Corporate Geographical Location and Capital Structure: Evidence from an Emerging Market

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ABSTRACT

This study investigates the impact of the geographical location of firms' headquarters on the capital structure decisions of listed non-financial firms in Saudi Arabia. In examining this, we compare the leverage levels among firms, which their headquarters, are in major and non-major cities in Saudi Arabia. Using a sample of listed non-financial firms over the years 2005-2016 and performing alternative methodologies, we find strong evidence that the location of a firm's headquarters shapes its capital structure choice. Specifically, we find that firms whose headquarters are in major cities have higher market and book leverage levels than firms whose headquarters are in non-major cities (i.e. other cities). This difference is explained by the reason that firms in non-major cities suffer from more information asymmetry and adverse selection problems than other firms, and this therefore makes external debt financing more costly. The outcomes of this study provide important implications for policy makers, investors, and analysts.

Keywords: Capital Structure, Headquarters' Location, Saudi Arabia, Major Cities, Non-major Cities
JEL Classifications: G30, G32, G39

1. INTRODUCTION

The question of how firms should choose their capital structure is regarded as the most important question in corporate finance (Lemmon et al., 2008). A plethora of studies have been performed in attempting to answer the optimal choice of the capital structure since the classic publication of Modigliani and Miller (1958), and theories have been developed to explain firms' capital structure choice (i.e., the trade-off, the agency, and the pecking order theories). Considerably, little studies have been undertaken in explaining the role of corporates' locations and their financing decisions especially in emerging markets setting.

The pecking order theory, which is introduced by Myers (1984) and Myers and Majluf (1984), predicts that information asymmetries is the main element for firms' financing decisions. In this regard, there are numerous empirical investigations, and proof of its legitimacy is blended. Likewise, prior studies introduced several

information asymmetries' proxies, for example, bid-ask spreads, residual volatility, and trading volume, are identified with the market response to issuing new equity and inclination to issue equity (Ivković and Weisbenner; 2005; Korajczyk et al., 1991; Loughran and Schultz, 2006).

Prior studies showed that firm location is a proxy for information asymmetry. According to Loughran and Schultz (2006), firm location is the most suitable measure of information asymmetry. As per Loughran and Schultz (2006), "non-major location is a measure of information asymmetry since it denotes that there are few investors located nearby and that the distance is economically significant." Loughran and Schultz (2006) report that corporate financing decisions are influenced by their locations. Thus, and following these studies, the information asymmetry measure that is used in the current study is the geographical location of the firm's headquarter. It is a general consensus that this factor (i.e. a firm's headquarters location) is especially appropriate when we need

to perceive how information asymmetry influences and impacts on the firm's capital structure (Korajczyk et al., 1991; Loughran, 2006; Mouton and Smith, 2016).

The majority of studies that investigate the linkage between corporate geographical location and capital structure decisions are related to developed markets and mostly in the United States (Ivković and Weisbenner, 2005; Pirinsky and Wang, 2010; Wang, 2018). However, this issue is still not considered within emerging markets setting, and therefore it is not fully understood.

Emerging markets are different from developed markets (Scott and Christensen, 1995). In contrast to developed markets, emerging markets have less institutional development (Al-Najjar, 2013; Guizani, 2017). Further, emerging markets are remarkably less perfect and suffer from high information asymmetry problem and therefore the capital structure mix decision among debt and equity suffers from the mentioned higher information asymmetry (Alnori and Alqahtani, 2019; Jabbouri, 2016). Furthermore, Therefore, since information asymmetry is prominent in emerging markets, it is interesting to investigating the effect of firm location, which is a proxy for information asymmetry, on corporate capital structure in such a market.

In addition to being an example of an emerging market, Saudi Arabia is also a considerable economy worldwide, a G20 member, and the largest exporter of crude oil (Alnori and Alqahtani, 2019; Hamdi et al., 2019). The Saudi Arabian capital market, as known as TASI, is the larger in the Middle East and North Africa (MENA) area. More importantly, the bond market is still underdeveloped, and corporate debt is mostly relying on banks loan (Alzomaia and Al-Khadhiri, 2013). Most of the main banks operating in major cities in the country (These three cities are Riyadh, Jeddah and Dammam). Therefore, corporate capital structure decisions may vary among firms, where their headquarters are in major cities, in comparison to the firms in other cities since the severity of information asymmetry cost is different among the latter and the former.

Therefore, the current study aims to identify the impact of the firm's location on their capital structure decisions for listed firms in the Saudi Arabian capital market. More specifically, this study will compare the leverage levels of the capital structure of major and non-major cities in Saudi Arabia. This will show how different information asymmetry cost between the mentioned two types of corporations can differently shape their capital structure choice.

After controlling for firm-related and external factors, as confirmed in the relevant literature, and applying alternative methods, we find strong empirical evidence that firms' headquarter locations play a significant role in determining firms' capital structure. The capital structure of firms located in non-major cities includes significantly lower leverage ratios, as measured by both market and book leverage, in comparison to firms located in major cities.

The lower leverage ratios in the capital structure of firms located in non-major cities, compared to the capital structure of firms in major cities, suggest that the former suffer from higher information asymmetry cost in comparison to the latter. Therefore, external financing (i.e. debt) is more costly for firms located in non-major cities and consequently, their financing decisions rely less on external financing, and their capital structure includes significantly lower external debt financing.

This article is divided into five sections. Section 2 considers an overview of the capital market and the geography of Saudi Arabia. Section 3 is the literature review. Section 4 provides the data and the empirical method; Section 5 contains the empirical results; and finally, section 6 concludes.

