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Dynamic Capital Structure and Country Level Corruption: Evidence from the MENA Region

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الاقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

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Dynamic Capital Structure and Country Level Corruption: Evidence from the MENA Region

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أقر بأن ما اشتملت عليه هذه الرسالة انما هي نتاج جهدي الخاص، باستثناء ما تمت الإشارة اليه حيثما ورد، وأن هذه الرسالة ككل أو أي جزء منها لم يقدم من قبل لنيل أي درجة علمية أو بحث علمي أو بحثي لدى أي مؤسسة تعليمية أو بحثية أخرى.

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Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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Abstract

This thesis aims to investigate the determinants of capital structure and to provide new evidence and shed the light on the impact of corruption on firm's financial decision in Middle East and North Africa region. Firm specific characteristics as well as country level determinants were examined to provide new evidence on the role of both levels of determinants of capital structure from this region. The two levels of variants were examined according to the three main theories; tradeoff, pecking order, and agency theory. Throughout the achievement of previous goals; this thesis examined the speed of adjustments by which the non-financial firms in MENA region adjust back to the target capital structure. The sample consists of 861 non-financial firms in the period of 2005-2018. The results show that the financial decision is driven by both firm and country specific factors. The results reveal that profitable firm and firm with higher growth opportunity uses less debt to finance its assets. While a positive relationship between tangibility and size, from one side, and leverage ratio, from the other, is observed. For country level determinants GDP and inflation are found to positively affect the firm's leverage on long run while corruption as a focal determinant has negative impact on firm leverage. Because the Corruption Perception Index (CPI) – an annual index on a scale of 0 to 100 with higher values indicating

lower levels of corruption. Showes a positive relation but negative impact. Negative impact means the higher the corruption level in a country; the lower level of leverage used by firms as source of financing. The results also show that firms place a target capital structure at which they adjust gradually. However, slow speed of adjustment was recognized when using book leverage as proxy for capital structure. On the other hand speed of adjustment increases when the market leverage is used.

It can be concluded that trade-off, agency and pecking order theories are all explain the capital structure decision of non financial firms. Furthermore, non-financial firms in MENA region use mix of internal and external resources of financing. In addition firm and country level independent variables appear to contribute to adustment towred target capital and corruption is one of these variables.

The study recommend for further reseearch on MENA region using more detailes in mesuring proxies for capital structure and firms leverage. In addition to consider the development of financial markets when explaining the capital structure of the MENA region. And to add more macroeconomic factors as determinants of capital structure.

Chapter One

Intoduction

1.1 Introduction:

Several studies in the capital structure field began with capital structure irrelevance theory (Modigliani & Miller, 1958). This theory is considered the cornerstone of this topic and was the first to refine a general framework for firm finance choices (Cekrezi, 2013). However, Modigliani and Miller have stringent assumptions involving mainly perfect markets and the absence of taxes in which the value of the levered firm at any point in time is equal to the value of an unlevered one no matter how much debt and equity the firm use. That is, the firm value is determined according to the present value of its future earnings (cash flow) on its investments and the firm's real assets regardless of the way it distributed its earnings or sources used to finance those investments. The theory's restrictive conditions included no taxes, both the firm and investor have the same information and ability to access capital markets, and it deny the existence of costs such as agency costs, transaction costs, and bankruptcy costs (assuming only two sources of funds, riskless debt and equity). Furthermore, the theory assumes that firm and investors cannot affect share price; hence, no arbitrage opportunity exists. In this theory with perfect world and no taxes and by using homemade leverage for approving, there is no relationship between the firm capital structure and firm value; that is, the capital structure is "irrelevant." Homemade leverage suggests taking out personal loans to adjust the status of the company with a low debt ratio. However, studying firm leverage proved that the company benefits from taxes on firm borrowing (Modigliani & Miller, 1963; Faccio & Xu, 2015). Capital

structure since the surge of irrelevance theory has attracted more attention. Subsequent studies have proven that the effect of choosing any specified composition of the capital structure affects the cost of capital, known as weighted average cost of capital, and thus the value of the firm (Abzari, Fathi, & Nematizadeh, 2012).

Corporate finance studies have evolved rapidly to answer the most popular and important question, which captures the essence of capital structure field: "How do firms choose their capital structure?" (Yapa Abeywardhana, 2017). This question instigated the ongoing debate among academics about firms' financing strategies. Capital structure formation is usually understood with the help of two basic theories; pecking order and tradeoff theories. The pecking order (Myers & Majluf, 1984) addresses the problem of information asymmetry and connects it with the process of capital structure choice. Pecking order states that managers have more information than shareholders, causing shareholders to ask for an adverse selection premium that is costly to the firm. Furthermore, the theory presumes that the firm chooses to cover its financial needs in a hierarchal manner, starting with internal resources (i.e., retained earnings) as long as they are available. If internal financing is not sufficient, the firm uses external financing, starting with issuing debt. When a firm needs more financing, the firm uses common equity as a last resort. Sánchez-Vidal and Martín-Ugedo (2005) said that this proposition was based on the problem of information asymmetry where adverse selection costs give rise to a hierarchy of financing choices in preferring internal resources. Therefore, pecking

order only explains patterns regarding firm preferences of financing rather than specifying any target capital structure.

Trade-off theory by Kraus and Litzenberger (1973), Scott (1977), and Kim (1978) is the second leading theory in the capital structure topic. Trade-off theory is built upon Modigliani and Miller (1958) to introduce the omitted influential factors by addressing the impact of financial distress on financial decisions. Key factors of this theory are taxes and bankruptcy costs. The theory is based on making a trade-off between the advantages associated with debt (the tax shields) and costs of debt, mainly the bankruptcy costs likely to occur if the firm relies heavily on borrowing to finance its business activities rather than issuing equity. The theory assumes that the tax benefits increase as the leverage increases but also the bankruptcy costs also increase. Trade-off theory asserts that incurring more debt increases the value of the company until the company's value is maximized at certain point. Therefore, to make the "trade off" between tax benefits and costs, there must be a benchmark to determine the extent to which the firm can incur more debt without being harmed and to ensure the firm works at the optimum level. Hence, trade-off theory's underlying premise, in contrast to pecking order theory, is that a predetermined target capital structure must exist, and the firm seeks this target. This target balances the cost of financial distress against the benefits of tax shields. While trade-off theory does not determine its numerical value, optimal capital structure has been identified in trade-off theory as the point at which the benefits of debt (tax shields) are equal to the bankruptcy costs. In other words, the optimal capital structure is the point at

which the value of the company is maximized. Actual capital structure is compared with this optimal that is, if higher (lower), the company will reduce (increase) its dependence on debt (Ross, 1977). The problem, according to Frank and Goyal (2009), is that tax benefits, bankruptcy costs and agency costs, the main elements of trade-off theory, cannot be directly captured and are hard to distinguish and determine in reality.

Trade-off theory has two main versions: static and dynamic. While the previous explanation relates to static trade-off, dynamic trade-off is mainly tested by the presence of a target capital for the company in addition to the speed of adjustment toward that target. The firm capital structure varies over time and may diverge from the target for various reasons (Uysal, 2009) including market changes, accumulation of profits, and investment expenditures. Fischer, Heinkel, and Zechner (1989) developed a model based on the assumption of static trade-off theory, considering the firm characteristics to find that optimal capital structure could be a single specified ratio or a range of leverage targets that any ratio lying between is considered optimal. This dynamic version accounts for the time aspect that is ignored in assuming a full and immediate revert toward the target in static models. The dynamic model states that the firm returns to the target when observed leverage is far from it gradually at a certain speed (Frank & Goyal, 2009).

However, in both versions of the theory, firms predict optimal capital that balances the costs and benefits of debt financing, and work on adjusting toward this optimal capital structure if any deviation from the target exists. The theory also suggests that the existence of market imperfections is

evidence of the importance of establishing target capital. Leland (1994) built a model based on the assumption of the fixed debt obligation the firm should pay and found that the firm adjusts its debt ratio toward the target only if the costs of adjustment are less than the cost of deviation from the target.

Another version of trade-off theory considers agency costs and resulted in agency theory (Jensen & Meckling, 1976; Myers, 1977). Agency theory is used to understand the relationship between the agent (manager) and the owner of the business. Jensen and Meckling (1976) state that managers are not truly concerned about owners' money. Since managers have less than 100% of residual claim in the firm, they are not absolutely careful with shareholders' interests (Yinusa, Rodnonova, & Luqman, 2019). This theory cannot be ignored in corporations since both agents and principals are continuously trying to maximize their own interests at the expense of others' interests, resulting in a conflict of interests and leading to additional costs known as agency costs. Agency costs should be considered when examining the trade-off between benefits and costs of debt. Leland (1998) emphasized the role of agency costs, which is represented in "asset substitution" in optimal capital structure determination. Agency costs equal the firm value in a perfect world, when all parties are concerned with each other's interests, minus the actual firm value in the real world. The agency cost of equity is the amount of mitigation in the company's value as a result of managers not doing their business efficiently, seeking personal benefits, being opportunistic, and wasting resources (Jensen & Meckling, 1976). The researchers agreed on the importance of these costs in determining the capital structure, but studies have difficulty identifying and

measuring these costs in real life (Helwege & Liangb, 1995). Relevant to this theory, free cash flow stand (Jensen, 1986) emphasizes that delivering cash flow to shareholders or making interest payments from cash flows reduces cash in managers' control, ensuring cash is not wasted on inefficient projects that reduce the company's value. Managers, according to this theory, can be stimulated by increasing the debt ratio and paying the interest using free cash flow (Jensen, 1986).

The previous discussion provides a brief review of the evolution of capital structure theories and highlights the importance of studying capital structure decisions. A more detailed discussion of theories is presented in subsequent chapters.

Corruption may have an effect on capital structure though research has diverse viewpoints that differ regarding the impact of corruption on the cost or process of financing. This variation results in differences in the questions asked, the results reached, and the recommendations necessary either to understand capital structure in corrupted environment or to reduce corruption (Aßländer & Hudson, 2017).

Country level determinants of capital structure that influence the company's financial choices, including corruption, are substantiated by empirical and theoretical studies and are potential interpretation for the variation in the firm's level of debt (Fan, Sheridan, & Twite, 2012). Corruption causes resource misallocation, productivity decreases, instability, and distortions in the economy preventing its flourish. Corruption is one of the most important challenges facing the legal system in the country but

weak laws and regulations are also cause of corruption. Therefore, laws that define corruption and suggest combating it are considered a pillar of a state legal system. For a good performance of such laws, firms or governments should have the ability for law enforcement, in addition to define a clear extent that provides effectiveness of these laws. Laws effectiveness appears in the context that capture laws and regulations used for controlling the behavior of investors, companies, and individuals in the investment environment (Fan, Sheridan, & Twite, 2012).

In the extreme case of market imperfections (e.g., corruption), financial suppliers may choose to limit funds granted to borrowers even if they are willing to pay required repayments. Financial suppliers choose to categorize borrowers to determine the credit allocation among investors, but they do not clarify the rate of return required (Wei & Kong, 2017).

Baxamusa and Jalal (2014) found that the cost of external financing rise with the increase of corruption level in a country. However, the sensitivity and resilience of this cost increases as the level of corruption in a country decreases. Since trade-off theory assumes that a company sets a target capital to which the firm must return, the chances of returning to (or approaching) the target (in the Presence of corruption) decrease, because financial costs increses, as well as reducing the speed of adjustment. Corruption's relationship with capital structure, according to Fan, Sheridan, and Twite (2012), is represented by asymmetric information resulting from weak law enforcement, monitoring, and transparency of managers' practices. Such costs should be included in the cost of financing.

Managers, as agents of owners, are supposed to act in principals' best interest. Persson, Rothstein, and Teorell (2010) emphasized that corruption in a company is represented in the information asymmetry between the director and principal. This corruption can be represented in companies through two theories. In one, the agent of the company or its manager possesses more information than the owner (owners) of the company and, therefore, can use this information to implement his or her own interests, contradict what is agreed upon between them, or make decisions that harm the company and do not help maximize firm value.

Collective action framework is the second theory according to Persson, Rothstein, and Teorell (2010). This theory main idia is the corruption action is "interactive or reciprocal". Collective action assumes that the regulatory and governmental institutions that are supposed to mitigate corruption by monitoring and punishment of corrupt agents; also seek for their interests over the publics. Nevertheless, it is not possible to generalize corruption to all supervisory institutions. Rather, it can be said that it depends on whether the other individuals are corrupt, then this encourages them to seek their interests.

Recently, few empirical studies have analyzed capital structure decisions and speed of adjustment for different regions around the world; however, current literature has paid limited attention to the influence of corruption on firm debt. There is little research focusing on corruption as one of the determinants of capital structure and speed of adjustment. However, corruption at the firm level couldn't be easily measured, so empirical studies

use country corruption indices as an influential factor on the capital structure decisions. The case of developing countries, like most of the Middle East and North Africa (MENA) region (Shleifer & Vishny, 1993), is rare. This thesis fills this gap by estimating the capital structure determinants focusing on corruption as one of those determinants. Moreover, this thesis investigates firms' speed in adjusting back to the target capital structure if they deviate from it.

To achieve the stated goal, companies were examined to determine whether they used optimal capital structure, made adjustment of actual debt toward the target debt ratio, and if applicable, how quickly they adjusted back to their target capital structure.

1.2 Research problem and questions

Capital structure and its dynamism have been studied widely for developed economies. However, few papers have analyzed this dynamism in developing countries. Moreover, the effect of corruption on the capital structure dynamism in the MENA region is still unidentified and its not well detected issue.

Bank loans and retained earnings are relatively the main sources of financing for countries in the MENA region (Azzam, 2015). The development of financial markets plays a major role in transferring financing from banks to markets (Wei & Kong, 2017). Therefore, one of the most important goals of many governments was to develop financial markets to promote investments, encourage companies' interaction with these markets, and improve the economy as a whole.

One of the pioneer work of capital structure in developing countries was Singh and Hamid (1992), who surprisingly concluded that developing countries rely mainly on external financing (e.g., debt and equity), especially, and more heavily on equity than on debt to finance new investments or operations. In contrast, Fan, Rui, and Zhao (2006) state that firm's major source of funds is debt, short-term debt in particular. Compared to equity issuance, debt financing is less asymmetry of information and, therefore, less expensive. In addition, the investor's likelihood of being scammed is lower, and therefore, the level of protection is higher.

Malinić, Denčić-Mihajlov, and Ljubenović's (2013) study on Serbia that has "emerging character" found the country suffers from the underdevelopment of financial markets, which limits the opportunities and options available to companies when funding is needed. However, on the balance, the variables affecting the capital structure are not much different in developed countries than in developing countries, as confirmed by other researchers, such as Booth, Demirguc-Kunt, Aivazian, and Maksimovic (2001).

In the past few years, many political and socio-economic developments have been observed after the recent protests and unrest in the MENA area. Changes in this area affected macroeconomic factors and institutional differences, which in turn have had profound influence on companies financing policies and capital structures (Vo, 2017). Studies are usually completed in one country of the MENA region, resulting in a limited perspective. This study differs in its scope and includes several

countries in the same region to provide a greater understanding of firm financing behavior. Therefore, this thesis focuses on the dynamics of capital structure decisions and uses cross-country determinants of capital structure to understand this area and investigate the impact of corruption. In particular, the study focuses on financing choices of non-financial firms because regulators monitor financial firms while non-financial firms have generally not received sufficient attention and are not subject to the same degree of strictness in laws, regulations, and investor protection requirements. Non-financial firms are thus more vulnerable to corruption (Iatridis & Zaghmour, 2013). The significant gap in the literature suggests a need for more studies in both developing markets and non-financial firms.

Regulatory place higher concern for capital structure proceeds from that of banks and financial institutions intermediary role and their function of providing money to investors, firms, and individuals. This function means banks and financial institutions must also consider their strategies in granting loans and employ their assets in the right investments. In addition, concern for risks arises due to the nature of the bank's operations and surrounding environment (Amidu, 2007). Furthermore, financial companies play the main role as a source of financing in developing countries, such as the Middle East and North Africa, due to the lack of development of financial markets, which has made them an essential pillar of the national economy. Therefore, supervision and compliance with laws and regulations in these companies is more severe than non-financial companies (Al-Beshtawi, Zraqat, & –Hiyasat, 2014; Flannery, 1998).

Non-financial firms' scope is important because non-financial companies also have limited funding sources due to the lack of sophisticated financial markets, while financial companies have many financing alternatives (Myers, 2001; Achy, 2009).

The capital structure decision is an intriguing, broad topic that cannot be limited or generalized to all companies because there are many variables affecting this decision (El-Masry, 2016). Therefore, this thesis further aims to reveal the impact of broadly used determinants on capital structure choices in addition to estimating the speed of adjustment toward the target capital structure for a region that researchers do not further pursue their research and do not pay great attention that demonstrate the importance of the MENA region.

Studies have focused primarily on firm-specific factors, which leaves a gap regarding the relationships between capital structure and macro factors. Therefore, corruption was included as the primary macro variable in this study. Corruption is a pervasive global phenomenon that exists in all countries of the world but varies in incidence between countries. A number of definitions of corruption have been developed by researchers and academics. The concept of corruption varies widely with political contexts from emerging to developed democracies. Usually, the definition of corruption is confused with its behaviors, aspects, effects, and consequences for society. Therefore, there is still no exact definition of corruption, and only a small number of researchers have agreed on the same conceptual one (Rose, 2017). However, the absence of exact definition of corruption cannot

be considered a criticism because corruption as a phenomenon must not be defined in a certain sense. In addition, whatever definitions abound, they are generally not sufficient to describe a specific phenomenon. One cannot consider a definition wrong, nor one can determine which definition is more correct. Limitation of specific definitions also narrows the empirical research and analysis domain (kurer, 2005). Therefore, the literal definition of corruption does not matter as much as its effect on society, so it is preferable to elaborate on its consequences for economic development and capital structure. Hence, this thesis uses the definition of the World Bank and the International Monetary fund, which created a concise definition of corruption. The World Bank and the International Monetary Fund, among others, define corruption as . (World Bank, 1999).

Based on the above discussion, the research questions are summarized as follows:

1. What are the determinants of capital structure decisions in the MENA region?

2. What is the impact of corruption on non-financial firm's capital structure in the MENA region?

3. Do non-financial firms in the MENA region use optimal capital structure? If yes, what is the speed of adjustment at which a firm returns to its target capital? How corruption affects this speed?

This thesis suggests that empirical research in this area will add to the understanding of findings regarding financing decisions.

1.3 Research objectives

Emerging markets have been involved in a 'transition period' in the last two decades, changing their old financing plans and techniques (Iatridis & Zaghmour, 2013). These changes began by shifting banks away from the top of the list of financing resources and reducing their role in granting loans for institutions and being their main supplier of funds. However, developing countries still depend on banks as main sources of financing. Thus, banks play a significant role in lending to firms in case of deficiency because of the scarcity of other sources, such as developed financial markets (Turk-Ariss, 2009; ElBannan, 2017). Developing markets have further begun essential changes to their economic systems. Many emerging markets have taken steps toward improving their financial markets to increase market efficiency and have tried to stabilized their capital markets by strengthen laws and policies governing the financing process, developing regulation and supervision (i.e., enforcing firms to undergo information disclosure) to promote investments in financial markets and fostering their role to gain the opportunity to be one of the main sources of financing (Rejichi & Chaker, 2012). The main goal is the transformation of developing economies from being bank-based to be financial market oriented. However, capital markets remain underdeveloped and have not matured to be a senior source like financial markets in major and developed countries (Errunza, 1983). This issue is still an obstacle in the external financing decisions of countries like those in the MENA region.

This thesis aims first to identify firm and country determinants that affect financing behavior. The second objective is to find the effect of

corruption on firms' financial choices of non-financial companies in the MENA region. In particular, the study determines the effect of size, profitability, tangibility, and growth opportunities on capital structure in this region using a dynamic model for the capital structure determinants. Most empirical studies focus mainly on developed countries, and research on such countries is extensive. Since these countries have more comprehensive and stable sources of financing than developing countries in which the environment and circumstances differ, the robustness of the explanatory variables and theories pursued by companies in capital structure decision might be different (Iatridis & Zaghmour, 2013). One incentive to study emerging countries is that it is an appropriate environment for the laws that protect stakeholders because of underdeveloped financial markets (Harvey, Lins, & Roper, 2004). In addition, insufficiency of data is a potential problem for developing countries. Research conducted on developed countries is easier because of the availability of the necessary information for analysis (Achy, 2009). Therefore, studies like Iatridis and Zaghmour (2013), Yinusa, Luqman, and Rodnonova, (2019), and Achy (2009) have a sample of one or two developing countries. This study not only estimates the dynamic model of capital structure but also scrutinizes the effect of corruption on the dynamic tradeoff capital structure in the MENA region. Therefore, this study examines a wide sample of 15 emerging countries. Third, to achieve the previous goal, companies were examined to determine whether they use optimal capital structure, whether they make adjustments of actual debt toward target debt ratio, and if applicable, how quickly they adjust back to

their target capital structure. A generalized method of moment's technique (GMM) was used to estimate the speed of adjustment toward the target debt ratio. Thus, this study provides a basis for understanding the effect of corruption on capital structure of non-financial firms in emerging countries context.

