</tr>
</tbody>
</table>
The results for Johansen Cointegration Test between managerial optimism and firm-specific variables

Table 22

The results for Johansen Cointegration Test between managerial optimism and macroeconomic variables

Table 23

The results for Johansen Cointegration Test between managerial overconfidence and firm-specific variables

Table 24

The results for Johansen Cointegration Test between managerial overconfidence and macroeconomic variables

Table 25

Firm-specific determinants of managerial behaviour

Table 26

country-specific determinants of managerial behaviour

Table 27

Overconfidence determinates of capital structure (firm specific)

Table 28

Optimistic determinates of capital structure (firm specific)

Table 29

Overconfidence determinates of capital structure (country specific)

Table 30

Optimistic determinates of capital structure (country specific)

Table 31

The results of Granger causality between debt/assets ratio and managerial optimism

Table 32

The results of Granger causality between debt/assets ratio and managerial overconfidence

Table 33

The results of Granger causality between debt/equity ratio and managerial optimism

Table 34

The results of Granger causality between debt/equity ratio and managerial overconfidence

Table 35
Abstract

This thesis examines the determinants of capital structure of firms in Egypt introducing a behavioural approach which received little attention in the empirical study for corporate finance literature. The researcher investigates the hypothesis that emerged from recently developed theories: firms that are managed by biased managers (optimistic and/or overconfident) will choose more debt financing structures than others. The researcher proposes different proxies for managerial optimism/overconfidence, mainly based on managers sales/return forecast and forecasted earnings per share. The researcher uses a sample of Egyptian companies listed in the Egyptian stock market in the years 2006 to 2014 and employs robust data estimation procedure to account for false correlation issues. The empirical analysis used strongly suggests that managerial behaviour/traits have a significant effect on the capital structure and should be taken into consideration as one of the determinants of firm’s capital structure. Specifically the researcher reports a strong positive relation between managerial optimism and leverage ratio. In addition, it confirms that Egyptian companies’ capital structure is mainly following the pecking order theory. The researcher’s results suggest that behavioural approaches (financial managers’ characteristics mainly those related to optimism or overconfidence) can offer relevant contributions to the understanding of corporate decision making.
Chapter One

*Research Framework*

- Introduction
- Capital Structure in Egypt
- Research Problem
- Hypothesis
- Research Importance /Significance
- Research Objectives
- Data and Methodology
- Overconfidence Proxy
- Optimism Proxy
- Research Model
- Variables Definition
- Data Source and Sample
1.1 Introduction

Capital structure in developed and developing countries is one of the most interesting topics for finance researchers. Theories of the capital structure were designed to help shareholders and managers reach the optimal results concerning the mix of debt/equity to finance their company with the minimum cost of capital that add value to the firm.

Modigliani and Miller (1958) constructed the first capital structure model (MM theory) that assumes that there is no influence on the cost of neither capital nor the firm’s value. The theory’s assumptions were: no corporate income tax, business risk is constant; no growth in cash flows, transaction costs is zero, perfect capital market conditions and no bankruptcy costs. These assumptions were considered irrelevant to most researchers (Modigliani& Miller, 1958). Both scholars then introduced the corporate income tax to their model and kept other factors constant, the result reached the minimum cost of capital, and the firm’s capital structure should be financed entirely with debt. They considered neither bankruptcy nor financial distress cost (Modigliani & Miller, 1963).

In 1976, another theory was introduced by Jensen and Meckling considering the agency cost problem which is the Free Cash Flow Theory. The agency cost arises when the interests / benefits of shareholders contradict with the interests / benefits of the firm’s management. The theory implies that to reduce the agency cost, the firm should introduce more debt to its capital structure. They argued that the use of financial advantage will reduce the need for external equity, therefore; the managerial ownership will not change as well, using more debt will urge managerial levels to implement disciplining mechanism, making efficient investment decisions due to the lack of funds (payments of contractual interest payments). The drawback of this theory is that by increasing the usage of debt, the agency problem of debt increases (conflict between the debt holders and shareholders) as the debt holders will be more distrustful towards management’s investment and financing decisions. The debt holders to protect themselves against, such actions restrictive covenants were considered to be one of the solutions. As a result, restrictive covenants prevent the firm from making investments, financing or dividends decisions (Jensen& Meckling, 1976).
Signalling Theory of capital structure is when managers and officers of a firm make decisions concerning the capital structure to send a signal to the market and investors to realize the firm’s true value. This is due to the asymmetric information that was ignored by previous capital structure theories, where internal users (firm’s managers and officers) may have certain information which is not available to external users (investors) about future potential profits. Stephen Ross, the author, emphasized that undervalued firms should go for higher debt ratios in order to send a signal to the market showing that firm’s potential earnings are good, and that the firm can safely acquire a higher debt level. Investors will directly interpret that the firm’s managers have estimated future cash flows will be sufficient to avoid financial distress (Ross, 1977). The drawback of this theory is that sending false signals that could be dangerous such as poor/fair forecasts, firms will issue more debt and thus increase bankruptcy costs.