2. OVERVIEW OF RESEARCH CONTEXT: SAUDI ARABIA

2.1. Saudi Arabia Economy
The Saudi Arabian economy is one of the top twenty economies of the world (G20). According to El Mallakh (2015), Saudi Arabia's economy depends to a major extent on oil as the nation is ranked as the second-largest producer of petroleum products. Therefore, Saudi Arabia's economy can be defined as an oil-based economy with robust government controls over principal economic operations. The Saudi Arabian economy possesses approximately 16% of the world's proven international petroleum reserves and plays a critical role as a leading OPEC. Several studies have indicated that petroleum accounts for 42% of Saudi Arabia's GDP (90% on export earnings and 87% on budget revenues).

Furthermore, it is worth noting that the Saudi Arabian market is also the largest financial market in the MENA region. During the first quarter of 2019, the country budget had accomplished its first surplus since 2014 and the surplus was approximately 10.4 billion dollars. This achievement was based on the increase of oil and other non-oil revenues that were injected into the economy. Saudi Arabia's economy is expected to grow tremendously in the future, considering its increased diversification plans and investments (Eakins, 2013).

Alnori and Alqahtani (2019) noted that the Saudi economy is considerably reliant on natural resources. Saudi Arabia is actively working to diversify its economy, investing heavily in non-petroleum production. Among the many things the Saudis are looking at are the enormous expansion of solar-energy projects, expanding mineral mining, and building automobile/light-truck assembly plants. These projects are already underway although Saudi Arabia is in a race against time and population.

2.2. Saudi Stock Market Overview
The Saudi Stock Market development is divided into two primary periods. These periods are the initial period and the restructured Period.

2.2.1. Initial period (1930-2003)
Joint-stock companies in Saudi began in the mid-1930s during the establishment of the "Arab Automotive" company which was the pioneer joint-stock company. In 1975, there were approximately 14 publicly-traded companies. With the main economic aims being the

development of infrastructure, human capital, and improving the conditions of living for citizens, and limited emphasis on growing the stock market (Alzomaia and Al-Khadhiri, 2013).

After the 1970s, the rapid growth of the economy triggered the foundation of many big corporations and joint-stock banks in Saudi Arabia. However, the market was still informal up to the early 1980s when the government regulated and rebuilt the capital market to guarantee the efficient and secure operation of the stock market. In 1984, the Saudi government created a Committee made up of the Ministry of Finance and National Economy, Ministry of Commerce, and the Saudi Arabian Monetary Agency (SAMA) to monitor and develop the market. The market activities were monitored and regulated by SAMA. By 1990, SAMA came up with an Electronic Share Information System (ESIS) which focuses stock trading from various locations to a single market and processes market orders (Alzomaia and Al-Khadhiri, 2013).

2.2.2. Restructured period (2003 – present)

The capital market authority (CMA) was founded in 2003, and it acts as the primary supervisor and regulator of the financial market. The CMA formulates policies to safeguard the interest of investors, guarantee efficiency and fairness in the financial market. The CMA is endowed with the power to enforce and control all the activities and operations of the Saudi capital market. Also, the role of the CMA goes beyond supervising and regulating players within the capital market. In fact, the CMA led to the creation of networks aimed at nurturing a stock investment culture among Saudi nationals and foreign investors (Alzomaia and Al-Khadhiri, 2013).

Below are the various development stages to Saudi's stock market:
1. Creation of the Saudi stock exchange (SSE) in 2007 as a single entity with authority to trade securities in Saudi Arabia.
2. The restructuring of Saudi stock market sectors in 2008 based on each listed company does, its revenue and earnings structure. In addition, the restructuring reconstituted Saudi's stock exchange from eight to fifteen 15 sectors.[1]
3. The TASI and new sector indices were determined on the basis of tradable and free-floating shares.
4. Commercial banks stopped providing intermediary services to players in the stock market and instead mandated to 110 independent brokers and research houses towards the end of 2009.
5. In 2009, for the very first time in Saudi, the buying and selling of Sukuk[2] and bonds was approved by the CMA, signaling the launch of a second regulated market.

2.3. Geography of Saudi Arabia

Saudi Arabia comprises of 13 regions which shape the kingdom's geography.[3] The sample of firms located in major cities comprised of firms located in Riyadh, Dammam and Jeddah. The cities of Riyadh, Dammam, and Jeddah are considered the major cities in this study based on their development levels, populations and strategic significance to Saudi Arabia. In fact, most of the major commercial banks are centralized in the mentioned 3-major cities.[4]

The next subsections review the theoretical framework of various capital structure theories and the several empirical studies on the impact of firm location on the capital structure. It reviews previous studies that examined the relationship between capital structure and firm location and undertakes an analysis to explore how firms' headquarters location affects the debt levels for firms in Saudi Arabia.

3. RELATED LITERATURE

3.1. Theoretical Models of Capital Structure Decisions

The literature on optimal capital structure choice has received significant interest within corporate finance following the seminal publication of Modigliani and Miller (1958). Since then, many theories have been developed to predict the existence of an optimal capital structure. For instance, Kraus and Litzenberger (1973) posit that a firms' capital structure is anchored on the trade-off between the advantage of debt financing (i.e., tax savings) and the disadvantages (i.e., the increased in expected bankruptcy). The trade-off theory proposes that the optimal capital structure is achieved where marginal benefits and the marginal cost of debt financing are balanced.

Jensen and Meckling (1976) introduced the agency cost theory in corporate capital structure literature. The agency theory suggests that conflict between firms' insiders (managers) and outsiders (bondholders and shareholders) is significant in the firms' financing choices. Therefore, this theory predicts that firms' capital structure choice should be made to reduce the mentioned agency cost.

Further, Myers (1977) brought forward another form of agency cost of debt, which is the underinvestment problem. According to Myers (1977) when the corporate debt matures after the expiry of investment options, shareholders may reject profitable projects (i.e. positive net present value projects), since the advantages of investing in such projects accrue to the firms' bondholders without maximizing the shareholders' wealth.