1.4 Study Significance

This study bridges the gap in the empirical literature by analyzing the capital structure determinants in the MENA region.

Because the MENA region mostly includes developing and underdeveloped countries, which have different legal, cultural, economic, and political characteristics from those of developed markets, they require greater attention by researchers. Therfore this study used a sample of 15 countries of such developing countries to fill this gap. Most countries included in the sample belong to the emerging and frontier markets group according to Standard and Poor's classification for 2019.

The study also focuses on such developing countries because they are considered a more fertile environment for corruption than developed countries due to weaknesses in ruling systems and laws (Venard & Hanaf, 2008). Highlighting the role of this variable in influencing the company's financial decision and choosing the different financing methods is infrequntly happens in previous research, especially studies concerns the Middle East and North Africa region.

1.5 Thesis organization

This thesis is organized into five chapters. Chapter 2 reviews previous studies, and chapter 3 introduces the methodologies used in this study to obtain the empirical results. The analysis of these results and empirical findings are presented in chapter 4. Finally, chapter 5 discusses the empirical findings and presents limitations to the study and recommendations for future research.

Chapter Two

Study Background

2.1 Introduction:

This chapter reviews the relevant literature regarding the determinants of capital structure and the effect of each factor in light of each of the two main theories of capital structure. Capital structure decisions have been considered an important and broad subject since the influencing work of Modigliani and Miller capital structure irrelevancy in 1958. This work was inspirational to many researchers. Therefore, two profound strands of literature have followed to provide insights into firms' financing behaviors. One supports trade-off theory and the other correspond to pecking order theory. These two main theories are usually used to understand companies' behavior to choose an appropriate method of financing.

Both theories hypothesize the amount of leverage to be undertaken through the analysis of costs and benefits of leverage. An intensive literature review indicates that both trade-off and pecking order theories agree that this critical decision influences firm performance and value. Further, all firm expansion, investment, and groundbreaking decisions ought to be taken in terms of capital structure changes. Substantially, the capital structure decision affects all parties related to the company who affect or are affected by company processes (known as stakeholders) and the whole economic development (Sakr & Bedeir, 2019). Furthermore, any increase or decrease in the percentage of one of the capital structure elements (e.g., debt) will affect (positively or negatively) the company's position in the market and the price of the company's shares (Shaheen & Malik, 2012).

The companies with more information asymmetry problems increase the share's sensitivity to the surrounding changes. Therefore, the risks increase and the investors will request an increase in compensation or yield, which is more expensive for firms. Accordingly, firms will turn to the least expensive source: debt (Gao & Zhu, 2012). Since equity financing is moe affected by asymetry of information, pecking order theory prefers debt over equity in external financing.

This thesis focuses precisely on the various predictions implied by the pecking order theory and the trade-off theory to analyze the financing behavior of non-financial firms in the MENA region.

This chapter is organized as follows. Section 2.2 presents brief definitions of capital structure. Then, section 2.3 discusses the ability to generalize determinants of capital structure of developed markets on those of emerging and developing markets. Section 2.4 provides an overview of the theoretical contribution of trade-off, pecking order, and agency theories. Section 2.5 presents the empirical findings for firm-specific factors. Each is introduced and its effect observed in line with the major theories. Sections 2.6 and 2.7 address research perspectives of whether trade-off and pecking order theories are completing each other or are mutually exclusive. Section 2.8 details the impact of corruption on the economy from two perspectives, one supports its undesirable role in a developing economy and the other opposes it. Section 2.9 provides the most common macro variables used to explain variations in capital structure. Last, section 2.10 illustrates the hypotheses development.

2.2 Definition of capital structure

Capital structure explains the way an organization is financed. This concept refers to the mix of debt and equity or the mix of internal resources of funds presented by retained earnings and external recourses (Nawazish, Rahat & Reddy, 2016). While Yao (1988) outlines capital structure as a set of transactions between the company and financial suppliers, Song (2005) defines it as the group of securities the company uses when any financing is needed. Ahmadimousaabad, Anuar, Sofian, and Jahanzeb (2013) define firm capital structure as the combination of debt and equity, which is not placed arbitrarily, but rather tries through this combination to maximize the value of the company. In contrast, Drobetz and Wanzenried (2006) state that target capital only leaves the company with a range of motion and can vary in its debt to equity portion. Song (2005) linked the term leverage with capital structure by saying that leveraged firms use debt financing in addition to equity, while unleveraged firms use equity only.

Capital structure has been extensively explained by many theories, and conflicting assessments have continued about which theory best explains firms' capital structure decisions. This thesis focuses on the three most famous theories in this field namely tradeoff, pecking order, and agency theories.

2.3 Generalization of capital structure determinants to the MENA region

Numerous researchers in the capital structure field have adopted the assumption that all firms similar in general taxonomies or in the same category have similar firm-level characteristics and are proportionally

affected by macroeconomic variants. Thus, their financing decisions are the same and based on the same motives. However, this assumption has been generally criticized because it is not based on objective and reasonable grounds (Booth, Aivazian, Demirguc-kunt, & Maksimovic, 2001). Many other studies have proven the presence of institutional differences and diversity of their impact on firm capital structure schemes. Albarrak (2015) found that firms in the same area do not embrace the same strategy in raising additional funds, and firms may change the strategy used to choose capital structure or even combine many strategies according to circumstances.

The factors affecting a given variable in a country, environment, or certain conditions may have no effect or the opposite effect on the same variable with other conditions or in another environment (Rajan & Zingales, 1995). Sometimes, a firm's intention to finance through a specific strategy could be confusing. Profit companies are caught between their tendency to use their own money to be more financially free and unrestricted by debt (consistent with pecking order theory) and the incentive to increase the debt ratio to benefit from tax shields that protect their returns (Dang, Kim, & Shin, 2012).

The extension of this research into the MENA region capitalize on the cross-country differences in firm capital structure decision-making processes, which cause speed of adjustment toward target leverage to vary from one country to another as well as from one firm to another. As the influencing factors and the circumstances surrounding the company differ, the debt-to-equity ratio also differs from one company to another. The fact that the explanatory power of popular theories of capital structure is

different; there is no theory that determines the specific correct debt ratio for each company. This is a relative matter that depends on these variables and the percentage of determinants impacted (Salim & Yadav, 2012).

To ensure the generalizability of variables for countries outside US, a test was performed by Rajan and Zingales (1995) on industrial countries (G-7) to determine whether factors affecting capital structure in the US (size, tangibility of assets, profitability, and growth opportunities) have the same robust relationships and are correlated with leverage in G7 countries. Rajan and Zingales (1995) study main aim is actually to ensure that variables are comparable across countries and that is really what they came up with. They found the theoretical underpinnings may differ while the variables are homogenous and similarly correlated so that variants can be easily dealt with or generalized. In addition, they distinguished the differences in each theory.

Booth et al. (2001) found similar results from developing countries. Overall, financial decisions in the studied areas were affected by the same variables as in developed countries. Panno (2003) also conducted such a study for Italy and the UK. Furthermore, Belkhir (2016), who was particularly interested in the MENA region, confirmed the generalizability of the variables affecting the capital structure to this area, and he studied ten countries in the MENA region using the same variables used by previous studies implemented on developed countries.

2.4 Theoretical literature Review

2.4.1 Theoretical Contribution of Trade-off Theory

As mentioned, the important role played by Modigliani and Miller's (1958) pioneer work on capital structure cannot be denied. However, their research neglected some important aspects, like real world imperfections. This lack motivated subsequent studies to disprove Modigliani and Miller's irrelevance theory. One study following Modigliani and Miller's assumptions (Kraus & Litzenberger, 1973) initially provided the static trade-off theory. Trade-off theory is a primer theory used in forming the optimal capital structure of a company. The theory is based on balancing the cost of debt financing (encompassing bankruptcy and agency costs) and the tax advantages associated with debt (De Bie & De Haan, 2007). The theory first considered that Modigliani and Miller's (1958) assumptions were unrealistic and considered imperfections in the market as mainly benefits of taxes resulting from debt and the costs of bankruptcy that the company might incur. These costs arise according to trade-off theory because the firm is obliged to pay interest and principal payments to debt holders. The firm's earnings from operations should be adequate to pay interest and the amount borrowed; if not, the firm is exposed to bankruptcy penalties. The main idea is that firms' creditworthiness plays a significant role in increasing or decreasing both bankruptcy and agency costs. The marginal benefits of incurring more debt decrease since the marginal costs increase. When a firm increases its debt ratio, benefits from taxes increase. However, as leverage increases, so does the likelihood of default because of bankruptcy probability and agency costs.

Accordingly, a firm should balance its borrowing to reach the point where its value is maximized (at the top of the curve in figure 1). At this point, benefits added by incurring debt counterbalance the rise in the present value of the costs. At that point, both benefits and costs offset each other, which emphasize the existence of optimal leverage (Myers, 2001). After this point, the costs of financing by leverage are greater and erode the benefits of tax shields and firm value begins to decline. The optimal capital structure is the proportion of debt and equity financing that maximizes the firm value and minimizes the associated cost of financing
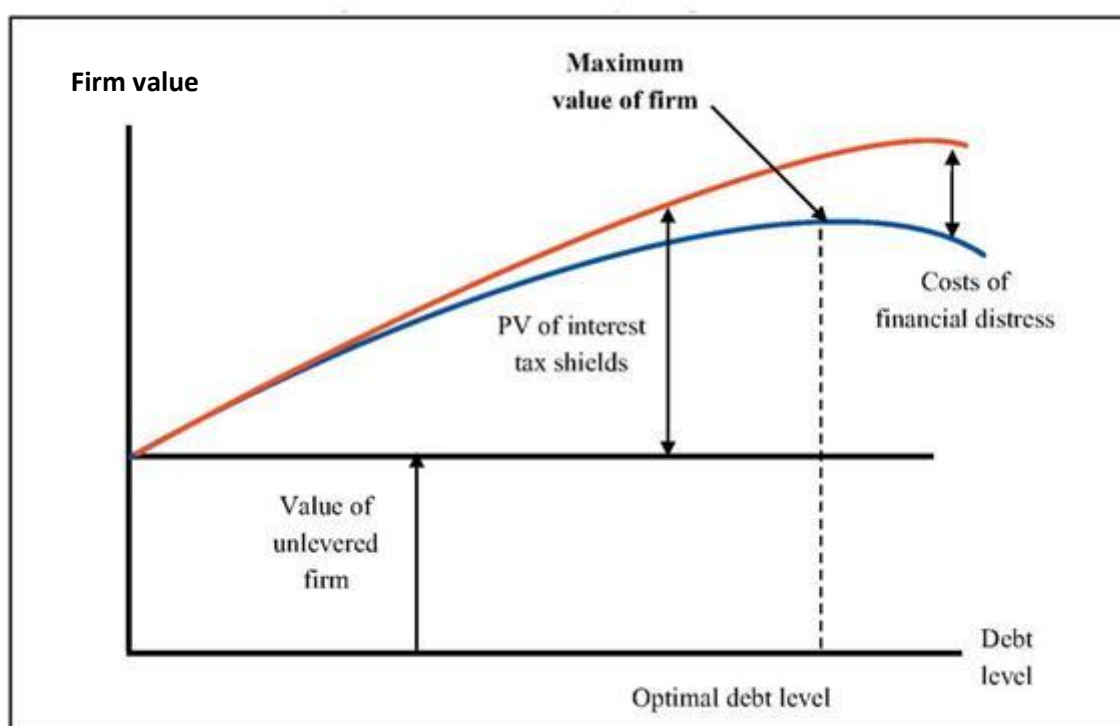
Figure 1: Trade-off theory of capital structure

Figure 1 illustrates the increase in firm value as the debt increases because of tax shields. This increase, however, does not continue forever since the present value for costs of financial distress also increases, which reduces the value of the firm.

According to Figure 1, firm market value = unlevered firm + (tax rate ×
market value of firm debt) - [(1 - tax rate) × P.V of bankruptcy costs].
(Gomes, 2006)

Approaching trade-off theory from a costs point of view, studies like
Mahmud's (2003) demonstrate that the costs of capital has a U-shape, where
costs decrease as firm value increases until minimum costs are achieved.
That is the point at which firm value is maximized (at the top of figure). After
that point, costs tend to rise, outweighing the benefits of capital structure.

The theory states that larger firms have many advantages, namely that
large firms' investments are wide and more diversified in addition to being
less prone to both bankruptcy and the agency's problem because they have
more stable cash flows. This stability makes them more applicable to fulfill
their obligation regarding debt and interest, and they are more likely to be
monitored by the governing bodies. Furthermore, they take advantage of
economies of scale, so they are able to take more debt with high bargaining
power over debt suppliers. In addition, the low percentage of information
asymmetry in large companies is an incentive for them to take a debt because
larger firms are less severe to information asymmetry (Rajan & Zingales,
1995; Strebulaev & Kurshev, 2006).

Regarding the positive impact of profitability on leverage according
to trade-off theory, profitable firms should have the high motivation to take
advantage of the tax deduction by financing with debt instead of using their
own money. By doing so, firms shield their profits from taxes. Needless to
say, profitable firms can incur more debt, make payments, and repay their

obligations using their profits at the right time (Lo´pez-Gracia & Sogorb-Mira, 2008; Tongkong, 2012).

Moreover, asset tangibility represents a feeling of security to the debt holders. In particular, when debt ratio is already high, the lenders request a cushion to absorb losses caused by default (Deesomsak, Paudyal, & Pescetto, 2004). The presence of these assets represents a guarantee of returning the money, reducing the problem of moral hazards as well as the cost of debt (interest) (Scott, 1977). Moreover, firms usually work by matching principal: the longer the asset life, the longer the maturity of debt. Thus, debt maturity is one element to consider when determining the optimal capital (Leland & Toft, 1996). Further, the growth opportunity has a negative impact on leverage. Huang and Song (2006) explain the reason for this negative relationship: growth opportunities are intangible assets and are therefore more vulnerable to harm in case of financing problems or unstable situations. Thus, they should be treated with great caution.

Trade-off theory assumes a negative relationship between debt and growth opportunities since both agency and bankruptcy costs increase when firms have higher investments opportunities (Myers, 1977). The last hypothesis is also supported by agency theory and states that increasing growth opportunities increases the conflict between the manager and principal, so a better way to reduce this conflict is by issuing equity (De Jong, Nguyen, & Kabir, 2008).

To summarize, debt holders know that if a company is unable to pay its obligations due to the absence of profits or bankruptcy, it liquidates these

assets and returns the debt-holder's money (Majluf & Myers, 1984; Narmandakh, 2017) Trade off theory also assume target capital structure and firms have incentive to return. If any deviations from their target debt ratios are observed, the firm must do its best to offset that deviation to remain close to the target (Myers, 1984). Harris and Raviv (1991) support trade-off theory, asserting the expected relationship between debt, from one side, and size, tangibility and growth opportunity, from the other. However, they violate the theory in suggesting a negative relationship between profitability and debt.

The dynamic partial adjustment model has come into common usage by many studies of corporate finance to test for the dynamism of capital structure. Flannery and Rangan (2006) used this model to test the financing choices consistent with tradeoff theory. They state that debt financing has dynamic behavior, emphasizing Fischer, Heinkel, and Zechner's (1989) conclusions in terms of adjustment toward the optimimal that needs time and is completed gradually. Fischer, Heinkel, and Zechner's (1989) also stressed that the adjustment does not occur completely due to the market imperfections. These studies provide evidence of dynamic adjustment behavior as predicted by dynamic trade-off theory (Strebulaev & Kurshev, 2006).

2.4.2. Theoretical contribution of pecking order theory

The adverse selection problem raised from information asymmetry increased the cost of external financing. However, the debt sensitivity to information asymmetry is lower than issuing equity; thus, pecking order theory prefers debt when external financing is necessary (Autore & Kovacs, 2004).

The moral hazard problem can be presented as follows. The repayments (premium) required by outside investors should be proportional to the degree of risk, but when the manager has more information than the investor, one of which is the degree of risk, the amount of compensation required is higher, forcing the manager to engage in riskier investments commensurate with the required compensation. By doing so, the manager may not achieve the company's objectives and reduces its value. One difference in decisions between pecking order and trade-off theories is that if the company finances its activities with debt, but exceeds the optimal; trade-off theory decides to stop incurring debt. In contrast, pecking order theory recommends increasing the debt as long as there is debt capacity because pecking order theory does not place target capital. Rather, this theory prioritizes obtaining external financing first by incurring debt until it reaches the point where the company is at risk of bankruptcy (De Jong, Verbeek, & Verwijmeren, 2011). The key point is debt capacity. Determining the debt capacity and incurring more debt financing in the future must account for the ability to repay obligations by studying the expected returns from investments and their ability to cover these obligations.

However, it is not simple and easy according to Autore and Kovacs (2004) to assess firm debt capacity. They explain, in the presence of the adverse selection problem, the inability to control this problem creates contradictory results in the variables measured based on pecking order theory (i.e. it leads to distortions in the results of the analysis or the decisions taken).

Nevertheless, the results of (Autore and Kovacs,2004) study shows that the presence of asymmetry of information guide the company towards avoiding external sources of funding, which is in line with the pecking order theory.

In contrast to trade-off theory, pecking order theory postulates a negative relationship between both firm size and profitability with leverage because larger and more profitable firms probably have higher retained earnings that can be accumulated and used. By doing so, the essence of the theory of using internal sources is achieved, and firms can use these sources instead of resorting to external sources, in other words, debt (Lo´pez-Gracia & Sogorb-Mira, 2008). Internal resources' merits are less exposed to fluctuations, like in transaction costs, and the information asymmetry problem is also low. The essence of this theory is to use the safest sources of financing. Therefore, the pecking order preferred internal resources. Barclay and Smith (1996) advocate that choosing this hierarchical pattern, starting with internal resources, reduces the cost of financing and choosing the "heapest available."

For the MENA region, societies are forced to be more conservative. Non- financial firms exploit the available resources and do not resort to alternatives unless these sources are accessed. In other words, companies that have their own funds, such as the retained earnings resulting from their profits, prioritize their investments with internal finance. In addition, the only option is to restore retained earnings as a result of underdeveloped markets, as concluded by Jibran, Wajid, Waheed, and Muhammad (2012) in their study on Pakistani non-financial firms.

The theory assumes that the impact of firm size is ambiguous; it could be positive or negative (Serrasqueiro & Caetano, 2014). An interpretation of pecking order theory's hypothesis of a positive relationship between size and debt made by Psillak and Daskalakis (2009) is that pecking order theory can be applied to small and medium companies easily and smoothly, as these companies suffer from information asymmetry. Therefore, these companies prefer internal sources of financing. That is, whenever a company's size decreases, it depends less on debt. The theory further assumes that managers have more information than shareholders (Myers & Majluf, 1984). Large corporations' actions are observable by outsiders, which reduces information asymmetry and increases firms' capacity for debt (Jovanovic, 2015).

Growth opportunities, according to pecking order theory, have a positive impact on firm leverage. Since major investments need money exceeding internal resources, the firm follows a hierarchy, choosing debt that is a first source of external financing (Michaelas, Chittenden, & Poutziouris, 1999). The last determinant is the tangibility of assets. Pecking order assumes that higher tangibility of the firm is an indicator that a large percentage of the company's investments are concentrated in fixed or tangible assets. Therefore, financing these assets must be done through the firm's own returns, and the internal sources of the company must be used before external sources, such as debt (Harc, 2015).

The impact of information asymmetry on the cost of different types of capital leads the company to prefer internal resources over external (Flannery & Rangan, 2006). In other words, when there are great investment

opportunities, but the company's internal returns and sources are few, profitability is low and no money exists for investments, then the company will try to find another source of financing: debt (an inverse relationship exists between profitability and debt). The company will not resort to financing in equity except in the case of extreme necessity due to the existence of information asymmetry. Therefore, the theory ranks its priorities with financing starting from internal returns, followed by debt, then equity.

The more controversial view about this theory is that "there is no well-defined target debt-equity ratio" (Sathyanarayana, Harish, & Kumar, 2017); Friend & Lang, 1988). On the other hand, most studies that have disagreed with trade-off theory depend upon proving the inverse relationship between profitable companies and debt and use this relationship as evidence to support pecking order theory.

Huang and Ritter (2009) found that if the cost of equity is high, the firm uses only internal sources (following pecking order theory). In contrast, when the cost of equity is low, pecking order becomes ineffective as a platform upon which companies depend for financing. Likewise, when applying the pecking order model to companies that set up target capital, all pecking order assumptions become insignificant (Shyam-Sunder & Myers, 1998).

2.4.3 Theoretical Contribution of Agency Theory

Agency theory was considered a complement to the two theories mentioned above and was referred to in most studies regarding the capital structure.

Asymmetry of information between the management and investors in risky assets are the main sources and causes of agency problem. Jensen and Meckling (1976) identified two types of conflict. One is considered the essence of the agency problem between managers and shareholders. The manager represents the agent delegated the decision-making authority on behalf of the shareholders and bondholders, who represent the principal. The manager's intention to not maximize the shareholders' wealth is the agency cost.