The asymmetric information existence cannot be ignored in capital structure theories. Shyam-Sunder and Myers (1999), introduced the Pecking Order Theory of Capital Structure, it assumes that the investment opportunities are recognized by managers not investors (asymmetric information assumption) and that the main goal of managers is wealth maximization of existing shareholders (no agency cost). They concluded that optimal capital structure is changed due to the internal generated fund and acceptable investment opportunities. In other words, when investment opportunities are greater than internal generated fund, firms issue more debt securities and, therefore; have higher debt ratio. On the contrary, highly profitable firms with limited investment opportunities will have lower debt ratios. This made firms go for financial slack (having cash or near cash and/or spare debt capacity) available to take up attractive opportunities as they appear. It is obvious that the pecking order theory emphasizes that firms use preference hierarchy while financing their capital structure as follows: firstly internal financing (retained earnings), secondly external financing (issuing debt, preferred stock and lastly common stocks) and this is mainly due to the floating costs of a new security issue; information asymmetry, and maintaining dividend pay-out ratio. Under the pecking order theory three main concepts were explained: firstly that there is a negative relationship between profitability and debt ratio, secondly the issuance of new stocks has negative impact on investors and finally it explains why firms hold large amounts of cash and marketable securities. As a result, the pecking order theory based on informational asymmetry suggests that firms do not have leverage targets or the best capital structure (Shyam-Sunder & Myers, 1999). The theory
was then criticized for not expressing why managers should pay attention to new stock whether it’s over or undervalued, in addition it does not explain why financing plans are developed to avoid the financing costs of manager’s advanced information (Myers, 2001). It also fails to recognize the added informational asymmetry costs that are issued from all other stakeholders of the firm. This makes the theory to be empirically motivated, but lacking the conviction of normal theoretical justification (Rademark & Severin, 2006).

Fama and French (2002) introduced the Tax Shield and Bankruptcy Cost- Trade Off Theory. This theory implies that the optimal level of leverage that maximizes the firm’s value can be reached through balancing the benefits of debt (tax shield benefit) to the cost of debt (bankruptcy cost and financial distress). They stated that the optimal capital structure can be determined when the benefit of tax shield balance exactly the cost of bankruptcy (Fama & French, 2002). This theory was criticized because they didn’t show the link between high profitability and low debt ratios. In addition, the theory predicts leverage ratios in excess of those commonly observed. Many studies rejected the invalid hypothesis that corporations attempt to achieve a target leverage. In particular, these authors find that firms do not respond to increases in profitability and/or common stock prices by issuing more debt (Henessy, 2003).

Another new theory was successfully presented by Baker & Wurgler (2002), exploring the debt/equity choice. The Managerial Opportunism Theory is the practice of issuing shares at high prices and repurchasing them at low prices; this is referred to as equity market timing. The authors’ theory was supported by several studies stating that “firms tend to issue equity instead of debt when market value is high, cost of equity is low, and finally when investors are too eager about earnings prospects.” (Baker& Wurgler, 2002). Also they observed that, two thirds of CFO argued that stock price fluctuations affect their decisions whether they should issue equity or not (Graham & Harvey, 2001). The theory proves that managers attempt to issue equity when share values are high and to issue debt when share prices are low. Baker & Wurgler pointed out that firms with low leverage are those raised capital when their stock prices were high, whereas firms with high leverage raised fund when their valuation is low (Smart et al, 2004).

It is clear from the above mentioned theories that the managers’ behaviour affects their decision (whether financing the firm externally or internally). It depends on whether the manager is optimistic and/or overconfident; where optimistic manger expects the occurrence of favourable
events in the future, and at the same time overlooks the probability that unfavourable events might occur. Overconfident manager, on the other hand, overestimates the quality and precision of information (signals about future possibilities) available to the individual or, in the same line, while underestimates the instability of processes involving uncertainty. Overconfidence can make one think that he is more competent and skilled than others or, that he is “above average”. In the model offered by Heaton (2002), optimistic managers believe that the projects available to their firms are better (in terms of expected return) than they actually are. Therefore, they think that the securities issued by the firm, whether bonds or stocks, are systematically undervalued by outside investors (the model assumes efficient capital markets). By nature, stocks are the securities most subject to the perceived undervaluation. Consequently, the firm will prefer to fund its investment projects through internally generated resources, and secondly, by issuing debt securities, keeping the issue new stocks as a last resort.

This interprets why managers’ decisions differ from time to time. The firm’s capital structure decisions are affected by the investment opportunity, size of the firm, cash flow available, the profitability, time market effect, growth rate, and others (determinates of capital structure). In addition to these determinants, behavioural concern for managers should be considered as well as the external factors.

In addition, the research will be focusing on the conflict that may arise from the static trade off theory and the pecking order theory; simply the static trade off theory implies that the firms have target debt ratio and try to reach this target while the pecking order theory argues that due to asymmetric information firms adapt a hierarchal order of financing preferences so that internal financing is preferred over external financing. It was found that the issuing or repurchasing process depends on the managers’ degree of optimism.

Behavioural determinants imply that the repurchase or issuance for firm’s debt decisions - whether to choose between the pecking order theory or trade off theory- depend on managers’ degree of optimism.
1.2 Capital Structure in Egypt

In Egypt, studies show that the capital structure followed by the Egyptian firms is consistent with the modified pecking order theory. The researcher made a simple comparison between the financial leverage and the debt to equity ratio of five randomly selected Egyptian companies, throughout the last five years, to observe the trend which the Egyptian companies use for funding.

The following was observed:

Figure (1) Comparison of leverage ratio (Total Liabilities / Total Assets)
The above figures show that capital structure varies from one company to another, even in same industry- as in Etisalat and Mobinil – as it was observed that Mobinil is essentially financing the company through debt while Etisilat is using more equity. This confirms that deciding on the debt to equity mix depends on other factor beside the conventional determinates of capital structure namely, the managerial traits/behaviour.

1.3 Research Problem

Till this point the researcher was addressing the capital structure theories and their application in the developed countries. Developing countries firms’ capital structure is considered a centre of attention for researchers. Most theories assume that the perfect market, the symmetric information assumption, is completely different in developing countries where imperfect markets and asymmetric information take place.

The main argument among all capital structure theories is the degree of using debt in firm’s capital structure.