Based on the information asymmetry problem, Myers and Majluf (1984) introduced the pecking order theory, which disregards the optimal capital structure mix. According to Myers and Majluf (1984), a company has a given order of preference for financing its operations. Therefore, the capital structure of a firm follows a certain pecking order. The pecking order theory suggests that firms employ internal funding before taking up external sources of funds based on asymmetric information costs. Thus, external financing is only considered once all internal sources of funds are exhausted.

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1 These 15 sectors include agriculture & food, building & construction, cement, energy, hotel and tourism, industrial investment, media & publishing, multi-investment, petrochemical industries, real states, retail, telecommunication & information technology, transport, banks & financial services and insurance

2 Islamic bonds.

3 These 13 re The primary regions are Riyadh, Mecca, Qassim, Tabuk, Madinah, Northern Borders, Jawf, Ha'il, Bahah, Jizan, Asir ,Najran,and Eastern Province (Al-Sakran, 2001).

4 According to Alnori and Alqahtani (2019), the bonds market in Saudi Arabia is still under-developed and therefore banks' loan is considered as very important sources of external debt financing.

Based on the severity of the information costs associated with corporates' alternative financing choices, firms' capital structure composition should be made to lessen the inefficiencies in firms' investments caused by information asymmetry.

As per this theory, equity investors are taking more risk than debt investors. It's a higher risk that leads a company to sell equity rather than seeking debt. Equity investors are typically not promised any payments by the company (Vasilescu-Giurca, 2009). Equity investors may someday be handed a dividend, but more typically, they invest for a future capital gain as the company grows in value. Debt lenders are promised repayments, and typically a low-interest rate for the use of their capital. That only makes sense for lenders to provide if either the company has a history of free cash flow to repay the debtor if the debt is backed by an asset or invoice or other collateral (Vasilescu-Giurca, 2009).

In addition to the above-mentioned theories, numerous theories have been put forward to explain corporate capital structure decisions. for example, the market power (Sullivan, 1974), collateral value (Scott Jr, 1977), the non-debt tax shield (DeAngelo and Masulis, 1980), firms' cost of liquidation (Titman, 1984) and, more recently, the market timing hypothesis (Baker and Wurgler, 2002).

3.2. Literature Review

Prior studies demonstrated that geographical location is an influential factor in capital structure decisions. Over the years, scholars have established a substantial difference between companies located in major cities and those in non-major cities with respect to financing choices (Wang and Pirinsky, 2010). Most of the research centers on the capital structure of different firms within major cities and non-major cities. A comprehensive review of earlier studies shows that firm location affects certain elements that have an impact on capital structure, such as the severity of information asymmetry (Foster and Young, 2013).

Bas (2012) analysed the World Bank Enterprise Survey data to evaluate the capital structure and debt maturity choices of firms in developing countries. He found a difference in the debt maturity levels and leverage for non-major cities' and major cities' companies. The financial and economic situation of a country affects firms differently. Non-major cities' firms were found to have lower debt and leverage maturities.

A likely reason for the preference of firms in major cities is that those companies have a significant advantage in information asymmetry. Information asymmetry affects the cost of capital as it impacts the risk profile of a firm. The cost of both equity and debt is influenced by geographical factors that impact the information environment. Considerable empirical evidence has been put forward to support the premise that information asymmetry affects capital structure decisions.

In their exemplary article, Myers and Majluf (1984) thought about what goes around when there are new investment avenues, and the board has data about resources set up that aren't accessible to external parties. They indicate that "if a company is obliged

to giving equity, and if the estimation of advantages set up is higher than the market understands, the firm may abstain from giving equity to avoid hurting current investors. Eventually, it will make issuing equity a costly financing option." This means when a company declares that it is going to issue equity, the stock prices go down. This may lead to companies effectively esteemed resources set up to evade a venture in the event that it must be financed sing the help of external equity.

In addition, Myers (1984) expands the ideas renewing a good prior hypothesis of capital structure; this is famous by the name of the pecking order theory. Considering this, the static expenses and advantages of capital structure organisations are insignificant for the majority of organizations. Companies hence want to subsidize Investment Avenue using internal finances, followed closely by debt financing, and with equity just if all else fails. An association's capital structure is a side-effect of these expense limiting financing choices as opposed to a goal.

As per the research of Korajczyk et al. (1991), "the degree of information asymmetry between corporate insiders and outside investors will change over time for individual firms." As per this idea at first, the organizations will make equity contributions for periods when there are small information asymmetries, and secondly, the response of equity issuance will vary depending on the level of information asymmetry. As anticipated, Korajczyk et al. (1991) find that equity issuance is undeniably progressively basic in the main portion of a quarter after an announcement of earnings than in the second half. Equity contributions are particularly rare as another announcement of earnings draws near. Moreover, when contrasted with income declarations following equity offerings, the announcement of earnings before contributions are both progressively useful and bound to pass on uplifting news.

A study by Wang, Wang, and Johnson (2016) evaluated the relationship between geographical location and capital structure. The study sought to establish how the location of a firm influences its capital structure decisions. They determined that there was indeed a significant, positive relationship. Wang et al. (2016) showed that internal financing was greatly recommended over external financing for firms experiencing information asymmetry.

Arena and Dewally (2012) established that the corporate debt characteristics for a firm have been in the past influenced by the cost of research to obtain the proper information concerning a particular firm located away from major cities. There is a smaller debt yield spread for most major city firms compared to firms located within non-major cities, which attract a smaller portion of investors due to the higher risk of having a high debt yield.