The other agency problem is between both the shareholders and the bondholders. Shareholders prefer investing in risky projects to obtain a higher return, while bondholders do not prefer that because their greatest concern is to restore their money with interest (Olakunle, 2014). Agency theory has a major impact on firm financial decision, and many researchers have linked corruption with capital structure in the process of choosing a proportional capital structure through the agency problem because this theory is not limited to a conflict of interests between managers and owners. Rather, the theory exceeds them by not achieving the owners' goal of maximizing their wealth or by affecting the value of the company, leading to its decline (Berger & Patti, 2006).

2.4.3.1 Agency Cost: Shareholder-Manager Conflict

The conflict between agent and principal lies in the presence of asymmetric information and in the manager performing activities that do not increase the company value. While the owner's goal and interest is to maximize the value of the company, the agent seeks to obtain higher salary regardless of the result that the company reaches because of his or her

decisions, which can be harmful and reduce the company's value (Oliveira & Kayo, 2019). This is because managers gain a small fraction of profits if they have done their jobs perfectly (satisfying the interest of shareholders), while they are totally responsible for losses. In the long run, the costs of bankruptcy increase because the space given to managers is sufficient for them to be motivated to change investment plans in a way that is not commensurate with the bondholders' interest (Auerbach, 1983). According to Jensen and Meckling (1976), one way to mitigate this conflict is to increase the proportion of equity held by managers. Hence, they become company owners so are careful about investments in which they engage, increasing the welfare of the principal. The optimal capital structure, according to agency theory, is when the agency cost and asset specificity consideration are at the minimum level. The firm reduces agency costs as it moves closer to the target (Vilasuso & Minkler, 2001).

Large companies have more diversified external sources of funds (Rajan & Zingales, 1995) since smaller firms are more subject to the information asymmetry problem and are therefore more affected by the costs due to less monitoring and weaker tightening of disclosure procedures than large companies (Chittenden, Hall, & Hutchinson, 1996). Therefore, they have relatively high cost for raising additional external financing (Smith, 1977).

2.4.3.2 Agency cost and free cash flow

The greater the expectations of growth opportunity, the higher the costs of agency (conflict between bondholders and stockholders), bankruptcy, and information asymmetry. This relationship causes firms to

follow the pecking order hierarchy pattern by using internal sources of funding (Jõeveer, 2013). When a firm needs more and outside financing, debt is a better choice than equity in a firm "under asymmetric information" to reduce the amount of cash flow in managers' control (Narayanan, 1988). Preventing managers from using internal resources, such as free cash flow, limits the exploitation of managers' power. This exploitation of control and reputation is achieved by investing in projects that reduce the value of the company (over investment) (Griffin, 1988). Reducing the costs of bankruptcy is a main condition for the firm to use debt financing to reduce cash in the control of the manager (Barclay, Smith, & Watts, 1995). Similarly, Johnson (1997) states that firms' use of debt depends on three main factors: cost of providing information to the public, the ability to sell fixed assets easily and quickly, and actions that may cause a decrease in company value due to the presence of asymmetric information or the availability of cash if in managers' control. Cash flow reduction includes paying interest for debt because creditors, in case of default, have the right to liquidate, so incurring debt helps reduce entry to risky projects (Al-Dohaiman, 2008).

Another way to reduce the problem of engaging in risky investments is by incurring short-term debt that matching interests between the manager and the owner (Myers, 1977). Long-term debt provides an opportunity for managers to replace high quality investments with lower quality ones. In such cases, managers use an asset replacement process (Leland & Toft, 1996). However, a creditor's money being protected by covenants is an

incentive by the company to become more able to incur debt (Billett, King, & Mauer, 2007). Firms with lower growth opportunity have a stronger negative relationship between leverage and growth opportunity. For Leland H. (1994), the asset substitution increases financial costs even when the firm has lower risk. The solution is to protect debt, which results in decreasing the cost of financing and decreasing the benefit of taxes. These contradictions to which the company is exposed make the determination of the optimum capital structure a relative and unspecified matter depending on the goals and vision of each company.

Among researchers, there is currently no consensus on a certain method or strategies that can be followed by companies regarding financial deficit. Myers (2001) emphasized this lack when he claimed that there is no theory forcing all institutions on the same "debt to equity ratio". Brounen, Jong, and Koedijk (2005) also state that these studies are merely descriptions and possibilities added to the previous research as part of many explanations for the selection of the appropriate capital structure and firm financing choice. Hence, no consensus on a comprehensive conclusion regarding capital structure decisions or the theory that best explains the capital structure choice.

2.5 Trade-off and Pecking Order as Mutually Exclusive Theories

Debates in corporate finance arose from controversy about the nexus of trade-off to pecking order theories. The rapport between theories has been discussed for many years. Some researchers have adopted the viewpoint that

trade-off theory is the alternative to pecking order theory. They are both mutually exclusive in explaining the capital structure decision.

The conflicting decisions between the two theories helped spread this idea and approach, which clarifies the idea of the opposing views of both theories. For example, according to trade-off theory, profitable companies have a positive relationship with debt ratio. The theory explains this positive relationship as profitable companies' ability to pay their obligations represented by the amount of the debt and its interest by their profit, and this in turn reduces the possibility of financial distress or bankruptcy and increases the amount debt protects the firm's earnings from taxes (Fama & French, 2002). In contrast, pecking order theory assumes that profitable companies have a negative relationship with debt because a company can finance itself through retained earnings where there is no need for external financing.

Studies have demonstrated that highly profitable companies use excess cash to repay their debt, while less profitable companies tend to use extra borrowing to do so, which leads to a higher dependence on debt to manage their operations (Myers and majluf, 1984).

Profitability and its inverse relationship with debt is the most used variable by researchers opposed to trade-off theory (Charalambakis & Psychoyios, 2012). This inverse relationship was used as evidence against trade-off theory by Myers (1993), who argued that the company incurs debt to maintain its profits in the short term instead of reinvesting them or using them. Gradually, the profits turn into retained earnings, which the company

can use instead of external financing and so dispenses with debt. Thus, the inverse relationship is reversed. Barclay and Smith (1996) advocate that the assumptions of pecking order theory are contrary to those of trade-off theory.

2.6 Trade-off and pecking order as complementary theories

Firms might change their patterns of capital structure and target in response to changes in the surrounding and interior conditions. Most previous studies used more than one variable to measure these circumstances' effects on capital structure because a better understanding of the actual determinants of capital structure decisions helps improve the strategic financing decision. Gaud, Jani, Hoesli, and Bender (2005) had mixed results: the size and tangibility of assets had a positive relationship with capital structure, while the firm profitability and growth had a negative one. Notably, each of these results supports a specific theory since profitability, for example, has an inverse relationship to debt. Therefore, the firm is consistent with pecking order theory, whereas the size indicates that the firm used trade-off theory. De Jong, Verbeek, and Verwijmeren (2011) used a different method, attempting to prove that both theories are not completely discrepant and believing that trade-off and pecking order theories may determine the same financing decision, despite the different general frameworks for each and although they are considered opposing theories.

In other words, a firm uses both theories as guidelines to form the capital structure. Another study that tested many important variants of capital structure was by Bunkanwanicha, Gupta, and Rokhim (2008). They investigated the impact of corporate governance on debt ratios and argue that

firm-specific factors like size, profitability, tangibility, and growth play a vital role in empirical studies. Size, tangibility, and growth have significant positive correlations, while profitability has a negative impact on debt, which is in line with pecking order theory. Nasution, Siregar, and Panggabean (2017) studied several variables (e.g., profitability, tangibility, corporate tax, and inflation) and found that, together, they had a significant impact on the capital structure. However, studying each variable separately, postulating all oher varibles are constant; only profitability (negative correlation) and tangibility (positive correlation) were significantly correlated to capital structure. Baskin (1989) found that despite considerable research proving that trade-off theory explains the behavior of capital structure for companies, American companies prefer to begin with internal sources of financing as opposed to external sources, which is in line with pecking order theory. He asserts that these companies do not follow trade-off theory because they did not account for the problem of information asymmetry. Most studies conducted regarding the capital structure issue had some variables that supported trade-off theory and others that supported pecking order theory, which constitutes evidence that a company's adoption of a certain strategy that supports one of the two theories does not necessarily cancel the other (Ahmadimousaabad, Anuar, Sofian, & Jahanzeb, 2013). Therefore, these theories are essentially complementary.

2.7 Empirical findings of previous studies

Empirical studies have results inconsistent with the Modigliani and Miller (1958) irrelevance theory. The many factors that affect capital

structure are countless. In their study, Harris and Raviv (1991) recommended defining and limiting the variables and providing a valid business model to help better understanding the actual determinants of capital structure decisions instead of expanding analyses to test the impact of a large number of variables. Because all possible factors affecting capital structure decisions cannot be considered in a single study, this research addresses the most common variables proposed in previous studies. Thus, leverage, in book and market terms, is taken as the dependent variable. Furthermore, the explanatory variables are a set of common micro-factors firm-specific factors identified and used by most capital structure studies and found to have a significant influence on firm leverage (see Harris & Raviv, 1991; Frank & Goyal, 2009). The elements that drive capital structure choices consistently in previous literature are profitability, company size, growth, and tangibility of assets and these will be investigated in this thesis. Moreover, international studies point to the role of macroeconomic factors in determining capital structure hence, two factors namely inflation and growth in GDP will be discussed. Furthermore, new evidence supports the role of corruption at the country level. The following sections introduce these results and compare them with previously mentioned theories.

2.7.1 Firm size

Many studies have investigated the effect of firm size on capital structure. The majority of relevant papers support the positive relationship between firm size on debt (e.g., Booth et al., 2001; Guney, Li, & Fairchild, 2011). In a study on financial decisions and long- and short-term sources of

financing, the size of the company, payment of distributions, the price of shares, and other firm characteristics, all decisions were related and affect the financing decision to achieve firm goals, which include target capital. In addition, all decisions affect the speed of adjustment to return to that target (Jalilvand & Harris, 1984). Large non-financial companies in Nigeria followed the trade-off theory: the larger the size, the greater the financing using debt. Likewise, profitability and tangibility were positively related to the ratio of both total and long-term debt, unlike the firm growth opportunities, which were inversely proportional to the debt ratio (Salawu & Agboola, 2008).

Regarding the positive relationship between size and debt, Al-Shubiri (2010) studied industrial companies in Jordan and found that large firms tended to have higher leverage ratios than small firms. Strebulaev and Kurshev (2006) determined that this positive relationship can be traced in part to economies of scale. Large companies utilize the merit of economies of scale to reduce costs per dollar borrowed when issuing debt securities and accounting for the large fixed costs of external financing. Ellili and Farouk (2011) also confirm the positive impact of size on debt (short and long term). Large companies want to take advantage of tax benefits to protect their returns. Therefore, they tend to incur more debt than smaller firms (Dincergok, 2017). For small and medium firms, the highly profitable companies follow pecking order theory, choosing to finance their operations first with their own money. The larger the size of the firm, however, the more it leans toward debt as a source of financing, thus following trade-off theory

(Serrasqueiro & Caetano, 2015). A positive relationship from a different viewpoint was found by Titman and Wessels (1988): large firms more often choose long-term debt, while small firms choose short-term debt. Banks are the first alternative for small companies when they need external financing. Because banks usually suffer from the inability to verify the data provided by these companies, small firms are more exposed to the problem of asymmetry of information. Furthermore, the borrowing costs for small companies are higher than for large companies. Therefore, small firms are forced to reduce the use of debt, which is another explanation for the positive relationship between size and debt (Hall, Hutchinson, & Michaelas, 2004). A strong positive relationship between size and both long- and short-term leverage was also observed by Mateev, Poutziouris, and Ivanov (2012) since larger firms have the ability to bargain and have diversified financing resources.

Conversely, a negative relationship between company size and leverage was observed by Icke and Ivgen (2011) and Ikechukwu (2016). In line with a previous study, Wahome, Memba, and Muturi (2015) agree with Rajan and Zingales (1995), who also found a negative relationship between firm size and leverage in German firms. However, unexpectedly, they argue that large companies are not exposed to financial distress, the possibility of bankruptcy is lower, and sensitivity to information asymmetry is lower than small firms (because they are more closely observed by analysts), so issuing equity is better for them (Alom, 2013). Firm size was used as a proxy for information asymmetry. Thus, according to pecking order theory, small

firms are most affected by this problem. Therefore, these companies tend to use internal sources of financing according to pecking order theory (Chittenden, Hall, & Hutchinson, 1996).

In line with the previous study, Degryse, Goeij, and Kappert (2010) found that Dutch small firms also use pecking order theory to cover their financial needs. One important reason, as Venanzi (2017) argues, is that large firms can easily gain access to different sources of funds, while small firms have limited sources. Titman and Wessels (1988) concluded the same when they found that the size of the company did not necessarily increase its dependence on debt to finance its operations. Small and medium firms have the problem of unavailability of accumulated earnings, especially in the launch stage. They are further unable to issue equity because of information asymmetry problems, so firms only option is incurring debt (Serrasqueiro & Caetano, 2015). This is another reasonable explanation for the negative relationship between firm size and debt: larger firms are more capable of tolerating more debt but, at the same time, have more diversified and easier access to capital markets. Furthermore, neither the tax advantages nor the assets' value are related to the debt ratio. Hovakimian and Li (2010) also found a positive impact of size on leverage since the high debt capacity and low risk are two privileges that allow larger companies to incur more debt. Contrary to all of the above, Karadeniz, Kandir, İskenderoğlu, and Onal (2011) studied Turkish companies in the newly launched stage and found that size did not affect these companies as most of their sources of financing were from internal sources, whether they were large or small companies.

2.7.2 Profitability

Profitability is the second extensively used determinant of capital structure. In trade-off theory, a positive relationship between a firm's profitability and debt is expected. Many studies claim that profitability is an influential factor in how the company's financing method is chosen to offset the effects of profitability on the target capital structure, which is evidence of dynamic trade-off theory. Other researchers argue that the reason behind this positive relationship is that the possibility of bankruptcy for profitable firms is lower, allowing them to finance by debt and take advantage of tax shields.

In contrast, some researchers have found a negative relationship between profitability and debt. This contradiction is not attributable to profitability as an independent variable, but rather to the theory that companies follow when making a financing decision (Sakr & Bedeir, 2019). Oino and Ukaegbu (2015) agree with previous explanations regarding the effect of theories on financing decisions apart from empirical results and found a negative relationship between profitability and debt ratios means that profitable companies rely less on external sources of funds.

In contrast to trade-off theory, pecking order theory assumes that profitable companies have a negative relationship with debt because the companies can finance themselves through retained earnings without need for external financing. Studies have demonstrated that highly profitable companies use excess cash to repay their debt, while lower profitable companies tend to use extra borrowing to do so, which leads to a higher dependence on debt to manage their operations (Myers and majluf, 1984).

For life insurance companies in Pakistan, the variables size, liquidity, and profitability affect their capital structure, as this structure follows pecking order theory. Earnings generated by a company can be reused to finance either a company's investments or its activities or even to raise additional capital. Therefore, the relationship is also negative between profitable companies and debt (Ahmed, Ahmed, & Ahmed, 2010).

Furthermore, Titman and Wessels' (1988) results are in line with pecking order theory and consistent with previous research indicating that profitable companies actually depend on their own money and have somewhat low debt ratios. In addition, Pandey (2001) expected that when profitability increases firms dispense external resources and tend to have lower leverage. A conventional overview of the negative relationship between profitability and debt can be used as evidence against trade-off theory. However, Abel (2018) states that if the earnings before interest and taxes (EBIT) are high and the tax benefits can compensate for the potential losses of bankruptcy then trade-off theory works. A higher EBIT means higher profitability and lower dependence on debt, which is thus evidence of the effectiveness of trade-off theory.

Several empirical studies have found a negative relationship between profitability and leverage. For example, Gaud, Hoesli, Jani, and Bender (2005) found that profitable Swiss firms eschew using debt while making their financing choices, which is consistent with pecking order theory. However, the same empirical study provides evidence of active target

adjustment behavior as predicted by the trade-off framework, proving that both theories illustrate the capital structure of Swiss firms.

Empirical test on mainstream capital structure theory were conducted by Hernández-Cánovas, Mínguez-Vera, and Javier (2015), who completed a specialized study for the three choices of pecking order theory on Spanish firms. They found that when firms think about external financing, three factors affect the choice. First, equity issuance procedures and conditions vary according to the state polices. In response, firms use various degrees of reliance on such a resource. Stock market development also affects firms' financial choices. In many countries where developing markets exist, firms resort to banks as external source of funds even for institutional loans. This has had a great impact on the companies' dependence on the resources they use when in financial distress.

2.7.3 Tangibility

Trade-off theory assumed a positive relationship between tangibility of assets and debt. However, usually in empirical research, the relationship between tangibility and capital structure should be done by studying long- and short-term debt based on the matching principle (Alves & Ferreira, 2011) because the type of assets the company uses has a strong relationship to capital structure. The companies maintain the fixed assets (e.g. equipment and land as collateral for the company's owners in case of bankruptcy), so the managers can perform asset liquidation to pay for firm shareholders. Therefore, Alom (2013) considers fixed assets used as collateral "solvency capacity". That means firms with high tangibility (usually large firms) can

take more risk and increase debt ratios because they feel more secure due to the presence of tangible assets. The presence of these assets is deemed collateral for debt holders, reducing the probability of bankruptcy (Berryman, 1982). Likewise, debts supported by collateral impose relatively less interest than debts with no collateral, which is riskier. Choosing the right financing method is an important issue for financial managers. Long-term debt for example is used for financing fixed assets (e.g., equipment, land), while current assets are financed with short-term debt (Claessens, Nenova, & Djankov, 2000).

The information asymmetry problem that exists in small and medium firms requires matching between long-term liabilities or sources of financing and long-term investments, such as financing fixed assets with long-term debt, consistent with both trade-off and pecking order theories (Harc, 2015; Michaelas, Chittenden, & Poutziouris, 1999).

It is important to understand the component of tangible assets used to determine the extent to which the firm is secured and collateralized by tangible assets. Thereupon, one can decide the "capacity of leverage" or ratio of debt that can be incurred without being extremely compromised (Giambona, Golec, & Schwienbacher, 2013). Accordingly, Giambona et al., (2013) found a robust positive relationship between tangibility in real estate and leverage. In a completely different direction, Shah and Hijazi (2004) found that tangibility in non-financial firms is not associated with capital structure.

Pecking order theory agrees with trade-off theory that the existence of tangible assets considered collateral acts as a supporter for firms to incur debt when these assets are "in place." In contrast, the intangible assets cannot be sold easily and quickly in the market without losing much of their value to compensate for the expected losses/costs of default in addition to considering matching maturities and revenues of these assets with the lifetime of the debt (Allen, 1995; Myers S. C., 1977).

The presence of fixed assets, through the matching principle, affords the company's use of the long-term debt (Amidu, 2007). This result is also advocated by Mateev, Poutziouris, and Ivanov (2012), who found that long-term debt is positively correlated with assets structure. Small and medium firms may have obstacles in incurring long-term debt, since few tangible (fixed) assets exists. Therefore, they prefer short-term debt if firms internal resources are inadequate.

Regarding pecking order theory of asymmetric information, the presence of these assets reduces the agency problem in that their values are easy to measure and appraise because of physical forms, unlike intangible assets. Campello and Giambona (2011) state that the degree of positive impact of the assets on a company's financing through debt depends on the extent of these assets to be salable. Usually, fixed assets explain the capital structure and financing behavior less than liquid assets. Thus, they also demonstrate the importance of these assets to be liquidated in case of bankruptcy.

Another matter related to tangibility is the degree of asset allocation. Despite the importance of allocating assets to support the company in the market by exclusivity of investments and assets, asset specification or using assets for unique investments may negatively affect the firm ability to finance its investments through debt (Balakrishnan & Fox, 1993).

2.7.4 Growth Opportunity

Growth opportunity is a main determinant of capital structure mix choice. A negative relationship realized between growth opportunities and debt is the prevailing overview by many studies (Awan, Bhatti, Ali, & Qureshi, 2010). Increasing the company's growth means that there are long-term costs represented in the costs of research and development and the costs of advertising (O'brien, 2003). In addition, Long and Malitz (1985) consider research and development an intangible investment with a risky nature. Since intangible assets (growth opportunity) cannot be used as collateral, higher growth opportunities will reduce guarantees and the incentive to borrow. Thus, the return of such assets is relatively low and has a negative impact on leverage (Fatmasari, 2011). In the event that the company is exposed to loss and risk of bankruptcy, the value of these assets decreases sharply, which confirms that they cannot be used as collateral for debt. "Firms with higher growth opportunity tend to issue less debt" is not the end of the growth opportunity relationship with debt.

Chen and Zhao (2006) studied the impact of growth opportunities using book-to-equity ratio as a proxy and found that companies that originally had low book-to-equity ratio and expect increases in their growth

opportunities depended more on debt due to its low costs (positive relationship). The negative relationship occurred for companies that already had a high debt-to-equity ratio and expected higher growth, so they avoided resorting to debt.

Alternatively, pecking order asserts that firms with higher growth opportunities have multiple and various resources of financing (Mahakud & Mukherjee, 2011). Firms that expect growth see that it will need more assets to extend their production. Therefore, they need more money and the best way to obtain money is to incur debt. Both theories agree on the same decision to increase the debt, whereby preference to increase debt is because the company will have a safety base, which is the retained earnings. Furthermore, according to pecking order theory, companies prefer to increase the debt over equity to avoid or reduce the agency problem and prevent managers from misallocating resources and reducing firm value (Pandey, 2001). Lang and Litzenberger (1989) found that lower growth opportunities reduced the problem of free cash flow (agency problem) that caused the over-investment problem.

2.8 Macro factors determinants of capital structure

The capital structure and its adjustment are also influenced by macroeconomic factors that cannot be controlled by a company. These factors play an essential role in firms' decisions and influence their operations. The external financing decisions are not solely dependent on firm characteristics; rather, external factors may limit the range of freedom in choosing such sources. However, Abzari, Fathi, and Nematizadeh (2012) did

not find any significant effect of macroeconomic variables on the capital structure decision on Iranian firms. Despite this finding, most studies have proven the importance of these variables in determining capital structure. For example, Touil and Mamoghli (2019) state that explaining capital structure differences and speed of adjustment variation among countries using firm-specific factors only will reduce the efficiency of the research and important elements are misses. Macroeconomic factors are considered first order explanatory variables, after firm specifics that affect the capital structure decision (Fan, Sheridan, & Twite, 2012).

Some practical studies found that the effect of these variables on capital structure is negligible, suggesting the need to study these variables to determine the implications of their use as influencing factors on the capital structure of companies in the Middle East and North Africa and resolve the controversy regarding them. Among the economic key factors that have been commonly used, are inflation and gross domestic product (GDP) growth. These factors are not the focus of this paper, but they are widely used measures in capital structure research that has a macroeconomic dimension.

2.8.1 Gross domestic product (GDP) Growth

The increase in the GDP greatly facilitates the availability of sources of financing. In addition, the positive economic situation helps the existence of investment opportunities for a company that needs access to various financing sources (Lemma & Negash, 2012).

In particular, GDP growth has been considered a major determining factor for financing choice and has a positive and significant relationship

with capital structure (Shamshur, 2009). In contrast to the previous study, Gajurel (2006) and Camara (2012) discovered an inverse relationship between GDP and debt-to-equity ratio. The negative relationship between GDP and leverage, according to pecking order theory, is that the GDP growth increases firms growth, and subsequently, the profits and returns of the company increase. As mentioned, companies prefer less risky sources, so firms prioritize their investments with internal financing, in other words, retained earnings (Gajurel, 2006). The contrasting view is, in the event of economic prosperity and increased GDP, costs, especially bankruptcy, will likely decrease. Thus, according to trade-off theory, costs reduction can be considered a motive for firms to increase leverage (Hacioğlu & Dinçer, 2017). Again, Muthama, Mbaluka, and Kalunda (2013) found a positive impact of GDP growth on long-term debt since firms need more finance to meet increased investment requirements produced to economically flourish.

2.8.2 Inflation

Inflation is closely related to capital structure studies and a major macroeconomic directive in this regard. This term is defined by (Akinsola & Odhiambo, 2017) as a "continuous increase in the general level of prices of goods and services over time result[ing] in reduction of purchasing power of money" (page: 42). Inflation as a macroeconomic variable has been used as proxy for costs of financing decision since the Fisher equation provided the link between nominal and real interest rates. Calculating the real interest to be paid to the lender requires taking the nominal interest rate and subtracts the inflation rate (Yan, 2010). Studies on capital structure, Camara (2012),

emphasis the influence of macroeconomic factors on corporate decisions. Inflation's influence on capital structure is one of the operative factors that influence interest rates, which in turn affects the mix of debt and equity capital. If there is an increase in prices, an increase in the interest rate will happen. Therefore, companies seek to incur debt because of the debt tax shield to benefit from taxes on interest, from a trade-off theory perspective (Belema & Odi, 2019). That is, trade-off theory assumes a positive relationship between inflation and the firm's leverage since an increase in price levels will cause higher benefits for the borrower by reducing the cost of borrowing. In addition, receiving more tax revenue and, therefore, inflation is considered an incentive to borrow (Baker & Martin, 2011; Kim & Wu, 1988). An additional interpretation of the positive relationship is that the value of money decreases, so the lender returns money with a lower value than he took. That is, the lender takes advantage of the declining value of money, which makes it attractive to borrow (Hochman & Palmon, 1985; Gordon, 1984).

Studying the inflation effect on leverage should be detailed and should include its effect on debt in the long term as well as on the total debt. Gajurel's (2006) study found positive relationship between inflation and long-term debt and a negative relationship with short-term debt as well as with total debt.

2.9 Corruption

Macroeconomic factors play an essential role in explaining the heterogeneity in capital structure and in the speed of adjustment for firms.

Therefore, these factors should be considered in addition to the variables on the company level. Many studies on the decision-making process regarding capital structure have also indicated the significance of other macroeconomic factors. Attention to firm-level differences of the company and its impact on the financial choice and speed of adjustment toward the optimal leverage ratio did not eliminate interest in the company's legal environment. Rather, many studies related to corporate financing have sought to prove the correlation and integration among these variables as a whole (Öztekin & Flannery, 2012).

Legal system importance has been demonstrated in the enforcement of contracts between investment parties like borrower and creditor. Property rights must be enforced and protected in addition to reducing information asymmetry costs (Claessens, Djankov, & Nenova, 2001; Touil & Mamoghli, 2019). The legal system has an explanatory power regarding macroeconomic factors. Weakness in the oversight and accountability of the financial field and laws' failure to direct financial institutions (banks in particular) had the most prominent role in the occurrence of financial crisis. Corruption is considered one facet of the legal system, and some studies use it as proxy for the legal system. Admati (2015) considered banks' "increased dependence on debt" led to higher default probability and a higher conflict of interests between the borrower and creditors (which represents corruption behavior). Risk of instability increased, and the borrower was "under water" because the debt's value was less than what it was actually worth.

Corruption receives much of attention that increased significantly after the financial crisis, as it is an important reason and a factor that helped greatly in the financial crisis occurrence. Corruption has different and varied forms, including financial fraud, abuse of power, and waste of resources (Krambia-Kapardis, 2016). Several hypotheses that check the robustness and the effect of corruption on the firm value found that the mainstream view is that corruption prevents economic development. Consequences of corruption include deleterious effects on the firm, economy, and society as a whole. Conversely, some researchers have emphasized, using empirical research, that the effects of corruption could be positive with disparate benefits, although they are difficult to determine (Ayaydın & Hayaloglu, 2014). Two views about corruption to be discussed shortly.

2.9.1 "Sand the wheel" hypothesis

The "sand the wheels" hypothesis was adopted to express the negative impact of corruption on firms, investments, economy, and the social environment. For this hypothesis, this term refers to reducing people's confidence in governmental, social, and financial institutions. Furthermore, corruption provides a fertile environment for bribery and financial exploitation (Habibov, Afandi, & Cheung, 2017). New research conducted by Habibov, Fan, and Auchynnikava (2019) suggests that, in addition to tightening control over institutions, firms and policy makers should change policies, decisions, and attitudes and increase community satisfaction with government institutions to reduce corruption rates as much as possible.

Guillaumemeon and Sekkat (2005) also agree that corruption "sands the wheels" and causes poor economic consequences, especially in countries with weak governance polices.

The problem of information asymmetry represented in "secret activities or information" is one of the forms or effects of corruption that has a negative impact on the economy and markets and appears more detrimental by constituting business barriers, leading to resources misallocation. Investors are prevented from assessing the benefits that they may receive from these investments due to misinformation and the lack of correct private information, including prices and managers' ability to manage such investments (Volejníková, 2007; Athanasouli & Sklias, 2012; Ahmad, Ullah, & Arfeen, 2012).

Corruption's impact on the debt ratio of a company and the economy remains one of the issues debated (Colonnelli & pre, 2017). Debt is less sensitive than equity to information asymmetry. Nevertheless, companies suffer greatly from the costs of the adverse selection problem, in particular, and prefer financing from internal sources first. Then, they tend toward using debt as another source of financing (Halov, 2006). Again, studies emphasize the negative effect of corruption. For example, Aidt (2009) used genuine wealth per capita as proxy for corruption. The convenience level of non-financial firms and the entire environment in general has lowered since the protests and revolutions beginning in 2011 in some countries of the MENA region. Less protected legal system and law enforcement are some of the

consequences of instability in this region, and as a corollary, corruption will increase.

Investors (lenders) confidence drops dramatically in countries experiencing a prevalence of corruption, weak law enforcement, and a feeble legal system. The risk of losing money discourages them and often prevents them from granting loans to companies in these countries (La Porta, Lopez-De-Silane, ShleIfer, & Vishny, 1997). A Transparency International report (Schoeberlein, 2019) emphasized that after more than eight years of demonstrations, known as the Arab Spring, people's confidence in the government and laws is still low. Limiting the spread of corruption is ineffective in the Middle East, which causes instability in this region. Thus, corruption has a negative effect on firm capital structure when implications of corrupt practices dominate potential positive advantages.

Regarding corruption's effect on capital structure, there is a mutual impact, meaning corruption has negative effects on the ratio of long-term debt, so companies located in countries that suffer from high rates of corruption resort to short-term debt as well. These companies are more vulnerable to the effects of corruption because they are more easily controlled by their large owners and by increasing the concentration of power and misuse by some of the company's controllers. However, at the same time, the firm can mitigate the severity of these consequences through the correct composition of the firm's capital structure (Lemma, 2015). Baxamusa and Jalal (2014) state that cost of capital should include costs arising from corruption (e.g., asymmetric information, weak law

enforcement). They found a non-linear dynamic adjustment and a negative relationship between corruption degree and the sensitivity of cost to change in corruption. The effect of corruption on financial and non-financial institutions was studied by Ojeka et al. (2019), who determined that corruption's negative impact on non-financial companies in Nigeria was greater because they are not subject to the same degree of strictness in laws that govern financial firms. Meanwhile, Persson, Rothstein, and Teorell (2010) conducted research on African countries (Kenya and Uganda), which is the region most exposed to corruption—in their opinion. They found that developing countries suffer from giving a false character or what they call a "mischaracterization" of corruption problems, making the cost of disposal and corruption reduction greater than its negative consequences for companies and society. Notwithstanding, Baxamusa and Jalal (2014) discovered that, in all cases (countries that are less corrupt or that suffer greatly from this phenomenon), countries must try to reduce corruption to the extent possible.

Rapid globalization accompanied by weak oversight on domestic and national investments and financial markets played a significant role in financial crises. Therefore, it was necessary to make developments and strengthen the global surveillance of national policies to avoid or reduce similar problems (Spindler, 2011) because financial crises negatively affect capital structure and caused slower economic development. Different public authorities and financial agencies, such as the central banks and Basel III (internationally agreed set of measures), put forth tough new standards and

recommended various limitations, like restrictions on taking risks, to protect investors. In addition, financial institutions are bound to comply with any conditions or requirements that may be imposed when granting or taking loans. Furthermore, public authorities and financial agencies provided bailouts like coverage of deposits made by some institutions, such as deposit guarantee institutions, to preserve depositors' money and reduce their losses. However, non-financial firms are less subjected to financial laws and security measures imposed by economic, regulatory agents, and monetary committees that engage in international scrutiny and are international and domestic norms. These reasons stress the importance of focusing on non-financial firms when studying capital structure.

2.9.2 "Grease the wheel" hypothesis

"Greasing of wheels" is a term first used by Leff (1964) to express the benefits of corruption. His study enhanced the argument in favor of corruption by explaining that "Corruption is another, less radical way of adjusting to the same pressures and goals." (Page: 11)

Leff (1964) also says that when there is a weak governance (government fails to achieve goals), graft and bribery help to quickly complete procedures (i.e., improve commercial activities), circumventing bureaucracy and fostering procedures that effectively disrupt works and provide opportunities for new and innovative project owners to grow, subsequently encouraging economic progress. In short, corruption speeds up activities by skipping some routine procedures that only delay the processes in a company using "speed money." Therefore, mistakes committed by

governments and default can be remedied by corruption in the form of bribes (Aidt, 2009).

One controversial study, by Belkhir (2016), found that corruption positively affects companies in the Middle East and the North Africa region. Méon and Weill (2008) state that under weak governance structures and ineffective policy, corruption reduces "the time cost of queues." However, from other points of view and considering its circumstances, corruption clearly hinders economic development. Méon and Weill (2008) also state that examining corruption from a moral point of view could result in ignoring the potential benefits of corruption.

Financial development increases the percentage of loans taken by companies. Moreover, the effect of corruption on these loans was found by Wei and Kong (2017) to be positive. When the two effects (corruption and financial development) were studied together, the relationship became competitive: the more corruption, the fewer loans. Fan, Sheridan, and Twite (2012) discovered that in countries with high levels of corruption, loan maturity decreased, hence shorter maturity loans increased. Thus, they found a negative relationship between debt maturity and corruption.

The only consensus view underling this literature is financial research is still unable to agree on a desirable mix of debt and equity. In addition, there are many factors influencing the capital structure decision and SOA toward the target of non-financial firms that cannot be counted. Some factors can be taken directly and are easily quantifiable, while others cannot. Those variables include many aspects and have an indirect influence on the

dependent variable (capital structure) in most cases. Such variables, including corruption, have indices developed through combined national and international organizations, refining and harmonizing the measurement process (Dreher, Kotsogiannis, & McCorriston, 2007).

2.10 Speed of Adjustment

Cost and speed of adjustment toward the target leverage is an important insight for examining optimal capital structure and considered a core element of capital structure research (Dang, Kim, & Shin, 2012). Many studies concerned with the subject of choosing the appropriate capital structure, which maximizes the value of the company, did not give the costs of the adjustment toward the target the appropriate importance and others completely ignored this factor. Therefore, these studies have been criticized (Hanna, 2019). A brief definition by (Nsouli, Rached, & Funke, 2002) of speed of adjustment that it is "the time elapsed in moving from one organizational economic structure to another" (page: 4). This term therefore can be applied to capital structure as the time needed by a company to restructure its capital according to new circumstances.

Speed of adjustment, according to trade-off theory, is usually between 0 and 1. The smaller the speed, the greater the adjustments lag between the actual and the target leverage. Pecking order theory assumes no target, so the speed of adjustment is 0. When speed of adjustment is equal to 1, full adjustment is achieved and the target and observed leverage are equal (De Haas & Peeters, 2006). However, an adjustment equal to 1 is almost impossible to achieve, meaning that most companies, even international

ones, cannot fully adjust back to their targets. Instead, the adjustment is partially accomplished.

Fischer, Heinkel, and Zechner (1989) observed the sufficiency in trade-off theory of an immediate and full adjustment of the deviation toward the target. This assumption was not realistic because of market imperfections. They state that even small costs (either transaction or adjustment costs) can cause inconstancy in returning to the optimal capital structure and the speed of adjustment. Therefore, they developed a model for dynamic capital structure that takes adjustment costs toward the target into consideration and computed the speed of adjustment. In addition, they assumed that there are a range of leverage ratios that firms are allowed to float within, and any leverage ratio within this particular boundary is optimal (Castro, Fernández, BorjaAmor-Tapia, & Miguel, 2015).

Assuming a range leverage ratios makes the adjustment process more flexible since the adjustment costs require no specific target ratio (Hovakimian & Li, 2010). Whenever the researcher proves there is a positive speed of adjustment, a target leverage ratio exists and the dynamic trade-off model of capital structure is functioning well (Drobetz, Schilling, & Schröder, 2015). Nonetheless, the existence of market imperfections is evidence of the importance of using target capital and assessing the importance of both the costs and losses of the company when it deviates from the target and the costs of returning to it (Ozkan, 2001). Dynamic trade off means that the leverage ratio changes within a specific range (Dudley, 2007). Hovakimian, Opler, and Titman, (2001) found that firms have target capital

ratios and that they adhere to these ratios and adjust toward them mostly when they need to issue a new debt or equity.

Speed of adjustment depends on the cost of deviation from target capital and the cost of adjusting back to the target (i.e., external financing cost). The decision of adjustment will be completed only when the benefits of adjustment are more than the costs. Indeed, Serrasqueiro and Caetano (2012) assert that firms adjustment toward their target is evidence that the cost of adjustment is lower than the cost of deviation from the target. Another important matter directly related to adjustment costs and capital structure decision is the size of the company. Small firms face the problem of high costs associated with adjustment. These high costs force them to convert away from target capital for longer than large firms (Barclay & Smith, 1996). The institutional environment plays a significant role in appreciating or decreasing the speed of adjustment, represented by Touil and Mamoghli (2019), who found that improved law enforcement practices positively affect speed of adjustment by reducing information asymmetry.

Likewise, the extent to which the actual capital structure is far from the target affects the speed of the adjustment and should be considered when the decision to revert to the target is studied (Flannery & Hankins, 2006; Byoun, 2008). However, sometimes being away from the target is less expensive to the firm than adjusting back, so the firm prefers to stay at that position (Drobetz & Wanzenried, 2006). According to Dang, Kim, and Shin (2012), whenever the gap between the target and the observed capital is greater, the company is more motivated to return to the target if the cost is

fixed. When the cost is variable, the firm should be balanced because a large gap between target and observed capital structure is usually associated with higher costs, slowing the speed of adjustment. The existence of adjusting costs is also evidence of variations in speed of adjustment according to the costs associated with the process. These empirical studies provide evidence of active target adjustment behavior as predicted by the trade-off framework.

As mentioned, the firm must study the costs associated with adjustment before it takes steps to adjust toward the target capital and determine whether the benefits are higher (Cook, 2010). Flotation costs are the most critical. Moreover, the fact that a firm is obligated to pay for debt holders but is not obligated to pay the owners (a matter dependent on the company director's decision) places the power in the hands of the creditor. If the firm is unable to pay back the debt, its options are strictly limited, and borne to bankruptcy (Jong, 2001). However, bankruptcy is not an easy, cost-free process, and calculating these costs is also not easy because bankruptcy costs contain direct, easy-to-determine costs, such as administrative costs and transaction cost related to liquidation and losing the firm (i.e. selling firm assets). Furthermore, some indirect costs are difficult to measure, like losing employees who resigned are also important part of the bankruptcy costs that cannot be neglected (Pham & Chow, 1989).

The presence of optimal capital structure is a motivation for the company to choose the best methods of financing, according to the surrounding environment and accounting for the company's other goals (Kumar, Colombage, & Rao, 2014).

Theoretically, the value of the appropriate capital structure at least is when the debt-tax-shield benefits associated with the additional substitution of debt for equity are more than bankruptcy, agency, and other costs. However, where it is not easily possible to reach the appropriate capital structure due to market imperfections and the presence of other factors that affect the capital structure, adjustments occur at certain speed toward the target capital structure (Gleason, Mathur, & Knowles, 2000).

Another matter to consider when performing the amendment process is the availability of the necessary funding sources for the company and the ability to enter the financial system. In addition, the availability of an advanced level of markets that allows the issuance of various financing instruments helps reduce the time and costs needed and facilitates the adjustment process (Faulkender & Petersen, 2006; Nsouli, Rached, & Funke, 2002). Political changes and the Arab Spring in the MENA region and consequences of uncertainty in the legal environment has led to an increase in transaction costs and a decrease in the quality of law execution, which negatively affected the speed of returning to target capital (Hearn, 2014).

Imperfections in the market have been proven to be an indication of the existence of target capital structure. However, the presence of market imperfections led to three important effects on the modification of the target. First, firms cannot reach their target capital structure all at once; rather, this must happen gradually. Second, degrees of imperfection in the market differ as well as the effect on the speed of the adjustment; therefore, there are differences in the speed of return to the target between countries. Third,

market imperfections lead to partial adjustment. Thus, it is not possible to adjust back to the target entirely, but only to approach it to a certain extent (Mahakud & Mukherjee, 2011; Dang, Kim, & Shin, 2012). Institutional and country differences affect the cost and benefits of returning to the target. Accordingly, these factors explain the difference in the speed of returning to the target.

2.11 Hypotheses of the study

According to the aforementioned explanation and previous discussion of empirical findings and theoretical underpinnings, the hypotheses were developed in line with trade-off, pecking order, and agency theories. These hypotheses about MENA region non-financial firms are as follows:

Hypothesis 1:   Larger firms are more leveraged than smaller firms.

Hypothesis 2: The relationship between profitability and leverage is negative; profitable firms tend to reduce dependency on debt.

Hypothesis 3: The relationship between tangibility and financial leverage is positive.

Hypothesis 4: The relationship between growth opportunity and financial leverage is negative.

Hypothesis 5: The relationship between country corruption level and firm's financial leverage is negative.

Hypothesis 6: Inflation has a positive impact on firms' leverage.

Hypothesis 7: The GDP growth has positive impact on firms' leverage ratio.

Table 1 summarizes the hypotheses of this study. Each hypothesis is introduced according to the expected sign and with the theories that support it.