Loughran and Schultz (2006) established that equity issuance is mainly affected by a firm's location, as understood through information asymmetry. There is a significant connection between returns on investments and the location of the company in which one invests since various investors survey most companies to identify trends in the returns on invested capital. Therefore, most investors prefer local companies whose information is

available. According to Loughran and Schultz (2006), there is less information asymmetry for companies located in major cities.

The location of a firm has a significant effect on overall corporate policies and culture, as evidenced in the study by Gao et al. (2010), which focused on U.S. firms. Gao et al. (2010) assessed the extent to which the location of a firm's corporate headquarters influences its capital structure. Corporate executives in major areas have more opportunities to create valuable networks and relationships than their peers in non-major areas, which are essential when seeking external financing. This is in line with Loughran (2008), who provided evidence that corporate policies are affected by location, regional culture, and local investors' preferences, hence affecting the capital structure of any firm within the market.

The degree of accessibility to external financing for a firm has been highly linked to the location of its headquarters. For instance, the South African Department of Business Management conducted a study for 14 years, over the years 1995 to 2008, they found that within listed firms in major cities, asset structure and size can be defined as the dominant determinants of capital structure (Foster and Young, 2013). As hypothesised from their survey, industrial firms indicated that operating leverage and profitability are also determinants of capital structure.

Arena and Dewally (2012) observed that companies in fast-growing locations, such as major cities in Saudi Arabia, had a financial advantage over non-major cities' firms. The study also observed that religion and culture in Saudi Arabia discourage interest-bearing lending, which is also a significant setback to efforts put forward to ensure an effective and efficient working system that can ensure the growth of capital markets in Saudi Arabia. The study established a significant relationship between external financing choice and location as well as the size of the firm.

From this perspective and through our review of the previous literature, it is clear to us that the location of the firm has an important impact on firms' capital structure decisions. However, prior studies neglect to examine the role of headquarter location in shaping Saudi Arabian corporations.

3.3. Research Hypotheses

Prior studies confirmed the link between a firm's capital structure, and it head headquarter location (e.g., Arena and Dewally, 2012; Bas, 2012; Dougal et al., 2012; Gao et al., 2010; Knyazeva and Knyazeva, 2011; Xiaoqiao et al., 2016). Firms in non-major cities are less likely to rely on external financing compared to firms in major cities (Dougal et al., 2012; Bas, 2012). In other words, they are less likely to accumulate debt compared to firms situated in major cities.

While it is true that firms located in major centres have a financial advantage over non-major city firms (i.e., lower information asymmetry), they are also more likely to rely on external financing). The pecking order theory predicts that firms with higher information asymmetry should not rely on external debt financing as the first financing option. Prior studies confirmed

that the informational asymmetry cost is lower for firm that are in in major cities relatively to firms located in non-major cities.

Firms located in non-major cities rely more on internal funding compared to firms situated in major areas (due to information asymmetry). Therefore, their debt levels is substantially lower (Wang et al., 2018; Xiaoqiao et al., 2016). Similarly, Wang et al. (2018) found that firms located in non-major areas have lower leverage ratios compared to firms in major areas. They accumulate debt at a much slower pace compared to firms located in major centers.

Empirical evidence concerning the link between capital structure and a firm's location provides generally conclusive results. It has been argued that firm location is a substitute for information asymmetry, and therefore the most appropriate tool for measuring information asymmetry (Loughran and Schultz, 2006).

Because information asymmetry among firms located in non-major areas and non-major cities tends to be high, firms are likely to issue less equity or rely on external financing for funding its high-value projects. In the same manner, firms located in major cities have a significant advantage in information asymmetry (Loughran and Shultz, 2006).

In Saudi Arabia, the bond market is still under-developed. Therefore, bank debt financing is important financing channels (Alnori and Alqahtani, 2019). Geographically, most major banks operate in the 3 major cities (i.e. Riyadh, Jeddah and Dammam). Therefore, it is expected that information asymmetry cost is more severe form firms located in other non-major cities. since prior studies confirmed that information asymmetric is more sever for firms which their headquarter is in non-major cities. Therefore, firms located in major cities should have higher leverage ratios in their capital structure in comparison to firm located in other cities (i.e., non-major cities).

4. DATA AND EMPIRICAL METHOD

4.1. Data

We employ annual data for listed non-financial firms in the Saudi Stock Market for the period between 2005 and 2016. The study excluded financial firms, i.e., banks and insurance companies, as their capital structure is significantly influenced by regulatory factors and hence not market-driven (Frank and Goyal, 2009).

Following Alnori and Alqahtani (2019), the Saudi CMA was formally established in 2004. Therefore, the sample period of this study commenced in 2005 as financial data on listed firms was made available. The entirety of the financial data employed in this study was retrieved from the Osiris database. All information related to firms headquarter locations are provided from The Saudi Arabia's Ministry of Trade and Investment.

Following prior capital structure studies, all leverage measures with missing values and all total assets with negative values were excluded from the study sample. The leverage measures and variables for firm characteristics were winsorized at the first and 99th percentiles consistent with prior capital structure research

(Lemmon et al., 2008; Park et al., 2013). Consequently, the sample of the study consists of 122 companies. Table 1 shows the annual observations in our sample for the firms in major and non-major cities by sector as classified by the capital market of Saudi Arabia.