Table 1: Variables predicted effects on leverage

Variable	Expected sign/hypothesis	Theory
Size	Positive	Trade off
Profitability	Negative	Pecking order
Tangibility	Positive	Trade off , pecking order & Agency
Growth opportunities	Negative	Trade off
corruption	Negative	Agency & pecking order
inflation	Positive	Trade off
GDP	Positive	Trade off

Chapter Three

Methodology

3.1 Introduction

This chapter addresses the selection of econometric models and justifies the estimation methods applied to address the research questions stated in the first chapter. The chapter also specifies the selected sample, the collected data, and the variables defined and the measurements of these variables. This chapter is organized as follows. Section 3.1 starts with a brief description of the collected data and specifies the selected sample. Then, section 3.2 discusses the methodology and addresses the generic method applied to estimate parameters and answer the research questions stated in the introduction chapter. Section 3.3 presents a detailed review of the GMM. Section 3.4 provides the measurement of the explanatory variables, which are regressed against the two measures of leverage, and describes the measurement and the included variables. Sections 3.5 and 3.6 introduce static and dynamic analyses and the partial adjustment models used in addition to introducing the bias of OLS in dynamic modeling and suggest solutions.

3.2 Sample selection and data sources

This research investigated the determinants of capital structure, focusing specifically on the predictors of financing decisions implied by trade-off theory. In this thesis a quantitative analysis is used to understand and generalize the behavior and impact of explanatory variables on capital structure. Analysis used a sample containing data across firms and overtime (panel data); using data sets of both dimensions led to more precise results (Bayrakdaroğlu, Ege, & Yazıc, 2013). Panel data analysis is widely used in

economic studies because it provides flexibility in analyzing quantitative data (Semykina & Wooldridge, 2010). Panel data covers wide and complex problems and allows for studying dynamics of the phenomena better than simple time or cross sectional data (Ozkan, 2001). Furthermore, panel data analysis is usually used to increase observations when data are unavailable and data size is small following (Sun & Parikh, 2001).

The data is obtained from the DataStream database, which provides both financial statements data on firms and the market value of shares for quoted firms in a wide range of countries. The DataStream database is widely used and considered a major source of micro-level panel data in the literature of capital structure. For many other economic studies, this database provided detailed balance sheet information and income statement data for both financial and non-financial firms. Data on macroeconomic factors used in this thesis is obtained from Transparency International Association and the World Bank. A sample comprising only non-financial firms was used in this analysis because financial behavior of financial firms could have a potential bias since financial firms influenced by regulations, and they experience increased requirements of the minimum capital structure especially for banks and further tightened rules on investors' protection, such as deposits insurances (Oino & Ukaegbu, 2014). Thus, the financing process for financial firms is governed, and is more subject to different limitations and accounting considerations that reduce corruption.

The final sample of this thesis, after considering missing data, consists of unbalanced panel data for 840 non-financial firms across 15 countries in the MENA region (i.e., Bahrain, Egypt, Jordan, Qatar, Malta, Israel, Iraq, Lebanon, Oman, Kuwait, Morocco, Tunisia, United Arab Emirates, Saudi Arabia, and Palestine) for the period 2005-2018. The total firm year observations used are 9741 which is appropriate for testing the dynamic changes of a firm's financial decisions for the region.

3.3 Variables' Measurement

There are several variables arising from theoretical analysis associated with the aforementioned theories. Theoretical and empirical studies have demonstrated a number of different financial measures for investigating the determinants of capital structure. The goal is to examine the influence of these variables on capital structure rather than find new variants. The selection of variables and their measurement is usually achieved according to the results of previous empirical studies, using the variables proposed and largely adopted by prior empirical literature to explain the variation in debt ratios across firms. Sometimes, the presence of a certain reliable data set obtainable to the researcher limits options and forces him or her to choose a specific measure of the variable and not others (Tucker, 1995).

3.3.1 Dependent Variables

There is no common agreement on whether the book value of leverage or the market value is the appropriate measure of leverage. Therefore, many authors have tested the determinants of capital structure using different measures of leverage. Following Öztekin and Flannery (2012), two proxies were employed to represent firm leverage: market and book leverage ratios. Some variables have an explanatory power for the model that uses the market leverage more than the explanatory power indicated by the model using book leverage, and vice versa. Therefore, the use of one proxy may prevent the effect of the rest of the variables from appearing, and they may lose their influence value on the leverage and eliminate these variants as unimportant variables in determining the capital structure (Frank & Goyal, 2009). Therefore, two proxies for leverage were used. Ferris, Hanousek, Shamshur, and Tresl (2018) found that both proxies correspond to changes in each other and that the stock prices increase the market value leverage. This effect only happened when equity values increased. However, in sharp decrease or high fluctuations in stock prices, steady book leverage was observed. On the contrary, Welch (2004) states that changes in stock prices have a long-term, large impact on capital structure.

Based on previous literature, two proxies for measuring firm debt were used in this thesis. Book leverage was calculated as total debt (short-term debt + long-term debt) divided by the book value of total assets, all at time t. Graham and Harvey (2001) see that firms future decisions were and will be based on book leverage not on the market one. In addition, book leverage

provides accuracy when there are fluctuations in financial markets since book leverage is the fixed values referred to in the event of any conflict, especially when the agency problem is associated with claims on a firm (Jarallah, Saleh, & Salim, 2018).

The second proxy, the market value of leverage, is calculated as total debt (short-term debt + long-term debt) divided by the total assets minus book equity plus market equity where the market equity is equal to common shares outstanding multiplied by the year end market price per share. Frank and Goyal (2009) used the market value since it is "forward looking"

3.3.2 Independent variables (firm specific)

The first explanatory variable apparent in almost all capital structure determinants studies is the size of the firm. Measuring the size as the natural logarithm of sales is used commonly in most studies of similar character (e.g., Titman & Wessels, 1988; Rajan & Zingales, 1995).

The next determinant of capital structure is asset tangibility (asset structure), deemed a component of firm constancy and stability. Asset tangibility is measured as the net property plant and equipment (total tangible fixed assets) divided by the total assets (Voutsinas & Werner, 2011; Titman & Wessels, 1988).

Profitability is the argumentative variable, and one of the most extensively used determinants of capital structure. To capture the profitability variable on firm's capital structure, profitability is measured as

earnings before interest and taxes and depreciation (EBITDA) divided by the total assets (TA).

Growth is measured by market to book ratio calculated as total assets minus the market value of equity plus the book value of equity divided by the total assets. Following Smith and Watts (1992) and Allayannis, Lel, and Miller (2004), this measure was used as indicator for increasing assets or investments of the firm. Measures are presented in table 1.

3.3.3 Independent variables (country level)

In a global perspective, this study on capital structure has three country level variables: corruption, GDP growth, and inflation. For these macroeconomic variables, various databases including the World Bank and Transparency International were used. Inflation is a macro variable used in Frank and Goyal (2009), and the measure used is the percentage change of annual consumer price index obtained from the World Bank database. Following many studies in capital structure (e.g., Basto, Nakamura, & Basso, 2009), GDP growth was used. The data source for GDP growth is the annual growth of the gross domestic product, also obtained from the World Bank data.

Corruption is the factor of interest in this thesis so is emphasized in this research. One of the problems facing corruption-related studies is that, at the company level, there is no specific criterion that measures corruption, so reports and studies on the state level are used (Colonnelli & pre, 2017). There are various measures of corruption available in the literature. Here, corruption was measured by the Corruption Index offered by the World Bank

and Corruption Perception Index (CPI) promulgated by Transparency International (TI). The latter index was used by Hakkala, Norbäck, and Svaleryd (2008). Using CPI it is a good choice according to Fan, Sheridan, and Twite (2012) for studies that use and tend to analyze panel data. The CPI is based on annual surveys that basically capture perceptions of the extent to which public power is exercised for private gain (abuse of power), including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. The index scores countries on a scale from 0 to 10 (or a scale of 0 to 100) with 0 indicating high levels of perceived corruption and 10 indicating low levels of perceived corruption. Before 2012, the CPI values ranged from 0 to 10 points, but from 2012, the range started to change to values between 0 and 100 points: 0 (highly corrupt) to 100 (very clean). Another index, the corruption index by the World Bank, ranges from approximately -2.5 to 2.5, the higher values (2.5) indicating countries with strong control of corruption.

According to the research objectives and the research questions Table 2 has set the variables used in this study and their measurement that are largely adopted from existing literature. This table illustrates and summarizes variables, variable definitions, the measurements of the variables, and the references.

Table 2: Summary of variables measurement

Measure	Definition	Equation	References
Book leverage	Total debt (short-term debt + long-term debt) divided by the book value of total assets	Total debt/Total assets	(Öztekin & Flannery, 2012) (Graham & Harvey, 2001) (Frank & Goyal, 2009) (Rajan & Zingales, 1995)
Market leverage	Total debt (short-term debt + long-term debt) divided by the total assets minus book equity plus market equity where the market equity is equal to Common shares outstanding times the year end market price per share	Total debt/(Total assets – book equity + market equity) Where market equity= Common shares outstanding * market price per share (year-end)	(Öztekin & Flannery, 2012) (Frank & Goyal, 2009) & (Rajan & Zingales, 1995)
Size	The natural logarithm of sales	$= Log\ (Sales)$	(Rajan & Zingales, 1995) (Titman & Wessels, 1988) & (Wahome, Memba, & Muturi, 2015)
Profitability	Earnings before interest and taxes and depreciation (EBITD) divided by the total assets (TA)	$= \dfrac{Earnings\ before\ intere}{Total}$	(Song, 2005) (O'BRIEN, 2003) & (Fatmasari, 2011)
Tangibility	Net property plant and equipment (total tangible fixed assets) divided by the total assets	$= \dfrac{Net\ of\ Property}{Tot}$	(Voutsinas & Werner, 2011) , (Titman & Wessels, 1988) & (Sogorb-Mira, 2005)

Growth Opportunity	Total assets minus the market value of equity plus the book value of equity divided by the total assets.	$= \dfrac{Total\ assets - b}{}$	(Allayannis, Lel, & Miller, 2004) (Booth, Demirguc-Kunt, Aivazian, & Maksimovic, 2001) (Smith & Watts, 1992) & (Alom, 2013)

3.4 Models and Estimation methods

The choice of research models used depends on the questions to be answered and the problem of the proposed research. The dynamic behavior of the firm, which includes the gradual adjustment and resetting of the target debt ratio, requires using a more flexible model since, fixed effect model only is not suitable and inferences may not be correct. This problem is solved by the instrumental approach using GMM to estimate the dynamic panel data models. Many previous studies indicated the dynamic nature of capital structure. Since this thesis uses panel data, a panel data methodology was used for all dynamic models of this thesis. Thus, the generic method applied to estimate dynamic parameters is the GMM. Early studies in literature mainly used the ordinary least square (OLS) that Baum, Schaffer, and Stillman (2002) considered a special case of GMM. However, when there is a lagged dependent variable in the model, OLS is not able to provide an efficient estimate.

To determine the long term effect of explanatory variables on capital structure, static analysis, in particular the fixed effect model, was used as a data analysis technique to investigate how explanatory variables explain the variations in target capital in the static long term relationships with the different hypothesized determinants of capital structure namely, firm size, asset tangibility, profitability, and growth opportunities.

3.4.1 The Static Model

The simplicity of the analysis is one of the most important advantages in which static analysis measures the relationship and the influence of a variable (independent) on another variable (dependent), considering that all other elements are constant. Static analysis studies the economic phenomenon more clearly so it considers the previous, current, and future values of the variable. Another advantage of this analysis is that it provides results in the long term. That is, it generates a preliminary picture of the results that will happen at the end of the given analysis period, regardless of the results in the short term. Regarding the capital structure, static analysis was used to explain some theories, such as value and capital theory.

To test the effect of the aforementioned determinants on capital structure, the liner dynamic partial model was used. This model provides flexibility to apply the appropriate model, whether one- or two-step partial adjustment models, to the research objectives and usually used in the capital structure studies that has dynamic character and has different adjustment speeds (Dang, Kim, & Shin, 2012). In addition, the static panel data models

were estimated with a static fixed effect model as i used by Al-Najjar and Hussainey (2011) and Serghiescu and Văidean (2014) to determine the long-term effect of the explanatory variables on firm leverage status. Therefore, the first estimation was the fixed effect model, which usually has the following general form:

$$y_{i,t} = \alpha_0 + \beta x_{i,t} + \varepsilon_{it}$$

where $y_{i,t}$ is the dependent variable (i.e., leverage), α_0 is the unknown intercept (constant) and is useful to determine which causes have an effect on the dependent variable. However, it does not reveal what that effect is. β is the common coefficient (slope or average value of Y absent X), and $x_{i,t}$ is the dependent variables. Since panel data was used, each observation was indexed by i, representing the entity (i.e., firm) in a time period t (the time dimension 2005-2018). Furthermore, ε_{it} is the residual error of firm I observation at time t.

However, static panel data analysis can, at best, give a glimpse of the data characteristic in stable and unchanged conditions, but in unexpected conditions, this model is unable to deal with variables. The static models do not mean that there is no "movement" or change, but rather that the growth or decrease of investments or company assets must be at a steady pace. Byoun (2002) states that changes happened in assets, and the presence of optimal capital and adjustment toward the target requires flexible models. Therefore, static analysis cannot measure the impact of such changes on optimal capital structure.

3.4.2 Dynamic partial adjustment models

The "partial" adjustment model was used because of imperfections in the market. These frictions, including the transaction and adjustment costs and asymmetric information, usually prevent the perfect return to optimal and lead to partial adjustment toward the target. In addition, the return process takes time, and speed varies according to its response to all these combined factors. This model accounts for these factors, so it was chosen. Two models of adjustment were usually used by previous studies: single-step and two-step adjustment models. Both represent the firm's willingness to do its best to eliminate part of the deviation from the target leverage.

a. Two-step partial adjustment model

Ideally, the target leverage of the firm should equal the current observed leverage. However, according to costs and the impact of factors and parameters, the adjustment process takes more time and is not executed immediately (De Haas & Peeters, 2006). Therefore, the target capital is determined using various factors. Previous literature (e.g., Frank & Goyal, 2009; Flannery & Rangan, 2006) concluded that what determines the target leverage is a mix between firm and country characteristics. The determinants used (i.e., size, profitability, tangibility, and growth opportunity) in this model were used to explain the dynamics of capital structure. This model basically consists of two equations: one static equation to determine the target leverage and the other to determine the dynamic partial adjustment process. The partial adjustment model takes the form of

$$DE_{ij,t}^* = \alpha_0 + \beta_1 X_{ij,t} + \beta_2 Y_{j,t} + \beta_{12} X_{ij,t} Y_{j,t} + \lambda_i + \varepsilon_{it} \text{ (Flannery \& Rangan, 2006)}$$

$DE_{ij,t}^*$ is the desired (target) leverage for firm i in country j at year t. The desired (target) leverage is the expected value from the above equation. $X_{ij,t}$ and $Y_{j,t}$ are firm (microeconomic) vectors and country (macroeconomic) characteristics, which are necessary to find the optimum debt ratio, $X_{ij,t}Y_{j,t}$ is the interaction of micro and macro vectors' effect on optimum leverage, and λ_i is an unabsorbed firm fixed effect. Last, ε_{it} is the residual (error) term that has zero mean and constant variance (normally distributed).

According to the two-step model, the existence of market imperfections made a gap between the actual debt ratio of the company and the target ratio, which achieves the maximum value for the company. Those imperfections cause the firm to be unable to perfectly adjust. The dynamic model of panel data is popular in studies of capital structure and has a macroeconomic dimension. Furthermore, the model is an advanced approach so can bind the institutional differences and country macroeconomic variables. Equation 2 was used to examine the heterogeneity of the speed of adjustment. In this equation, the target debt equation is represented by the notion of partial adjustment by substituting target leverage into the adjustment equation and then estimating the rest, which is formalized as follows:

$$DE_{ij,t} - DE_{ij,t-1} = \delta_{ij,t}\left(DE_{ij,t}^* - DE_{ij,t-1}\right) + \varepsilon_{i,t} \quad \text{(Flannery \& Rangan, 2006)}$$

where $DE_{ij,t}$ is the current debt ratio of the firms, and $DE_{ij,t-1}$ is the previous (annual) firm leverage proportion. $\delta_{ij,t}$ represents the partial adjustment coefficient (1- coefficient of lagged endogenous variable). In

other words, $\delta_{ij,t}$ is the parameter of the speed with which the company returns to the goal (SOA), which is assumed to be between 0 and 1 (0% to 100%) since the firm does not adjust fully to the target. Rather, each firm tries to shorten the gap between the current leverage and the leverage proportion to which it hopes to reach, so the higher the value of $\delta_{ij,t}$, the faster the speed of adjustment to reverse to target leverage.

It's worth mention that there are two proxies of debt so DE represent the firm book leverage in addition to the market leverage.

b. Single-step partial adjustment model

The two-step partial adjustment was not preferred to analyze data of this thesis. An alternative approach was used. Because the single-step approach depends on substituting the target leverage by its determinants when estimating the partial adjustment model using one equation. The main rationale behind using this approach instead of the two-step partial adjustment is to avoid the accumulative errors that can be produced when there are two or more equations. Since two step substituting target leverage first in a separate equation and then estimate the partial adjustment in another equation. Single step partial adjustment model was used by Fama & French, (2002).

The model of the single-step approach is as follows:

$$DE_{i,t} = \ \kappa \beta X_{i,t} + (1 - \kappa)DE_{i,t-1} + \varepsilon_{i,t} \quad \text{(1)} \quad \text{(Fama \& French, 2002).}$$

where $X_{i,t}$ is the set of firm-specific and country characteristics and variables that determine the desired leverage, which are the same as the determinants used in the previous two-step adjustment equation.

The equation can be rewritten in more detail by substituting the determinants as follows:

$$DE_{i,t} = \delta\beta_0 + \delta\beta_1 SIZE_{i,t} + \delta\beta_2 PROF_{i,t} + \delta\beta_3 TANG_{i,t} + \delta\beta_4 GROW_{i,t} +$$

$$\delta\beta_5 GDPG_{j,t} + \delta\beta_6 CORR_{j,t} + \delta\beta_7 INFL_{j,t} + (1 - \delta)DE_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

Where δ is the speed of adjustment, and $DE_{i,t}$ and $DE_{i,t-1}$ are respectively the current actual debt ratio and the previous (annual) debt ratio of the firm.

The tested equation can be simplified as

$$DE_{i,t} = \beta_0^* + \beta_1^* SIZE_{i,t} + \beta_2^* PROF_{i,t} + \beta_3^* TANG_{i,t} + \beta_4^* GROW_{i,t} + \beta_5^* GDPG_{j,t} + \beta_6^* CORR_{j,t} + \beta_7^* INFL_{j,t} + \lambda DE_{i,t-1} + \varepsilon_{i,t}. \quad (3)$$

where δ is equal to $(1 - \kappa)$ and β^* is the $\kappa\beta$.

As mentioned, each explanatory variable could have a negative or positive relationship with leverage. Therefore, the correlation and relationship between the different determinants of capital structure would change according to the different aspects of capital structure and various theories that explain these aspects.

3.4.3 Generalized method of moments (GMM)

Dynamic panel models play a significant role in corporate finance. The generalized methods of moments estimator by Arellano and Bond (1991), in particular, has gained popularity in recent research because it provides feasible and efficient estimates for panel data models and helps investigate the dynamism of capital structure decision research in terms of the importance of adjustment behavior and the factors affecting target debt

ratios. This estimator also provides a straightforward way to test the factors influencing capital structure decision. In addition, GMM is used to investigate the speed of adjustment toward the target in a partial adjustment framework. The two-step GMM system estimator is one of the choices to account for endogeneity of the explanatory variables (Semykina & Wooldridge, 2010). An additional reason to use System GMM in these models is that it calculates a more reasonable speed of adjustment of capital structure.

The moment term in the GMM refers to population. The idea and principle is how to go from the population condition to an explainable factor in terms of the sample since it is difficult to estimate and find information for the entire population (see Wooldridge [2001] for further discussion). GMM has two main estimators: the diference GMM and the system GMM. Diference GMM builds using differences from all explanatory variables in the regression as instruments. Since the system GMM takes both the difference and the level, it is called the two-step system GMM (Roodman, 2009). Many studies use the system GMM. These types of studies found this GMM more efficient since it mitigates the time bias and cross-sectional heteroscedasticity and measurement bias (Castro, Tascón, & Amor-Tapia, 2015).

In this study, the dynamic panel data in a partial adjustment model framework and two-step system GMM by Arellano and Bover (1995) and Blundel and Bond (1998) was used. Two-step GMM was used because it reduces the sample error bias resulting from the weak instrument problem of one-step GMM (Wei & Kong, 2017).

GMM is a generic method used to estimate parameters in dynamic models. This method is a logical choice in dynamic regression modeling that uses panel data to examine the dynamics of relationships between capital structure and the explanatory variables. Two-step system GMM uses instruments to solve the problem of endogenous variables (influenced by other variables in the regression). Instruments are variables (other those in the regression x and y) used to deal with unexpected behavior between variables. Furthermore, GMM provides efficient and consistent estimators by controlling both the endogeneity of the explanatory variables, like the potential correlation between the regression errors, and the explanatory variables (previous firm leverage's effect on current leverage) due to the existence of lagged dependent variables and unobserved panel heterogeneity. In addition, GMM is used when the time period is small compared to the great number of observations (Ozkan, 2001; Jovanovic, 2015). The problem of endogeneity poses a challenge that can affect the results of a search by delaminating some of the variables (variables that have values that change overtime) associated with the error term that actually affect the dependent variable, or there could be many effects by the independent variable on the dependent variable at the same time. Alternatively, the measurement process could be wrong (Semykina & Wooldridge, 2010). Therefore, GMM is a useful tool when homoscedastic and serially independent cases exist, and using GMM instruments in particular help to resolve the endogeneity issues that arise because of the correlated unobserved effects. The GMM estimator was designed for situations like this analysis, where the nature of the dependent

variable is dynamic and depends on its own previous value. Choosing this model is also logical because it allowed to perform two tasks: investigate whether firms predetermine a desired proportion of debt and equity and, if so, determine the speed the company needs to return toward this target leverage (actually be close to it). Furthermore, GMM allows testing whether the previously identified variables affect the capital structure and the type of effect (positive or negative). This model was used by Belkhir, Maghyereh, and Awartani (2016) and Thanh (2017).

Chapter Four

Empirical Results and Conclusion

4.1 Introduction

This chapter begins with a descriptive analysis of the data. Then, a correlation analysis is presented, followed by the empirical results obtained from analyzing determinants of capital structure in the MENA region using static and dynamic regressions, as presented in chapter 3. The results are discussed and compared to the aforementioned theories and previous empirical research about capital structure presented in chapter 2. The traditional determinants of leverage appear to be both statistically and economically significant across non-financial firms. The regression results for static and dynamic models are provided in tables 3 and 4. The dependent variable is the firm leverage using two proxies, book and market leverage. The explanatory variables that cover the three basic theories of capital structure are size, profitability, tangibility, growth opportunities, GDP growth, inflation and corruption.

4.2 Descriptive Statistics

The descriptive statistics are a logical starting point when analyzing data since they provide first impression and useful information about data for further interpretation. The detailed summary statistics were produced in STATA statistics software. The final sample includes 9,741 firm-year observations for 861 non-financial firms in 15 countries in the MENA region. Due to missing values, the number of observations is less than total number of observations originally obtained (12,054).

4.2.1 Descriptive statistics for the leverage variable by country

Table 3 presents the descriptive statistics of book leverage ratio. For each country, the table lists the descriptive statistics of leverage variables over the sample period 2005-2018 using book values of leverage as proxy for capital structure.

Table 3: Descriptive Statistics of book leverage by country

Book Leverage						
COUNTRY	Obs	Mean	St.Dev	Median	MAX	MIN
BAHRAIN	222	0.0830488	0.1269571	0.0025682	0.77856676	0
Egypt	1,248	0.18819	0.1898195	0.1383627	0.9945696	0
Iraq	151	0.0484589	0.1540975	0	0.9031385	0
Jordan	842	0.1675266	0.1505575	0.1440618	0.736534	0
Qatar	226	0.2471842	0.2146815	0.1896677	0.8005015	0
Israel	2,753	0.263796	0.2233214	0.2388566	0.9916713	0
Kuwait	658	0.1884617	0.1671808	0.1559262	0.697402	0
Malta	124	0.2678589	0.1911453	0.2530777	0.866205	0
Lebanon	12	0.4120236	0.1360315	0.4646009	0.5913228	0.198312
Morocco	538	0.1835007	0.1571584	0.1644306	0.7957637	0
Oman	819	0.2918515	0.2566278	0.2262814	0.9611476	0
Tunisia	418	0.2233856	0.1907468	0.1839363	0.8763582	0
UAE	418	0.1986991	0.1742766	0.1696934	0.7959595	0
Saudi Arabia	1,087	0.2280349	0.1919839	0.208063	0.697648	0
Palestine	225	0.1266861	0.1452684	0.0724521	0.881654	0
Sample	9,741	0.2193299	0.20459458	0.1764992	0.994569607	0

Tables 3 and 4 report summary statistics for book and market leverage (respectively) for each country as well as for the entire sample. Both tables present mean, median, standard deviation, and maximum and minimum values for 15 countries. There is great heterogeneity among firms in terms of mean values in book and market leverage. The overall sample statistics

illustrate the mean of book leverage has changed over time, compared to the study by Belkhir, Maghyereh, and Awartani (2016) for the period 2003 to 2011, while this thesis relied on data of non-financial companies between 2005 and 2018. On average, the book leverage for the entire sample is 21.9% (with a median of 0.1764), which is 0.438% and 0.267% lower than sample mean from Belkhir, Maghyereh, and Awartani (2016), which was 39.0% with median of 36.8%. A possible explanation for this decrease in leverage is provided by Lukić (2018): the high cost of debt, the increase in inflation, and the low level of production make the surrounding conditions generally not encouraging for finance using debt.

Iraq has an average of only 4.8% debt as a proportion of total assets, which is the lowest value in the sample. Notably, Bahrain has a low average book ratio, which conforms with Belkhir, Maghyereh, and Awartani (2016). However, Belkhir, Maghyereh, and Awartani's (2016) results for the book ratio mean value for Bahraini firms was 15.6% (median 10.9%), which is almost twice the mean of this study's 8.3% (median of 0.2%) book ratio. Furthermore, as table 3 presents, Lebanon has the highest value with an average of 41.2% as a proportion of total assets.

The results of the descriptive statistics using market leverage as proxy for capital structure are enumerated in table 4.

Table 4: Descriptive statistics of market leverage

	Market leverage				
COUNTRY	Obs	Mean	St.dev	Median	MAX	MIN
BAHRAIN	111	0.2105187	0.1755698	0.17117288	0.9464101	0.0043862
Egypt	1,024	0.2112645	0.1891225	0.1589946	0.91859788	0.00013373
Iraq	36	0.1363155	0.155967	0.05340047	0.61036274	0.00452319
Jordan	732	0.2017579	0.1718078	0.1662763	0.88971615	6.6687E-05
Qatar	200	0.2355097	0.1937482	0.19143094	0.91316214	0.00048724
Israel	2,308	0.2831014	0.2056709	0.24655501	0.969391	0.0000601
Kuwait	561	0.2230394	0.1827547	0.17069385	0.8868604	0.0005556
Malta	111	0.2258854	0.1635047	0.17408443	0.7643232	0.000455
Lebanon	12	0.3822251	0.1299815	0.41876128	0.5324287	0.168201
Morocco	496	0.1694494	0.1571326	0.1277574	0.7941254	0.000022
Oman	699	0.3406956	0.2414067	0.29018587	0.9541795	0.0006226
Tunisia	375	0.2298468	0.1899315	0.18806115	0.7723429	0.0001044
UAE	385	0.2211996	0.1895838	0.16855588	0.9001144	0.0001293
Saudi Arabia	927	0.2351267	0.2104349	0.17518446	0.9424685	0.000023
Palestine	170	0.2075253	0.2038564	0.12760637	0.8456718	0.0005187
Sample	8,147	0.2447982	0.2026044	0.19583928	0.969391	0.000022

Average market leverage of the entire sample is 24.5% (median 19.6%). Findings from Belkhir, Maghyereh, and Awartani (2016) on capital structure had an average market ratio of 33.4% (median 27.5%)

Table 4 reveals a large variation in market ratio across countries. Bahraini firms have the lowest market leverage ratio of 8.3% (with median 17.1%), while Lebanese firms have the highest leverage of 38.2% (with median 41.9%). A possible explanation for this result is that there were only 12 observations for Lebanon. Thus, the mean was likely affected by both outliers and small samples, so this result should be considered with caution. The second highest country in market leverage ratio is Oman with 34%. In

Belkhir, Maghyereh, and Awartani's (2016) study, Oman had the highest market ratio of 42.4% (median 41.2%). The affinity of proportions indicate that Oman maintains its high rank in the countries most used for debt, while decreasing in the value of debt ratio in two measures (book and market) during this study period. Furthermore, Touil and Mamoghli (2019), who studied 12 countries in the MENA region, found the lowest debt ratio for Bahraini firms while Oman had highest debt ratio.

Comparing the mean and the median of book and market leverage in previous studies on the MENA region reveals that some countries have maintained a high ranking (compared to other countries in the sample) in their use of debt as a source of financing, as countries with low funding remain at the same level and are more dependent on other sources of financing, such as retained earnings. Furthermore, the debt ratios are less than in previous periods due to economic changes and political instability that occurred in the second half of the studied period. Since economic, regulatory, political, and investor protection environments strongly affect investment decisions, this political uncertainty caused and "explosive effect" by increasing risk and volatility in stock markets, which reduces the investment incentives in the MENA region (Chau, Deesomsak, & Wang, 2013; Antoniou, Guney, & Paudyal, 2008). The concept of debt capacity (Myers, 1984) establishes a simple but important rule in capital structure studies: companies borrow as much as they have the capacity to borrow. This rule leads to the possibility of decreasing the debt capacity of MENA region countries.

4.2.2 Descriptive statistics for the aggregated variables used for modeling

Table 4 presents the descriptive statistics of firm variables and country level variables used in the model for the whole sample.

Table 5: Descriptive Statistics of variables used in regressions

Variable	Mean	St.dev	Median	Max	Mini
SIZE	12.62448606	3.345605742	13.37586949	26.3115017	-0.262664309
PROF	0.073725478	0.405996376	0.095070063	4.486560209	-26.94074074
TANG	0.336861828	0.255845944	0.288577767	1.153390095	-0.054563897
GROW	1.424443978	1.028749128	1.143465874	9.818727848	0.000193316
CORR	0.248906955	0.600373733	0.2593156	1.567186	-1.399408
CORR-T	49.05023119	12.0051136	49	77	15
GDPG	0.039279	0.029594468	0.038978959	0.261702457	-0.070761026
INFL	0.036926731	0.044245504	0.027076641	0.295019327	-0.04863278

This Table report the mean, the median, the standard deviation the minimum and the maximum of the variables which are used in the regression. SIZE is the log of sales that represent firm size. PROF is the firm's profitability, TANG is the firm's tangibility, GROW is the firm's growth opportunities CORR and CORR-T are two proxies of corruption and are from Word Bank and transparency international respectively. GDPG is the gross domestic product growth and INFl is inflation.

A brief discussion for table 5 will be done by comparing the results of the mean of the factors I found with previous studies which are done in the MENA region. The mean of the firm size which I found in this study has change over time compared to a study for Belkhir, Maghyereh, and Awartani (2016). They found a mean of 4.92 where the results illustrate mean of 12.62. Close results to this study was found by wedad Ismail (2017) with size mean of 11.45. Profitability mean of 0.074 has not much change comparing to 0.073 of Belkhir, Maghyereh, and Awartani (2016). Tangibility and growth has a little decrease in mean value of 0.34 and 1.42 comparing to 0.37 and 1.89 respectively also for Belkhir, Maghyereh, and Awartani (2016). Country level factors like GDP growth and inflation have also lower mean values of 0.039 and 0.037 respectively comparing to 0.052 and 0.055. However what can be seen is the clearly and significant increase in the average of corruption of 0.249 comparing to 0.075 of Belkhir, Maghyereh, and Awartani (2016) in their study of MENA region over the period 2003-2011. This is an indicator of the effect of the protests, the changes that occurred, and the instability of the surrounding environment that occurred in 2011 that increased the corruption rates in this region.

4.3 Correlation Matrix

A matrix of correlation coefficients between each variable (dependent and independent variables) used in the regression analysis are reported in table (6).

Book and market values of debt are used to represent the dependent variable. **book leverage** is the first proxy used for the dependent variable, and **market leverage** is used as second proxy for the dependent variable.

CORR is corruption using World Bank corruption index. **CORR-T** is corruption using transparency international corruption index (CPI). **GDPG** is the growth of GDP. **GROW** is firm's growth opportunities. **INFL** is country inflation. **SIZE** is firm size. **PROF** is the firm profitability**.** And **TANG** is firms tangability. All measurements are represented earlier (see table 2).

Table 6: Correlation Matrix

	book leverage	market leverage	CORR	CORR-T	GDPG	GROW	INFL	SIZE	PROF	TANG
book leverage	1.0000									
market leverage	0.8366	1.0000								
CORR	0.1590	0.1209	1.0000							
CORR-T	0.1494	0.1191	0.9539	1.0000						
GDPG	-0.0168	-0.0160	0.0133	0.0531	1.0000					
GROW	-0.1322	-0.3835	-0.0141	-0.0385	0.0461	1.0000				
INFL	-0.0530	-0.0646	-0.4472	-0.4725	0.1577	0.0143	1.0000			
SIZE	0.1733	0.0117	0.0262	-0.0155	0.0078	0.0945	0.0904	1.0000		
PROF	0.0021	-0.0268	-0.1029	-0.0991	0.0118	0.1600	0.0495	0.1163	1.0000	
TANG	0.2481	0.1867	-0.1398	-0.1252	0.0097	0.0361	0.0751	0.0519	0.1022	1.0000

The correlation matrix for the variables reported in table 6 was used to examine the correlation among variables. The matrix provides a one-to-one relationship between variables and explains the type and degree of relationship. The sign of some coefficients in the regression output are different than the signs in the correlation matrix. This difference occurs since the relationship between variables in the matrix are not conditional on other explanatory variables in the regression, especially when explanatory variables are correlated.

The results indicate there is a negative relationship between book leverage and three explanatory variables (i.e., growth opportunities as a firm specific factor and inflation and GDP growth, which are country-level determinants). The correlation is 13.22%, 5.30%, and 1.68%, respectively. However, book leverage is positively correlated with the rest of the variables. Positive correlations between book leverage and other explanatory variables range from 0.21% (with profitability) to 24.81% (with tangibility).

Market leverage is also negatively correlated with growth opportunities, GDP growth, and inflation, but at higher percentages of 38.35%, 6.46%, and 1.60%, respectively. Market leverage is also negatively correlated with profitability at 2.68%. However, market leverage has a positive correlation with the rest of the variables with ranges of 1.17% to 18.67%. Notably, there is significant variation between the two proxies of the dependent variable and the percentage of correlation between each and the repressors.

The correlation coefficient between leverage and determinants of leverage is quite low and within the interval -44.72% to 24.81%. Correlations between the determinants of leverage were fairly small, except the inverse correlation between inflation and corruption, which has higher value (47.52%). The relatively low correlation coefficients thus do not indicate multicollinearity.

4.4 Regression results: static models

Static models illustrate the effects and impacts of variables over time or during time stages; however, time is not directly explained in the models. These models are used in most economic studies. Even when using dynamic models, static models are used as a basis for research and studies that require the application of dynamic models (Safiullin & Safiullin, 2018). These models define an equilibrium point, and when adding other variables or changing the values of the existing variables, a new equilibrium position is reconstituted.

4.4.1 Fixed effect model using book leverage

Table 7: Fixed effect model (book leverage)

Static Analysis					
	book leverage				
	model 1	model 2	model 3	model4	model5
SIZE	0.0132296	0.013049	0.012315	0.012166	0.011115
	(2.55)**	(2.52)**	(2.35)**	(2.19)**	(1.96)**
PROF	-0.0962543	-0.09592	-0.09444	-0.09395	-0.09209
	(-2.73)***	(-2.72)***	(-2.7)***	(-2.64)***	(-2.62)***
TANG	0.1982438	0.19708	0.195641	0.19511	0.194165
GROW	(6.93)***	(6.93)***	(6.81)***	(6.68)***	(6.58)***
	-0.0068815	-0.00698	-0.00699	-0.00627	-0.00625
	(-2.15)**	(-2.19)**	(-2.2)**	(-1.98)**	(-1.98)**
CORR		0.028744		0.028124	
		(2.15)**		(2.17)**	
CORR-T			0.001744		0.002022
			(2.83)***		(3.07)***
GDPG				-0.03761	-0.07602
				(-0.58)	(-1.1)
INFL				0.091242	0.138298
				(1.57)	(2.17)**
Number of Obs	8,121	8,121	7,949	7,942	7,770
W.R 2	0.0576	0.0591	0.0603	0.0569	0.0591
F-statistic	(15.97)***	(13.84)***	(14.25)***	(9.58)***	(9.77)***

SIZE is the firm size PROF is the firm's profitability, TANG is the firm's tangibility, GROW is the firm's growth opportunities CORR and CORR-T are two proxies of corruption and are from Word Bank and transparency international respectively. GDPG is the gross domestic product growth and INFl is inflation. .This table reports the correlation coefficients between the leverage variables book and market leverage and all explanatory variables and there f statistic values.

* significant at 10%, **significant at 5% and ***significant at 1%.

The analysis presented in table 7 clarifies the way in which the independent variables, both firm-level and country-level, influence and determine the financing behavior for non-financial firms in the long run. In model 1, no country-specific variables were included in the leverage estimation. Only firm level variables were provided. Afterward, institutional and macroeconomic variables were tested one at a time. In models 2 and 3, corruption using both proxies (each model included one of these proxies) was added in regression to the original set of firm-specific variables to investigate its impact on firm leverage, while all other country-level variables remained constant. Then, in models 4 and 5, inflation and GDP were added, so all macro variables are included in the last two regressions in table 4. In model 1, all firm-specific factors are statistically significant. Size is the logarithm of sales. The coefficient of this variable is positive in both static and dynamic models using book leverage (dynamic analysis is further extensively explained) clearly suggesting a linear relationship between size and debt. In an alternate specification, larger firms in the MENA region have easier access to credit, which encourages borrowing. Thus, debt increases as firm size increases. This result has been reported earlier in capital structure studies on firms from developed countries (i.e., G-7 for Rajan & Zingales, 1995). Larger firms, according to Rajan and Zingales (1995), have easier access to financial markets and lower bankruptcy and transaction costs. Iatridis and Zaghmour (2013) presented the same results regarding the impact of size on firms leverage. Their interpretation was that larger

companies are more exposed to accountability and auditing, in addition to having specialized financial analysts who analyze investments. That finding is in line with the trade-off theory hypothesis. From an agency story point of view, Mateev, Poutziouris, and Ivanov (2012) determined that smaller firms are more subject to information asymmetry problems and pay much for solving the problem, so the cost of capital for them is higher than for larger firms. Since cost of capital structure should include financial distress, that is represented in agency and bankruptcy costs (Leland H. , 1994).

Trade-off theory assumes that larger, more profitable firms and firms with higher tangibility (Kurshev & Strebulaev, 2006) are more likely to finance using debt (Sheikh & Wang, 2011). Firm size could be used as a proxy for inverse impact on bankruptcy (Salawu & Agboola, 2008). The inverse relationship between bankruptcy and leverage suggests a positive impact of size on leverage (Warner, 1977).

However, leverage is clearly not sensitive to the "size" in non-financial firms in the MENA region. For a 1 percentage point increase in firm size, book leverage only increased by 1.3 percentage point. Köksal and Orman (2014) found that, as the size increases, larger firms become more sensitive and size impact on financial leverage increases, while small firms sensitivity is not affected.

However, the coefficients for the size variable held in models 2, 3, 4, and 5. Even when adding country-level variables, the average increase in leverage according to size influence is still low, only 1.23 percentage point. This result is similar to those reported by González and González (2008),

who explained that relationship to size is an inverse proxy for bankruptcy, so there is a positive relationship between firm size and leverage. Previous studies (e.g., Schmukler & Vesperoni, 2014) have discovered that firm's size is more sensitive and positively influences leverage when financial markets are more developed. Therefore, large firms have diversified options for raising capital. However, in the MENA region, there are underdeveloped financial markets (Neaime, 2016). Hypothesis 2 predicts that financial structure decisions are significantly affected by profitability in an inverse way. Firms in the MENA region are perceived to be relatively riskless (conservative), so the higher the profitability of the firm, the lower the debt ratio. Therefore, these firms depend mainly on accumulated earnings rather than on issued shares or debt to finance investments. Risks of the surrounding investment environment negatively affect financing using debt, so companies resort to more secure sources, which are internal sources such as retained earnings. When cost of financing using these resources is not commensurate with revenue, the company resorts to debt, accounting for and trying to overcome the surrounding risks (Taggart, 1986). Indeed, Alom (2013) emphasizes the previous findings of (Taggart, 1986) by empirical analysis and expected that the motive behind choosing internal sources of financing is to avoid external financing risks, especially when external sources of financing are not easily available.

Although the former expression is not binding, another partial explanation for this negative relationship is that financial markets are underdeveloped, causing an obstacle in financing processes and decisions

(Chen, 2004). The robust negative relationship between leverage and profitability was observed. Profitability is significantly negatively related to firms' capital structure in all static, dynamic, book, and market based models. For a 1 percentage point increase in profitability, leverage for non-financial firms in the MENA region decreased by 9.6 percentage point. The result verifies pecking order theory, which states that when firms are profitable they prefer internal over the external sources of funding. This result corresponds to Danis, Rettl, and Whited (2014), Booth, Demirguc-Kunt, Aivazian, and Maksimovic (2001), and Belkhir, Maghyereh, and Awartani (2016). These researchers found an inverse impact of profitability on leverage in addition to a positive relationship between firm size and tangibility and firm leverage. Furthermore, Belkhir, Maghyereh, and Awartani (2016) discovered that profitability (retained earnings) contribute in capital structure mix in countries that experience high information asymmetry problem.