4.2. Empirical Method
4.2.1. Defining capital structure
This study used the leverage ratio as a variable for capital structure. The leverage ratio provides a measure of the extent to which a company employs debt to finance its operations. Therefore, to extensively determine the capital structure of firms in both non-major cities and major cities, it is invaluable to employ the market or book leverage ratio of the firms. Therefore, to confirm our conclusion, we apply both the market and the book leverage ratio to measure firms' capital structure. The following equation represent the market leverage:

1. $\text{Market Leverage} = \text{M-Leverage} = \dfrac{SD_{it} + LD_{it}}{SD_{it} + LD_{it} + S_{it}P_{it}}$

Table 1: Annual observations of firms in major and non-major-cities by industry

Industry no.	Industry name	All	Major cities	Non
1	Media	33	33	0
2	Petrochemical	137	67	70
3	Cement	105	53	52
4	Retail	97	93	4
5	Energy	20	20	0
6	Agriculture	155	111	44
7	Telecom	33	33	0
8	Multi-investment	58	34	24
9	Industrial	129	124	5
10	Construction	124	111	13
11	Real estate	52	31	21
12	Transportation	45	45	0
13	Tourism	24	24	0
14	Banks	0	0	0
15	Insurance	0	0	0
	Total firm-year observations	1012	779	233

Table 1 presents the number of firm-year observations for all firms, majors and non-majors cities firms across 15 industries in our sample over the period 2005-2016, based on the Saudi Financial Market industry classification

Where $SD_{it} + LD_{it}$ is the short-term debt of a firm plus its long-term debt at time t, and S_i, P_{it} is the market value of a firm, which is equal to the product of the outstanding common shares of a firm and the price per share at time (Khodier et al., 2012).

The leverage ratio based on the book value is derived using the following equation:

1. $\text{Book leverage} = \dfrac{SD_{it} + LD_{it}}{TA_{it}}$

Where $SD_{it} + LD_{it}$ is the book value of the short-term debt of a firm plus its long-term debt at time t.

4.2.2. Variable selection and regression analysis
To compare the leverage levels based on the firms' location between majors-cities firms and non-majors cities firms, we control for firm-specific factors that are evidently relevant to capital structure decisions. These factors are profitability, size, growth opportunities, asset tangibility, earnings volatility and non-debt tax shield (Lemmon et al., 2008; Park et al., 2013). Table 2 presents the calculations of all applied variables and the expected sign of each variable.

4.2.2.1. Location
The location variable is a dummy variable equals 1 if a firm located in a major's city (i.e., Riyadh, Jeddah, or Dammam), and 0 otherwise.

4.2.2.2. Profitability
Operating income to total assets. According to the pecking order theory, presented by Myers (1984) and Myers and Majluf (1984) profitability and leverage have an inverse relationship such that an increase in profitability reduces the need for debt funding, as the firm can employ internal resources. The trade-off theory, on the other hand, predicts a positive relationship between a firm's profitability and its debt level.

Size: the natural logarithm of total assets of the sampled firms. Based on the trade-off theory, larger firms are more leveraged than

Table 2: Variable definitions and the expected signs of the independent variables

Variables	Definition		
Dependent			
M-leverage	Short-term debt + long-term debt/short-term debt + long-term debt + market capitalization		
B-leverage	Short-term debt + long-term debt/total assets		
Independent			
Location	Dummy variable that equals 1 if the firm location in major cities and 0 otherwise		

Control		Expected sign	Corresponding theories
Profitability	Operating income before depreciation/total assets.	(−)	Pecking order
		(+)	Trade-off
MB	Market value of equity/total assets.	(−)	Agency theory
		(+)	Pecking order
Size	Natural log of total assets.	(+)	Trade-off
		(−)	Pecking order
Tang	Net property plant and equipment/total assets.	(+)	Trade-off
		(−)	Pecking order
Earnings V	The standard deviation of EBIT/total assets over the most recent three years.	(−)	Trade-off
		(+)	Pecking order
Dep.	Depreciation expenses/total assets.	(−)	Trade-off
		(+)	Pecking order

smaller firms as they have lower cash volatility and have better access to capital markets. The pecking order theory, on the other hand, suggests that larger firms are less leveraged than smaller firms as they superior information asymmetry.

4.2.2.3. Market-to-book (MB)
The market value of equity divided by total book value of assets. It is used as a proxy for a firm's growth opportunities. According to Myers (1977) firms with high growth potential have low leverage ratios as they have high agency costs. The trade-off theory suggests that growth opportunities and leverage have a negative relationship as growth firms are expected to lose more value in the event of financial distress (Frank and Goyal, 2009).

4.2.2.4. Tangibility (Tang)
Firms' gross property, plant, and equipment divided by total assets. Firms with more tangible assets have more collateral for debt financing compared to firms with less tangible assets. Therefore, asset tangibility and leverage ratios are expected to have a positive relationship. The agency cost theory suggests that asset tangibility has a positive relationship with the leverage ratio as tangible assets make asset substitution difficult. On the other hand, the pecking order theory suggests that asset tangibility and leverage have a negative relationship (Harris and Raviv, 1991).

4.2.2.5. Earnings volatility
The earnings volatility variable denotes the standard deviation of earnings before interest, tax and deprecation to total assets over the recent years (Frank and Goyal, 2009). The trade-off theory suggests that a firms' earnings volatility and leverage ratio have a negative relationship due to the high risk of bankruptcy associated with high earnings volatility.

4.2.2.6. Non-debt tax shield (Dep)
Non-debt tax shield denotes the ratio of depreciation expense to total assets. According to DeAngelo and Masulis (1980), high depreciation expenses decrease a firm's leverage. Harris and Raviv (1991) on the other hand observed that non-debt tax shield has a positive relationship with debt.

4.2.3. Methodology
This study conducts two univariate tests, i.e., the t-test and rank-sum test to examine the mean and median difference between market and book leverage ratios for firms in major cities and non-major cities.

Further, following relevant studies (e.g., Alnori and Alqahtani, 2019), we apply OLS regression analysis[5] to explore the effect of firm location on the capital structure of a firm using leverage ratios after controlling for key firm characteristics. The dependent variable of the study is leverage ratios both market and book. The primary independent variable of the proposed model of the study is location, represented by a dummy variable where 1 denotes a firm located in a major city while 0 denotes a firm

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[5]   Following Alnori and Alqahtani (2019) and Park et al. (2013), we apply OLS regression in the main analysis. Further, we also performed alternative methodology for robustness purposes. Both outcomes are consistent.

located in a non-major city. The regression analysis is conducted further while incorporating the industry fixed effects and year fixed effects.

The following regression equations are employed to achieve the objectives of the study:

1. $\begin{aligned} MLeverage = {} & \beta_0 + \beta_1 Location + \beta_2 Profitablity + \beta_3 Size \\ & + \beta_4 MB + \beta_5 Tang + \beta_6 EarningVol + \beta_7 Dep \\ & + \beta_8 Industry + \beta_9 Time + \varepsilon_{it} \end{aligned}$

2. $\begin{aligned} B\,Leverage = {} & \beta_0 + \beta_1 Location + \beta_2 Profitablity + \beta_3 Size \\ & + \beta_4 MB + \beta_5 Tang + \beta_6 EarningVol \\ & + \beta_7 Dep + \beta_8 Industry + \beta_9 Time + \varepsilon_{it} \end{aligned}$

Where:

Market leverage: Denotes a firm's market leverage, which is a proxy for its capital structure.

Book leverage: Denotes the firm's book leverage, which is another proxy for firms' capital structure.

Location: A dummy variable for the firm location where 1 implies that a firm is located in a major city and 0 otherwise.

Profitability: The firm's profitability in a given year.

Size: denotes the firm's natural logarithm of total assets in a given year.

MB: A firm's growth opportunities in a given year.

Tang: denotes the variable for a firm's asset tangibility in a given year.

Earnings Vol: denotes a firm's earnings volatility in a given year.

Dep: denotes a firm's non-debt tax shield in a given year.

Industry: is the industry dummy variable.

Time: is the time dummy variable.

ε_{it}: denotes the error terms.

4.3. Correlation
The coefficients of correlation between the variables of the study for firms in major and non-major cities are presented in Table 3. The majority of the variables had correlation coefficients that fall between −0.1 and 0.1 are significantly close to zero suggesting no relationship exists between the variables. Also, none of the variables have a strong correlation with each other as the correlation coefficients are <0.5. Therefore, although some of the variables as discussed earlier displayed significant correlation, none of the variables shows a strong relationship to impact the application of regression analysis. Therefore, multicollinearity is not a concern.

5. EMPIRICAL RESULTS

5.1. Descriptive Statistics

The summary statistics of all variables employed in the study are shown in Table 4. The average book and market leverage are 0.2254 and 0.1867, respectively. This implies that the book leverage was greater than the market leverage. The findings are consistent with the findings by Robb (2014) who also observed that

the average book leverage was greater than the market leverage for firms in the United States.

The descriptive statistics show that average profitability is 0.0735, while the standard deviation of the same is 0.0813. The mean and standard deviation for the growth opportunities variable was 1.6701 and 1.4765. The average size variable of the firms employed in this study was 6.4627. The average asset tangibility

Table 3: Correlation matrices

	M-leverage	Location	Profitability	Size	MB	Tang	Earnings vol	Dep
M-leverage	1							
Location	0.0800	1						
Profitability	−0.3394	−0.0042	1					
Size	0.5311	−0.0262	0.0685	1				
MB	−0.5689	−0.0031	0.3189	−0.3891	1			
Tang	0.1605	−0.2465	0.0439	0.2359	0.0066	1		
Earnings vol.	−0.1759	−0.0071	−0.0000	−0.2392	0.2033	−0.0395	1	
Dep.	0.0155	0.0212	0.0461	−0.0074	−0.0489	0.3576	0.0193	1
	B-leverage	**Location**	**Profitability**	**Size**	**MB**	**Tang**	**Earnings vol**	**Dep**
B-leverage	1							
Location	0.0714	1						
Profitability	−0.2389	−0.0042	1					
Size	0.4644	−0.0262	0.0685	1				
MB	−0.4122	−0.0031	0.3189	−0.3891	1			
Tang	0.2401	−0.2465	0.0439	0.2359	0.0066	1		
Earnings vol.	−0.1503	−0.0071	−0.0000	−0.2392	0.2033	−0.0395	1	
Dep.	0.0494	0.0212	0.0461	−0.0074	−0.0489	0.3576	0.0193	1

Table 3 presents the correlation matrices, which show that the independent variables are not highly correlated, suggesting that multicollinearity is unlikely in the analysis

Table 4: Summary statistics for variables of firm characteristics

Summary statistics	n	Mean	Median	Std. dev	Min	Max
All firms						
M-leverage	1012	0.186	0.117	0.189	0	0.676
B-leverage	1012	0.225	0.204	0.181	0	0.662
Profitability	1012	0.073	0.065	0.081	−0.133	0.324
MB	1012	1.670	1.188	1.476	0.221	7.9
Size	1012	6.462	6.305	1.581	3.135	10.83
Tang	1012	0.467	0.463	0.232	0	0.891
Earnings vol	977	0.031	0.024	0.026	0.002	0.177
Dep	1011	0.031	0.028	0.023	0	0.138
Major-cities firms						
M-leverage	779	0.1938	0.1260	0.1888	0	0.6766
B-leverage	779	0.2315	0.2172	0.1747	0	0.6626
Profitability	779	0.0739	0.0681	0.0783	−0.1333	0.3243
MB	779	1.668	1.161	1.483	0.2219	7.9
Size	779	6.426	6.220	1.637	3.135	10.837
Tang	779	0.4335	0.4150	0.2278	0	0.8912
Earnings vol	755	0.0312	0.0245	0.0276	0.0020	0.1772
Dep	778	0.0315	0.0280	0.0249	0	0.1383
Non-majors-cities firms						
M-leverage	233	0.1631	0.0944	0.1892	0	0.6766
B-leverage	233	0.2049	0.1581	0.2003	0	0.6626
Profitability	233	0.0724	0.0512	0.0910	−0.1333	0.3243
MB	233	1.676	1.251	1.454	0.2219	7.9
Size	233	6.584	6.527	1.376	4.110	9.648
Tang	233	0.5805	0.6319	0.2131	0.0085	0.8912
Earnings vol	222	0.0316	0.0250	0.0243	0.0020	0.1772
Dep	233	0.0293	0.0294	0.0174	0	0.0777