In addition, the lower costs of financing using retained earnings increases the availability and the ability of self-finance (Scaramozzino & Harris, 2008). The remaining models have a fairly steady proportion of profitability contribution to the financing decision.

Growth opportunity appears to have a negative effect in the long run, meaning that firms with higher growth opportunities intend to reduce debt and use internal resources of funding. This decision is an indicator that firms are subject to information asymmetry by reducing the amount of cash flowing into the hands of managers, making firms prefer internal financing.

The same result was reached by Kayo and Kimura (2011), Titman and Wessels (1988), and Rajan and Zingales (1995). The first regression indicates a small impact of growth opportunity on book leverage. For each 1 percentage point increase in growth opportunities, firm leverage decreased only by 0.6 percentage point. This result is in accordance with hypothesis 4 and lends further support to trade-off theory. A similar result holds for the rest of the models where corruption and other macroeconomic factors were added to the regression.

Tangibility is the variable that both pecking order and trade-off theories expect to positively impact firm leverage. Tangibility provides collateral so the firm is able to incur more debt (Titman & Wessels, 1988; Rajan & Zingales, 1995). Tangibility was observed to have a positive significant effect in all static models using book and market leverage. This result reveals that firms reduce information asymmetry to incur more debt by using tangible assets as collateral that make the lender feel safe when giving his or her money to the borrower (firms). The tangibility variable is the most sensitive variable at the firm level and an increase in tangibility by 1 percentage point increased the ratio of debt to assets by almost 20 percentage point. This result reinforces the idea that companies in the Middle East region are conservative. The presence of tangible assets reduces firms' conservative behavior and fosters external financing using leverage, as predicted by Bigelli, Martín-Ugedo, and Sánchez-Vida (2014) and Scott (1977). Furthermore, when the investor is insured, he or she is encouraged to invest. This result corresponds to a recent study conducted by Nouira and

Bellouma (2019) on the MENA region, which is considered a bank-oriented region. The study clarifies the importance of fixed assets in encouraging borrowing, supporting agency, trade-off, and pecking order theories.

Song (2005) found a positive and significant impact of asset tangibility on long-term leverage since firms matched fixed assets with long-term debt. The results of Touil and Mamoghli (2019), who conducted a study on Middle East and North Africa region non-financial companies (but for a different period of time), were consistent with these results in terms of the positive relationship between the tangible, size and debt. In addition to the negative relationship between profitability and debt, these findings emphasize that the availability of collateral reduces risks and the symmetric information represented in the inability of laws to protect the creditor. Furthermore, these findings asserts that firms tend to choose the cheapest resources (internal earnings) of funds. Touil and Mamoghli (2019) disagree with these results, finding a positive effect of growth opportunities on debt. Fan, Sheridan, and Twite (2012) had the same results and effects of the variables at the company level in terms of the positive relationship between the size and tenability and the negative relationship between profitability and growth with leverage.

The coefficient estimates of corruption using both corruption indexes from transparency international and the World Bank have positive signs on static models 2, 3, 4, and 5. These coefficient estimates indicate that there is a negative relationship between corruption level and firm leverage. Since the corruption perceptions index scores countries on a scale from 0 (highly

corrupt) to 100 (very clean), the higher the score, the lower corruption is in this country. These results, which hold in some dynamic models in table 10, are consistent with previous studies. Iatridis and Zaghmour (2013) recommended widening the sample to emphasis the role of corruption on misallocating resources and the importance of oversight and disclosure to companies in the MENA region. This result provides evidence as suggested by the hypothesis already reported in chapter 2 and are also generally consistent with both pecking order and agency theories.

In addition, GDP does not suggest any significant influence on leverage in the long run, possibly because firms' opportunity was taken as a firm-level explanatory variable. However, inflation has positive significant impact in model 5 using book leverage as the dependent variable and all firm and other country variants in the regression. Inflation's positive impact suggests that firms take advantage of tax shields when the cost of borrowing increases (nominal interest rate), so when inflation is high, firms tend to tap into the debt markets to raise funds.

The within R^2 provides information about the explanatory power of models. It explain how much of the variation in the dependent variable within firms (i.e non-financial firms) is captured by the model. Statistical models within R^2 are extremely low, according to models of book leverage. Models generally explain between 5.69% and 6.03% of firm-level and country-level variation, which is small. However, the F-statisics for the models are significant at a 5% critical level.

Comparing the within R^2 of models of book leverage with the within R^2 of models that use market leverage as a dependent variable, its notable that within R^2 rises to the range between 19.63% and 19.91%, which is better than models using book leverage and adds further power to the model but is still relatively low.

4.4.2 Fixed Effect Model Using Market Leverage

The fixed effect model was used by many previous research studies (e.g., Drobetz & Wanzenried, 2006), and the existence of a correlation between individual-specific effects and the independent variables has been proven as not a problem and it does not affect the results. Using panel data allows one to study the correlation between observed and unobserved variables, providing more efficiency because of more observations. This model was applied using STATA software.

Table 8: Fixed effect model (market leverage)

	market Leverage				
	model 1	model 2	model 3	model 4	model 5
SIZE	-0.00607	-0.00591	-0.005883	-0.00634	-0.006306
	(-1.13)	(-1.09)	(-1.07)	(-1.08)	(-1.05)
PROF	-0.13525	-0.13567	-0.135686	-0.13568	-0.135672
	(-3.96)***	(-3.95)***	(-3.95)***	(-3.85)***	(-3.85)***
TANG	0.10425	0.104817	0.1014653	0.103577	0.1000351
	(3.58)***	(3.6)***	(3.45)***	(3.48)***	(3.33)***
GROW	-0.08994	-0.08982	-0.089547	-0.08925	-0.088945
	(-16.15)***	(-16.19)***	(-16.05)***	(-15.87)***	(-15.73)***
CORR		-0.01422		-0.01499	
		(-0.87)		(-0.94)	
CORR-T			-0.000394		-0.000443
			(-0.54)		(-0.57)
GDPG				0.077441	0.079227
				(0.96)	(0.94)
INFL				0.042997	0.0361299
				(0.67)	(0.52)
Number of Obs	6,966	6,966	6,846	6,811	6,691
W. R 2	0.1991	0.1994	0.1992	0.1966	0.1963
Fstatistic	(77.48)***	(62.37)***	(60.97)***	(43.17)***	(42.22)***

SIZE is the firm size PROF is the firm's profitability, TANG is the firm's tangibility, GROW is the firm's growth opportunities CORR and CORR-T are two proxies of corruption and are from Word Bank and transparency international respectively. GDPG is the gross domestic product growth and INFl is inflation. .This table reports the correlation coefficients between the leverage variables book and market leverage and all explanatory variables.and thiere f statistic values. * Significant at 10%, **significant at 5% and ***significant at 1%.

Different regression results were found in static analysis; a change was observed in the role of firm size while using different leverage measures. However, there is no statistically significant relationship between firm size and leverage. The coefficients of size in static models that use market leverage as proxy (i.e., table 8) becomes negative and statically insignificant in each of the five models. Accordingly, the size does not have a significant effect on market leverage in a fixed effects model. The negative impact of size on long-term debt was found by Song (2005). This result occurs because smaller firms' credit worthiness does not allow them to take long-term debt that is riskier than short term debt because the firm will be exposed to fluctuations in interest rates and instability of environment in the long run. To discover the effect of corruption on firm leverage, corruption was added to the regression in model 2 using the World Bank index and in model 3 using the TI index (CPI). Neither corruption nor firm size had a significant impact on market leverage in these regressions. Even adding other country variables to the static regression as additional explanatory variables in models 4 and 5 did not introduce any improvement to the size the or corruption impact. The same result was revealed by Kale, E, and Ramirez (1991). When applying static analysis (OLS), they found no significant effect of size on capital structure. Size of the firm (in addition to other variables, such as liquidity) could be used as an indicator of the firm's development. Wanzenried (2002) found an insignificant effect of firm size on capital structure on UK firms. Other elements play an important role in influencing the capital structure that must be considered, such as the institutional

environment which includes how developed the financial markets are. In underdeveloped markets, the size of the company may not be beneficial (see Rajan & Zingales, 1995; Kale, E, & Ramirez, 1991).

Wanzenried (2002) asserts that the existence of well-developed markets increases long-term debt. Therefore, large firms use more short-term finances and less long-term finances. Ghazouani (2013) found an insignificant impact of firm size in Tunisian firms. Simultaneously, all other firm-specific factors were still strongly significant. Furthermore, the signals of coefficients hold using market leverage proxy. As table 8 illustrates, none of macroeconomic factors are statistically correlated to market leverage, so no significant impact of the macroeconomic variables on leverage decisions exists. Only three firm-level factors have robust effect on leverage (the relations between these variables and capital structure can be negative or positive according to what was previously explained).

The positive impact of tangibility on capital structure supports the idea of increasing the proportion of tangible assets and helps to absorb the unexpected losses and reduce costs that arise from companies' investments as found by (Tornyeva, 2013). Operation costs reduced by tangible assets include the agency costs as predicted by trade-off theory according to (Moosa & Li, 2012). In contrast, studies with negative impact of tangibility, like that of Bayrakdaroğlu, Ege, and Yazıc (2013) indicate firms do not use tangible assets to pledge their debt financing. They found a positive impact of growth opportunities on leverage, confirming pecking order theory.

4.5 Regression Analysis: Dynamic Models

The changing nature of the dynamic regression makes the speed of adjustment toward the target more flexible according to costs and the variables affecting them, thus providing a clearer and more comprehensive vision for leverage. Furthermore, dynamic regression is an advanced model used in economics and analysis (Safiullin & Safiullin, 2018). Dynamic models have produced findings regarding book and market leverage and the impact of firm- and country-level variants on each proxy of debt.

4.5.1. Dynamic analysis using book leverage

Based on a general dynamic model, the estimates of equation 3 using book and market leverage are presented in tables 9 and 10, respectively. Each table include five models as in static regression. Both tables represent the results of regression with system-GMM for non-financial firms in MENA region.

Table 9: Regression with system-GMM using book leverage

Dynamic Analysis					
	moodel 1	moodel 2	moodel 3	moodel4	moodel 5
book leverage (-1).	0.889944	0.891046	0.8910946	0.762827	0.76711
	(26.84)***	(26.84)***	(27.01)***	(10.84)***	(11.5)***
SIZE	0.003325	0.003311	0.0032442	0.001663	0.002115
	(5.16)***	(5.25)***	(5.23)***	(0.35)	(0.44)
PROF	-0.10748	-0.10804	-0.1063583	-0.17735	-0.17573
	(-3.99)***	(-3.95)***	(-3.93)***	(-3.28)***	(-3.33)***
TANG	0.030653	0.030532	0.0314083	0.027165	0.026314
	(3.17)***	(3.05)***	(3.13)***	(0.86)	(0.82)
GROW	-0.00578	-0.00572	-0.0058304	-0.00938	-0.0099
	(-2.86)***	(-2.85)***	(-2.93)	(-3.06)***	(-3.24)***
CORR		0.000388		0.006771	
		(0.12)		(0.7)	
CORR-T			0.0000181		0.000145
			(0.12)		(0.29)
GDPG				0.109701	0.119704
				(2.34)**	(2.43)**
INFL				0.110664	0.085745
				(1.11)	(0.83)
SOA	11.0%	10.9%	10.9%	23.7%	23.3%
Half-life	5.94	6.01	6.01	2.56	2.61

number of Obs	7400	7400	7245	6241	6112
number of instruments	95	96	96	27	27
AR(1) sig	0.000	0.000	0.000	0.000	0.000
AR(2) sig	0.059	0.059	0.059	0.064	0.064
Wald test (chi)	(746.48)***	(681.62)***	(658.34)***	(19.25)***	(20.23)***

book leverage is the book ratio of leverage which is dependent variable. book leverage (-1) is the lagged value of the dependent variable**,** SIZE is the firm size PROF is the firm's profitability, TANG is the firm's tangibility, GROW is the firm's growth opportunities CORR and CORR-T are two proxies of corruption and are from Word Bank and transparency international respectively. GDPG is the gross domestic product growth and INFl is inflation. .This table reports the correlation coefficients between the leverage variable book leverage and all explanatory variables. And their f statistic values. * Significant at 10%, **significant at 5% and ***significant at 1%.

As tables 9 and 10 present, the lagged value of the dependent variables book and market leverage have significant impact on firm's capital structure in the MENA region. Further the result showes a high coefficient of the independent variable (0.889944) that is between 0-1. This finding is evidence that MENA region firms have optimal capital structure toward which they gradually adjust. The estimation result is reported in table 9. The lagged value of the dependent variable is stated at the top of the column in the table. Firsy column (moodel 1) provides only the four firm level factors used as explanatory variables in the regression.

Large firms and firms with more tangibility use more debt to finance their investments and operations. A small increase was observed in debt proportion to assets when size on book leverage. A 1 percentage point increase in firm's size increased debt to total assets in only 0.3 percentage point. This is a small proportion compared to Belkhir, Maghyereh, and Awartani (2016), who found an increase in book leverage of 6.7 percentage point, on average, according to a 1 percentage point increase in firm size. While profitability and growth opportunity have a negative significant impact on leverage, growth opportunity is a critical factor in determining debt dynamics. The results revealed $\beta 4$ coefficient investment opportunities with negative values and statically significant at 90%, 95%, and 99% on dynamic models applied to book leverage. Thus, a strong negative correlation between the growth opportunity and firm leverage in the short term was observed. However, the sensitivity of growth opportunity's impact on leverage is relatively low. For a 1 percentage point percentage point

decrease in growth opportunities, the proportion of debt-to-firm assets increased by 0.31 percentage point. This result is consistent with Antoniou, Guney, and Paudyal (2008), who found that, according to agency and pecking order theories, the problem of information asymmetry is the reason for this negative relationship. Decreasing the effect of this problem can be accomplished by providing procedures by state and investors protection laws. The insignificant coefficient of growth opportunity in model 3 remains a puzzle. Tangibility's positive impact is consistent with Graham, Lemmon, and Schallhiem (1998). This result corresponds to trade-off theory as it provides an affirmation of the supportive role provided by fixed and tangible assets to the creditor in terms of the ease of liquidation of these assets in the event of bankruptcy or default. These results still hold after adding the country-level variable corruption using the World Bank index and TI corruption indexes in columns (moodel 2) and (moodel 3), respectivel. In columns moodel 4 and moodel 5, two other country-level factors were added: inflation and GDP growth. The results indicate that two country-level factors, corruption and inflation are not statistically significant, while the GDP growth has positive significant effect on book leverage. The dynamic analysis differs in that the size and the tangibility coefficients are insignificant in models 4 and 5 where the country-level variables were added. The type of assets used as a collector and its composition affects the possibility of these assets playing the role of guarantor for a firm financing by debt. If the tangible asset reselling process is fast and easy, the tangibility impact on capital structure is more significant (Skoogh & Swärd, 2015). A

negative relationship was found by De Haas and Peeters (2006) in a study on Central and Eastern European firms. The reason for this negative relationship is that the assets were not salable and that the financing of these assets was not achieved through external sources of financing, such as debt.

Speed of adjustment using fixed effect models, such as pooled OSL of fixed effect, usually has biased results, so in this study, the two-step GMM estimator was used to help avoid time bias (Arioglu & Tuan, 2014). Speed of adjustment was calculated in two ways. One was by (1-κ) and using the half-life equation to determine the time needed to eliminate 50% of the deviation from the target. Non-financial firms had a range of 10.9% to 23.7% speed of adjustment toward their target book leverage. In other words, firms needed 2.6 to 6 years to adjust half way to the target and shrink the gap between observed and target leverage. A much slower SOA was estimated in the first three models where GDP and inflation were not included in the regression, although the speed of adjustment estimated in models 4 and 5 was still 24% and 23%, respectively. The results indicate that firms in the MENA region slowly adjust back to the optimal book leverage. Nonetheless, this finding does not eliminate the presence of a target capital. Using the dynamic analysis, Ghazouani (2013) concluded that higher cost of adjustment is the main reason for slow adjustment.

4.5.2 Dynamic Analysis Using Market Leverage

Table 10: Regression with System-GMM Using Market Leverage

Dynamic Analysis					
	moodel 1	moodel 2	moodel 3	moodel 4	moodel 5
market leverage (-1)	0.587102	0.588117	0.583153	0.529135	0.521277
	(16.91)***	(16.91)***	(16.89)***	(7.96)***	(7.81)***
SIZE	0.004277	0.004124	0.003989	-0.00547	-0.00585
	(4.47)***	(4.35)***	(4.22)***	(-0.95)	(-1.00)
PROF	-0.16181	-0.15685	-0.15655	-0.20164	-0.20327
	(-8.00)***	(-7.7)***	(-7.7)***	(-6.91)***	(-6.93)***
TANG	0.068666	0.071424	0.073415	0.009601	0.009327
	(4.89)***	(5.07)***	(5.18)***	(0.29)	(0.27)
GROW	-0.06632	-0.06585	-0.06556	-0.11078	-0.11019
	(-8.06)***	(-8.04)***	(-8.1)***	(-10.84)***	(-10.84)***
CORR		0.009775		-0.00345	
		(1.98)**		(-0.29)	
CORR-			0.000542		0.000467
			(2.2)**		(0.72)
GDPG				0.140354	0.164229
				(2.07)**	(2.32)**
INFL				0.24637	0.233946

				(1.77)*	(1.71)*
SOA	41.3%	41.2%	41.7%	47.1%	47.9%
Half-life	1.30	1.31	1.29	1.09	1.063
number of Obs	6222	6222	6115	5206	5117
number of inst	95	96	96	27	27
AR(1) sig	0.000	0.000	0.000	0.000	0.000
AR(2) sig	0.663	0.678	0.636	0.868	0.806
Wald test (chi)	(190.22)***	(159.31)***	(160.58)***	(29.75)***	(28.59)***

market leverage is the market leverage which is dependent variable. market leverage (-1) is the lagged value of the dependent variable, SIZE is the firm size PROF is the firm's profitability, TANg is the firm's tangibility, GROW is the firm's growth opportunities CORR and CORR-T are two proxies of corruption and are from Word Bank and transparency international respectively. GDPGis the gross domestic product growth and INFl is inflation. .This table reports the correlation coefficients between the leverage variables the market leverage and all explanatory variables. And thiere f statistic values. * Significant at 10%, **significant at 5% and ***significant at 1%.

Results of dynamic analysis are usually similar to those of static analysis. Coefficients of firm-specific factors were all statistically significant except for firm size. Because of less developed financial markets that limits the resources available for firms. Table 10 presents the dynamic regression of firm-specific factors that determine the capital structure in addition to the country-level determinants. Findings are presented regarding the market leverage. The first column includes firm-level factors. All factors in this regression are statistically significant. Firm size and tangibility have a positive significance level, a 1 percentage point increase in each of these two factors increases market leverage by 0.4 percentage point and 6.8 percentage point, respectively. To the contrary, profitability and growth opportunity have a negative impact on book leverage , a 1 percentage point increase in each of these two factors decreases market leverage by 16.1 percentage point and 6.6 percentage point respectively. These findings also hold for seconed and third columns (moodel 2 and moodel 3), where both coefficients and signs did not change dramatically. Models 4 and 5 have significant changes in coefficients (magnitude of impact) or the sensitivity of leverage to these factors and sign of the coefficient. The size and tangability sign becomes negative and insignificant. Profitability and growth opportunities keep the negative sign, but their contribution of firm's capital structure increases more than previous models (1.2 .and 3)

Static models cannot demonstrate the cross sectional differences illustrated by the dynamic models. Static models analyze simple

relationships and identify direct effects, unlike dynamics, which analyze more complex relationships (Kurshev & Strebulaev, 2006).

Firm size is considered one of the main determinants of capital structure; however, its impact is still ambiguous according to the proxy used (Harc, 2015). Many studies (e.g., Fischer, Heinkel, & Zechner, 1989; Bevan & Danbolt, 2001; Banerjee, Heshmati, & Wihlborg, 2000) have proven that capital structure is positively affected by the size of the company due to the diversity available to large firms, as well as benefits from the economics of scale and low debt costs. Nonetheless, many others have proven a negative impact and some did not find any impact for firm size on capital structure. According to Kurshev and Strebulaev (2006), the negative relationship between firm size and leverage exists during the refinancing period. The results are consistent with previous studies of Ezeoha (2008) and Faulkender and Petersen (2005), who explained that large companies prefer to resort to internal sources of financing instead of going into the difficulties of external financing. Higher costs are expected to arise, especially in regions (such as the MENA region) that suffer from a low level of development of financial markets. In addition to the unstable investment environment that constitutes an incentive for large companies to resort to their retained earnings as explained by (Nouira & Bellouma, 2019). This interpretation supports the findings in table 8 where firm size in models 1, 2, and 3 have significant positive impact but are slightly sensitive to increasing firm size in the MENA region.

Furthermore, size in the dynamic regressions when adding macroeconomic variables (GDP and inflation) becomes insignificant and its effect on both book and market leverage is negated. According to Titman and Wessels (1988), larger firms have easier access to financial markets. However, the financial markets in the MENA region are still underdeveloped; thus, the sensitivity of firms size and significance impact are small or even non-existent. Wahome, F. Memba, and Muturi's (2015) results indicate that the effect of a company's size has reversed to become either insignificant or negative (or even both as in models 3 and 4) on leverage when adding other variables to the dynamic models regression. Wahome, F. Memba, and Muturi (2015) explain that these variables (GDP changes, corruption, and inflation) affect the capital structure, and the relationship between firm size and leverage is negative or the impact is eliminated. Bokpin (2009) also states that macroeconomic factors may impact firm specifics to change their sensitivity and impact capital structure decisions; in particular, he used the GDP and inflation variables.

Such a negative relationship between size and leverage was observed by Wahab and Ramli, (2014), who interpreted this result as support for pecking order theory. Companies in a stable situation and with internal cash flow and greater capital accumulations do not need to use external sources of financing, or they could be using equity financing while in a "healthy condition" to issue equity (Yolanda & Soekarno, 2012). Another explanation is that firms in the MENA region may not be large enough (considered small firms) to incur long-term debt, so they prefer short-term

options, resulting in a negative relationship between firm size and debt (Hall, Hutchinson, & Michaelas, 2004).

Profitability was the dominated variable in all models, maintaining the same direction of influence (inverse impact on leverage) and the same robustness. Thus, profitability was significant in all models at a 99% significance interval. In models 3 and 4, sensitivity of profitability increased to 20.1% and 20.3%, which is relatively close to Belkhir, Maghyereh, and Awartani's (2016) study. One explanations is that, according to pecking order theory, companies in the MENA region avoid or try to reduce the costs that arise from external financing (e.g., bankruptcy and agency costs), which are expensive compared to investment returns. Many researchers have found profitability has negative relationship with leverage and it also has dominance (Chen, Jung, & Chen, 2011). This result supports non-financial firms in the MENA region using internal instead of external financing.

Although tangibility has a positive sign as predicted by trade-off theory, it has an insignificant effect on firm leverage. According to previous findings, a firm's main preference when financing is the retained earnings because firms do not need guarantees or collateral represented in the tangible assets since companies do not have the tendency to borrow. This explanation and insignificant effect of tangibility was also obtained by Ezeoha (2008). Ezeoha (2008) asserts that, according to trade-off theory, tangibility is more effective and has a significant impact on long-term debt.

For Yolanda and Soekarno (2012), the nature of tangible assets plays an important role in whether to pledge the debt. According to the type of

companies within the sample, Yolanda and Soekarno (2012) found that there was an insignificant relationship between firm tangibility and leverage because the fixed assets of firms used in the sample (plantation firms) had no collateralized nature.

Belkhir, Maghyereh, and Awartani (2016) recommend several actions to increase firms' use of debt for financing, such as increased roles and regulations that protect investors, and to increase the level of control and transparency and develop the whole financial system.

The final firm-specific variable that significantly affects capital structure is growth opportunities. Variable growth opportunity in almost all models (except for model 3 in the dynamic analysis that uses book leverage) had a negative significant impact on financial leverage as a second dominant variable, indicating its explanatory power. This result complies with the trade-off theory hypothesis of the negative relationship between growth opportunities that consider indicators for existing asymmetric information problems and flotation in cash flow levels' capital structure (Kiraci & Aydin, 2018). A positive and negative relationship was found between size and profitability (respectively) with debt. Lemma and Negash (2012) found that the method of calculating the capital structure and mesurment used play an important role in determining the effect of the tangability on financial deciesion.

The analysis results using market leverage as proxy for debt are quite different in terms of inflation and GDP growth. The results of the country-level variables differ in some respects from the market leverage basis. The

estimates indicate that the coefficients of GDP and inflation are positively significant; GDP is considered an indication of how stable the state is. The higher the GDP, the greater ability of firms to incur debt (Bas, Muradoglu, & Phylaktis, 2009). In the short term, in case of economic flourish, the profitability of non-financial firms increases the firms' use of internal sources of funds over external (Ukaegbu & Oino, 2014).

A positive relationship between leverage and inflation indicates that increases in price levels appreciate leverage ratio. The results may support the notion that because the money value decreases over time, non-financial firms in the MENA region take advantage of this fact by using money with higher value and returning it to the lender at a lower value. In other words, as El-Masry (2016) found in his study of developing countries and as Homaifar, Zietz, and Benkato (1994) explained, inflation reduces the real cost of financing, which support hypothesis 7 and corresponds with trade-off theory. These relationships are, as expected, consistent with the findings in the literature (e.g., Kim & Wu, 1988). This result is contrary to Bas, Muradoglu, and Phylaktis (2009), who state that cost of debt (nominal interest) in an inflationary period increases, discouraging firms' incentive to incur debt. Leland H.'s (1994) results indicate that increasing cost of debt increases the optimal leverage ratio to take advantage of the desired tax benefits. Thus, the company automatically increases the debt ratio to reach close to that target, consistent with trade-off theory. Muthama, Mbaluka, and Kalunda (2013) found that cost of financing (interest) in the short term is

high but is less in the long run. This explanation is for the positive impact of inflation on total leverage and long-term debt.

Corruption's negative significant effect is contrary to the findings of Belkhir, Maghyereh, and Awartani (2016), who determined that MENA region firms takes advantage of corruption (positive impact on leverage) to avoid legal bureaucracy (red tape and stringent rules. That is, "it greases the wheel." However, results of this study suggest that corruption negatively influences leverage, supporting the "sands the wheels" hypothesis. The justification for this is that laws have become less intense after protests and political changes in this region.Therfore, corruption index used to represent the integrity of the legal system and higher corruption levels are associated with lower property rights and law enforcement and ineffective policy. In addition to the need to increase monitoring costs, these requirements would raise the costs of debt financing, which results in debt becoming less attractive as a source of financing. Less creditor right protection is one of the reasons for the increased lending risk and was thus a major obstacle to the companies' reliance on debt as a source of financing, as found by LL.M, Ferrando, and Moro (2015). This result is consistent with Gueta's (2006) results on the MENA region when investigating the impact of corruption on growth of the countries in this region. Gueta (2006) found that the MENA region suffers from a poor regulatory environment, causing widespread corruption, which had a negative, but indirect, impact on investments and the capital of the state and individuals. In addition, the impact of the variables (including corruption), whether direct or indirect, is stronger in the Middle

East and North Africa than in the rest of the world. Same results was given by Baxamusa and Jalal, (2014) they found that corruption in countries with higher corruption level suffer from increasing in cost of capital wither debt or equity. They found the average cost of capital to be 15.17% in countries of higher corruption level. While it decreases to be 5.84% for lower corruption countries.

The dynamic results also reveal that GDP has a significant positive impact on market leverage in the short term. This impact can be interrupted by increasing the volume of investments in an economic flourish that encourages companies to increase their debt ratio due to improvements in economic conditions. Furthermore, GDP growth has been used as an indicator for positive economic conditions so has a positive impact on speed of adjustment that fosters returning to the target leverage Cook and Tang (2010) found that in positive economic conditions (GDP growth), the speed of adjustment rose from 13.5% to 18.5% when using market leverage, while SOA rose from 14.5% to 16.7% in economic flourish using book leverage as proxy for capital structure. These previously observed country explanatory variables seem to add explanatory power and significance to explaining variations in corporate leverage.

An alternative way to assess the speed of adjustment is the half-life, which means the time needed by a company to pass half the distance to adjust back to the target and eliminate a particular fraction (50%) of the deviation (Iliev & Welch, 2010). The half-life is calculated as $"Half-life" = \frac{\log 0.5}{\log(1-\delta)}$

Where δ is the speed of adjustment.

This significant speed of adjustment is the most important issue in contemporary capital structure research and is consistent with trade-off theory. Trade-off theory states that firms have target leverage and when firms deviate from the target, they make financial decisions that will adjust the gap between the previous year's leverage and the target leverage of the current period. On the contrary to the previous opinion Hovakimian and Li, (2012) conclude that Proving the importance of putting a target capital is not done through the speed of adjustment or the dynamic behavior of the financing process. In addition, it is not necessary to considered both (SOA) and dynamic behavior as evidence in favor of the tradeoff theory or other theories of capital structure.

The difference in the adjustment speed indicates the effect of the macroeconomic and firm-specific variables on the adjustment costs (Drobetz & Wanzenried, 2006). Macroeconomic variables (Yan, 2010), including the GDP and inflation, proved to affect the speed of return to target capital. Yan (2010) also found a positive effect of inflation and GDP growth on firms' speed of adjustment. In favorable economic conditions, costs become smaller so GDP is higher, and because of real interest rate reduction (as mentioned earlier), the speed of adjustment is higher since cost of financing declines.

The nature of the companies and their field of work may have an impact on the speed of adjustment. Financial companies are adjusted at a faster rate than non-financial companies because non-financial companies

prefer internal sources, while banks prefer financing from external sources, such as debt (Oino & Ukaegbu, 2014). In Oino and Ukaegbu's (2014) study, non-financial firms in Nigeria had a speed of adjustment of 46%, which is quite close to this study's results.

The estimated speeds of adjustment generated by these models for the real data was calculated by $(1-\kappa)$ where κ is the the coefficient of lagged dependent variable. an average of 43.8% speed of adjustment toward the target. Overall, the results provide evidence that non-financial firms in MENA countries' target leverage and financial decisions are dynamic. The half-life estimation method revealed a remarkable and significant variation between results for market and book leverage proxies. The average number of years that the company needs to eliminate half of the divergence from the target is 4.62 and 1.15 years in models using book and market leverage, respectively. Touil and Mamoghli (2019) found that firms needed three to four years for partial convergence to targets, which was considered a long time and slow adjustment. The reason is the higher costs (asymmetry of information and transaction costs) associated with the adjustment process. Firms preferring internal resources of funding defiantly reduce the speed of adjustment toward the target leverage ratio. In addition, the lower distress cost is an indicator of the lower proposition of debt used for finance (bankruptcy costs are associated with incurring more debt), so lower levels of bankruptcy cost slow the adjustment process. This significant variation is due to the measurement process that may affect both firm-specific factors' effect and the speed of adjustment (Fan, Sheridan, & Twite, 2012).

Its notable that speed of adjustment using market leverage is faster than book since market value of leverage is affected by market changes more than book values that depend on historical data.

First-order and second-order serial correlations in the first-differenced residuals were tested using AR1 and AR2 statistics (Arellano and Bond, 1991). The presence of correlations for the first order does not imply a large problem in estimates and results. The null hypothesis for the second-order correlation is the absence of the second-order serial correlation, which should not be rejected. In this case, the absence of the second-order autocorrelation was not rejected; accordingly, the results here indicate that an autocorrelation problem is non-existent.

Chapter Five

Conclusion and Recommendations

This thesis considered the capital structure patterns and variables to determine the capital structure in non-financial firms in the MENA region. Further, the study incorporated the impact of corruption on leverage ratio, the main concern of this thesis. This research determined whether there is a target capital for these companies and the speed with which the companies return in the event of deviation from that target. This thesis makes significant contributions in a number of areas. First, for non-financial firms in the MENA region, this study provides information that improves on these firms' managerial capabilities to better position themselves to adapt to the surrounding circumstances and the lack of available funding sources and providing identification for the determinants of capital structure to help managers and policymakers design appropriate strategies to make more informed decisions and find better exploits for determinants' impact on firm capital structure. Second, for finance suppliers, this thesis provides information on non-financial firms' financing schemes. This information could help these suppliers provide and develop financial products to meet non-financial firms' needs by explaining the determinants of capital structure decisions.

Finally, this thesis contributes to the existing literature by investigating the determinants of capital structure in the MENA region, a relatively marginalized region since most studies focus on developed countries, and adds a new variable to capture the effect of corruption on capital structure of non-financial firms. Furthermore, the study extends the existing empirical analysis of firm-specific determinants of leverage to non-

financial firms that have little attention in capital structure literature. Therefore, this work could be the basis for future research on capital structure, which could be improved by adding more explanatory variables to the regressions.

Results strongly support the empirical predictions and hypotheses. Generally, the results support the traditional determinants of leverage and provide empirical evidence that the capital structure decision of non-financial firms in the MENA region is significantly affected by determinants of developing countries and financial firms. Capital structure depends on both firm-specific characteristics and the environment (country) in which a firm operates. Based on a sample of the MENA region during the 2005-2018 period, firm debt had two proxies: book and market leverage. Certain firm-specific factors are relevant for explaining capital structure namely; size, profitability, tangibility, growth opportunities. In addition to a macroeconomic factors namley GDP growth, inflation and corruption. Some of these factors correspond to pecking order; some results are apparently consistent with trade-off theory.

The main findings are summarized as follows.

Firm's size and tangibility have a positive significant impact on debt percentage. Tangibility had expected positive signs in all cases; however, size was insignificant in some models. The ratio of tangible assets had a significant positive sign in most cases, which was predicted by the hypothesis of trade-off theory interrupted by the availability of collateral that promotes borrowing. While profitability and growth opportunities have

strong negative impacts on firms leverage, profitability coefficients had a negative significant sign in all models. This result is an indicator of the availability of internal funds and firms prioritizing their investments with internal finance. This financing behavior is in agreement with pecking order theory.

Growth opportunities may represent the degree of informational asymmetry, so they have a negative sign with debt. On the country level, inflation has a positive effect on firm leverage, which indicates that firms achieve utilization of tax shields on debt and its costs. In addition, GDP has a positive relationship with leverage but only in the long run. Corruption, which was considered the main country-level determinant, has a negative impact on leverage. The robust estimation results of these three variables and firm-specific variables indicate the empirical validity of trade-off theory and pecking order as a basic framework. From previous studies that have linked corruption to asymmetry of information, we recognize that from the perspective of pecking order theory, increased corruption leads to an increase in information asymmetry, leading to increased risks. This result makes the company prefer less risky sources of financing, which are internal sources, from the agency theory viewpoint, which increases the cost of capital structure, making firms prefer less expensive sources as well.

As mentioned, proving that firms have speed of adjustment automatically proves that firms have optimal leverage (which supports the trade-off framework). A slow Speed of adjustment for book leverage was noticed while a high speed of adjustment was recognized using the market

leverage. For book leverage firms in MENA region need 2.6 to 6 years to pass half the distance to adjust back to the target, or 10.9 to 23.7% speed of adjustment. For market leverage they need 1.06 to 1.31 years or 41.2 to 47.9% SOA going back to target.

It's also notable that partial adjustment mechanism had better performance and higher speed was observed when adding corruption, GDP, and inflation to the model. This result indicates those variants add explanatory power to the model and speed up the adjustment process. Since GDP and inflation have a positive impact on debt, they stimulate the return toward the target capital structure. All results were consistent with the hypotheses presented in previous chapters, reinforcing results in the literature. The results support trade-off, agency and pecking order theories. One result consistent with the predictions of pecking order theory was that profitability was a dominant variable that maintained its negative influence in all models and analyses. Changes in firm size signal were observed. The intensity of firm size's effect changed to be a variable with an indefinite effect, as it was found to have a positive effect, but with a low degree of influence on financial leverage.

Growth opportunity had a consistent influence with predictions of trade-off theory and significant negative impact on firm leverage (both book and market leverage) in almost all models. This result is consistent with the assumptions of trade-off theory.

All three theories agree that tangibility's effect has a positive impact on firm leverage and empirical evidence that proves the importance of tangible assets in protection of debt and providing pledges for lenders was provided.

The overall results indicate that more than one of the assumptions of trade-off theory influence debt financing behavior in addition to a core essence of trade-off theory, which is the target debt ratio. This thesis provides empirical evidence that firms in the MENA region put forward a target debt ratio. founding a gradual adjustment in the model means that firm close the gap from year to year toward the target even when a large divergence from the target or differences in optimal leverage ratios across countries exists, and that is evidence of the tradeoff theory.

Trade-off, pecking order, and agency theories appear to explain the capital structure decision, and some firm-specific factors are consistent with one of each. This support has been previously discussed: Serrasqueiro and Caetano (2015) and Korajczyk and Levy (2003) concluded trade-off and pecking order theories are complementary and not mutually exclusive.

- Since development of financial markets greatly affects companies' options and financing decisions, the measurement used for the dependent variable and independent variables can change the results of the research. In addition to the explanatory variables, all these factors affect the financing options and the degree of sensitivity of this decision to company-level changes. Thus, the intensification of the study and research on companies in developing economies like MENA region is necessary to recognize the actual differences between

the financing decisions of developed and developing countries. Therefore, studies on developing countries need to be more extensive and studies interest should be increased regarding determinants of capital structure of the firms located in emerging markets. Recommendations for future research are to use more detailed proxies for leverage, for example, long- and short-term debt, since non-financial firms asset nature is not salable, so there is a mismatch in the maturities of assets and liabilities that make them face troubles in short-term financing. It could be ideal for these firms to satisfy their short-term needs by using liquid assets. The shorter the term, the more liquid assets should be used to pledge this leverage. This matching between maturities of debt and assets liduidity would help in better understanding of financing behavior. It is, however, important for future research to also consider the development of financial markets when explaining the capital structure of the MENA region to better understand the financial decisions in this region. In addition, other institutional variants, such as political stability and institutional quality, should be included. All these changes that could have an impact on choosing the right capital structure of the firm must be taken into consideration. This thesis also suggests the need to pay further extensive attention on the macroeconomic factors that affect the capital structure decision.

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كلية الدراسات العليا

ديناميكية هيكل رأس المال ومستوى الفساد باستخدام بيانات من الشرق الاوسط وشمال افريقيا

إعداد

آيات حكواتي

إشراف

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ديناميكية هيكل رأس المال ومستوى الفساد باستخدام بيانات من الشرق الاوسط وشمال افريقيا

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الملخص

تهدف هذه الأطروحة إلى التحقيق في محددات هيكل رأس المال وتقديم أدلة جديدة وإلقاء الضوء على تأثير الفساد على القرار المالي للشركة في منطقة الشرق الأوسط وشمال أفريقيا. تم فحص الخصائص المحددة للشركة وكذلك المحددات على مستوى الدولة لتقديم أدلة جديدة على دور كلا المستويين من محددات هيكل رأس المال من هذه المنطقة. تم فحص مستويين من المتغيرات وفقًا للنظريات الرئيسية الثلاث pecking order and agency theories (trade off) التي تم الاعتماد عليها كأساس نظري في هذه الاطروحة. خلال تحقيق الأهداف السابقة؛ تناولت هذه الأطروحة سرعة التعديلات التي تقوم بها الشركات غير المالية في منطقة الشرق الأوسط وشمال إفريقيا للرجوع والاقتراب من هيكل رأس المال المستهدف. تتكون العينة من 861 شركة غير مالية في الفترة 2005–2018.

تظهر النتائج أن القرار المالي مدفوع بعوامل على كلا المستويين. تكشف النتائج ايضا أن الشركة الاكثر ربحية والشركة التي تتمتع بفرص نمو أعلى تستخدم ديونًا أقل لتمويل أصولها، بينما لوحظ وجود علاقة إيجابية بين كلا من نسبة الاصول الملموسة والحجم من جانب ونسبة الرافعة المالية من الجانب الآخر. بالنسبة للمحددات على مستوى الدولة، وجد أن إجمالي الناتج المحلي والتضخم يؤثران بشكل إيجابي على الرافعة المالية للشركة على المدى الطويل بينما وجد ان الفساد كعامل محوري له تأثير سلبي على الرافعة المالية للشركة. هذا التأثير السلبي لأن مؤشر الفساد المستخدم هو مؤشر سنوي بمقياس من 0 إلى 100 (كلما كانت القيم أعلى تشير إلى مستويات أقل من الفساد) فان النتائج تظهرعلاقة إيجابية ولكن تأثير سلبي. التأثير السلبي يعني ان ارتفاع مستوى الفساد في بلد ما؛ يؤدي الى انخفاض الرافعة المالية لشركات الغير مالية في منطقة الشرق

الاوسط وشمال افريقيا. تظهر النتائج أيضًا أن الشركات تضع هيكل رأس مال مستهدفًا تقوم بتعديل نسبة الدين للاقتراب منه تدريجياً. ومع ذلك وجد ان سرعة الرجوع الى رأس المال المستهدف بطيئة عند استخدام الرافعة المالية الكتابية كبديل لهيكل رأس المال. في المقابل، تزداد سرعة التعديل عند استخدام رافعة السوق.

يمكن الاستنتاج أن نظريات الثلاث تفسر جميعها قرار هيكل رأس المال للشركات غير المالية. علاوة على ذلك، تستخدم الشركات غير المالية في منطقة الشرق الأوسط وشمال إفريقيا مزيجًا من موارد التمويل الداخلية والخارجية. بالإضافة إلى ذلك، يبدو أن المتغيرات المستقلة على مستوى الشركة وعلى مستوى الدولة تساهم في اتخاذ قرار راس المال المستهدف والفساد هو أحد هذه المتغيرات.

توصي الدراسة بإجراء مزيد من الابحاث حول منطقة الشرق الأوسط وشمال إفريقيا باستخدام مزيد من التفاصيل عند قياس وكلاء لهيكل رأس المال وفعالية الشركات. بالإضافة إلى مراعاة تطور الأسواق المالية عند شرح هيكل رأس المال في منطقة الشرق الأوسط وشمال إفريقيا. وإضافة المزيد من العوامل على مستوى الدولة كمحددات لهيكل رأس المال.