The table presents the summary statistics for all firms in our sample. Further, the table presents the summary statistics for major and non-major cities firms. The major cities. The definition of each variable is shown in Table 2

of the firms used in the study sample was 0.4673. The average for the NDTS variable for firms used in the study was 0.0313 while the average earnings volatility was 0.0310.

Table 4 also shows summary statistics for firms classified by location, (i.e. firms in major cities and firms in non-major cities). The study sample comprises of 779 firms located in major cities while 233 firms were located in non-major cities. The average market and book leverage for firms in major cities was 0.1938 and 0.2315 respectively while that for firms in non-major cities was 0.1631 and 0.2049 respectively. These findings indicate that firms in major cities employ more debt than firms located in non-major cities. According to Mouton and Smith (2016), firms in major cities are expected to employ more debt than their counterparts in non-major cities given the information asymmetry and access to capital. Firms located in non-major cities have high information asymmetry compared to firms in major cities (Mouton and Smith, 2016). Therefore, firms in non-major cities put an investor at an information disadvantage thus incurring higher costs of credit than major cities firms as investors require a premium on the extra risk.

The average and standard deviation of profitability for firms in major cities is 0.0739 and 0.0783, while that for firms in non-major cities is 0.0724 and 0.0910, respectively. The statistics reveal that firms located in major cities are more profitable and have less volatility of earnings than their counterparts in non-major cities. Therefore, firms in major cities of Saudi Arabia are likely to be more profitable than their counterparts in non-major cities based on the summary statistics of the study sample. Similarly, the average growth opportunity variable for firms in major cities is 1.6683 and 1.6763 for firms in non-major cities. These statistics suggest that for firms in Saudi Arabia, profitability and growth opportunity for firms in major-cities is higher than that of non-major city firms.

The asset tangibility ratio for firms in major cities is 0.4335 while that for their counterparts in non-major cities is 0.5804. Similarly, the average non-debt tax shield for firms in non-major cities is higher than that for firms in major cities. The findings suggest that firms in non-major cities tend to hold more assets per share than firms in major cities. Shahar and Manja (2018) observed that firms with large non-debt tax shields tend to include less debt in their capital structures compared to their expected cash flows. Therefore, since firms in non-major cities have lower debt levels than firms in major cities, they are expected to have higher non-debt tax shields.

5.2. Univariate Analysis Results

Table 5 shows the results of the univariate analysis (i.e. mean and median differences tests) of the leverage ratio between firms in major and non-major cities. The findings show the mean market and book leverage of firms in major cities is significantly different from that of firms in non-major cities[6].

Table 5: Firms located in major and non-majors cities mean and median leverage comparison

Mean and median leverage comparison	Majors	Non-majors
M-leverage: Majors-cities–non-majors-cities		
Mean	0.1938	0.1631
Median	0.1260	0.0944
t-test (Mean difference)		0.03***
Wilcoxon rank sum z (median difference)		0.03***
B-leverage: Non-majors-cities–majors-cities		
Mean	0.2315	0.2049
Median	0.2172	0.1581
t-test (mean difference)		0.027***
Wilcoxon rank-sum z (median difference)		0.059***

The table reports the results of the t-test and the rank-sum test, indicating mean and median leverage differences between sharia-compliant and non-sharia-compliant firms. The leverage measures are market leverage (M-leverage) and book leverage (B-leverage). M-leverage=(Firms' short-term debt + long-term debt)/(short-term debt + long-term debt + market value of equity). B-leverage=(Total short-term debt + total long-term debt)/total book value of firm' assets. ***indicates significance at the 1% level

The mean difference between majors cities and non-major cities firms' market-based leverage is 0.03 while that of book leverage is 0.0027. In both cases the mean difference for market and book leverage statistically significant implying that the leverage level of firms in major cities is greater than that of firms in non-major cities. Further, the rank-sum tests also confirm that the market and book leverage ratios median different for firms located in major cities exhibit significantly higher market and book leverage relatively to their non-major cities counterparts.[7] However, since the univariate tests do not control for firm-specific factors that are relevant to capital structure, the next step is to apply regression analysis controlling for internal and external factors (Alnori and Alqahtani, 2019).

5.3. Regression Results

The results of the regression analysis are summarized in Table 6. Columns 1 and 2 show the regression results of market and book leverage ratios comparison between the two groups of firms without controlling for industry effect. Column 3 and column 4 display the results after controlling for the industry effect. The primary coefficient of the study is the dummy variable Location which allows us to compare the leverage levels between major cities firms and non-major cities firms. As per the results, the dummy variable's sign is negative and at 1% significance level, it's also statistically significant. This strong negative sign remains significant in all regressions applied to the research variables. The results affirm the hypothesis that major cities have significantly greater leverage ratios than non-major cities firms. The confirm that the geographical location of the firms plays an important role in their financing choice. More specifically, the significant positive relationship between the firm location variable and market/book value leverage ratios implies that firms located in major areas likely to have a high level of debt funding.

The results support the hypothesis that the capital structure of Saudi listed firms located in major cities includes more debt as

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6   To ensure the consistency of our findings, we apply both t-test, to test the mean difference, and rank-sum test, to compare the median difference, among the tow types of corporations.

7   since the univariate tests do not control for firms-specific factors that are relevant to capital structure, the next stop is to apply regression analysis controlling for internal and external factors (Alnori & Alqahtani, 2019).

they have more access to debt funding and financing decisions include lower information asymmetry cost in comparison to Saudi listed firms located in non-major cities (i.e. other cities). It implies that information asymmetry of debt funding plays a critical role in capital structure decisions as non-major cities firms are less leveraged than major cities firms. Investors prefer major cities firms over non-major cities firms as they have easy access to company information compared to non-major cities firms. Therefore, we conclude that location is a significant factor form firms' financial decisions and practically the capital structure decisions.

The results are consistent with the findings studies which report that the geographical location of a firm influences its financial decisions including leverage levels (e.g., Mouton and Smith, 2016; John et al., 2011; Xiaogiqo et al., 2016). Further, the higher leverage levels, explore in this study, of Saudi listed firms that geographically located in major-cities in comparison to the listed firms located in other cities are consistent with prior studies performed in developed economies (e.g., Xiaoqiao et al., 2016; Wang and Pirinsky, 2010; Foster and Young, 2013).

Similarly, John, Knyazeva, and Knyazeva (2011) examined the extent to which the geographical location of a firm influences a firm's dividend policies and agency costs. The study also established that firms located in non-major areas are disadvantaged with respect to considerations made by investors about managerial investment decisions. It also found that challenges attributed to free cash flow are more severe and that dividends paid are higher for firms located in non-major areas than firms in major areas. Consequently, it showed that a company's dividends are affected by the location as well.

The pecking order theory's information asymmetry cost is better able to explain the capital structure of firms, in comparison to the trade-off theory and the agency theory. More specifically, the lower information asymmetry cost for Saudi firms that are geographically

located in major cities[8], relatively to other firms that are located in other cities, enables the former to have more external debt financing in their capital structure in comparison to the latter. Therefore, the pecking order information asymmetry still empirically relevant.

Regarding the control variables, profitability displays a significant negative relationship with the book/market leverage ratios which is consistent with the pecking order (trade-off) theory and prior studies (e.g., Alnori and Alqahtani, 2019; Frank and Goyal, 2009; Lemmon et al., 2008; Park et al., 2013).

The market to book ratio (MB), which represents growth opportunities displays a significant negative relationship with the leverage ratio. Therefore, firms with a high market to book ratio have a low leverage level. This is consistent with Myers (1979) underinvestment theory. Further, the negative effect of MB on leverage ratios is in line with most prior studies (e.g. Alnori and Alqahtani, 2019; Frank and Goyal, 2009). Firm size shows a significant positive relationship with the capital structure at a 1% significance level.

There is a positive relation of firm size with leverage decisions of a firm and this relationship is consistent with the tradeoff theory and findings of studies by (e.g. Alnori and Alqahtani, 2019; Frank and Goyal, 2009; Park et al., 2013).

Similarly, there is a positive link between market and book leverage to assets tangibility, as supported by prior empirical research by (e.g. Alnori and Alqahtani, 2019; Frank and Goyal 2009; Park et al., 2013) in line with the trade-off theory.

The earnings volatility variables displayed a negative relationship with a capital structure, which is consistent with the trade-off theory. The trade-off theory suggests that firms with higher expected bankruptcy costs have lower firm leverage. Nonetheless,

8   Again, and as reported already, the major cities in Saudi Arabia are Riyadh, Jeddah and Dammam. therefore, we classify all listed Saudi firms that are geographically located in these mentioned cities as firms located in major cities, while all other firms other firms that are geographically located in other cities as firms located in non-major cities.

Table 6: Regression results comparing the leverage levels between majors-cities and non-majors-cities firms

Variables	(1)	(2)	(3)	(4)
	Pooled OLS		Industry FEs	
	M-leverage	B-leverage	M-leverage	B-leverage
Location	0.0542*** (0.00962)	0.0574*** (0.0113)	0.0695*** (0.00974)	0.0663*** (0.0103)
Profitability	−0.547*** (0.0515)	−0.384*** (0.0563)	−0.571*** (0.0529)	−0.430*** (0.0513)
Size	0.0444*** (0.00341)	0.0364*** (0.00386)	0.0450*** (0.00343)	0.0463*** (0.00364)
MB	−0.0467*** (0.00429)	−0.0321*** (0.00403)	−0.0321*** (0.00375)	−0.0145*** (0.00346)
Tang	0.104*** (0.0229)	0.167*** (0.0240)	0.179*** (0.0246)	0.294*** (0.0274)
Earnings vol	0.0978 (0.160)	0.0448 (0.180)	−0.0775 (0.146)	−0.0808 (0.137)
Dep	−0.380* (0.195)	−0.292 (0.223)	−0.109 (0.192)	0.0770 (0.201)
Constant	−0.0842*** (0.0287)	−0.0756** (0.0331)	0.136*** (0.0441)	0.155*** (0.0458)
Time dummies	Yes	Yes	Yes	Yes
Industry dummies	No	No	Yes	Yes
Observations	975	975	975	975
R-squared	0.532	0.368	0.663	0.596

The table presents regression results for the combined samples of major- and non-major-cities firms over the period 2005-2016. The dependent variables in our regression are market leverage (M-leverage) and book leverage (B-leverage). Location is an indicator variable that equals 1 when a firm is complying with sharia and 0 otherwise. The control variables are profitability, size, MB, Tang, earnings volatility, and non-debt tax shield. Two estimators are used: Pooled OLS and industry fixed effects. The numbers in the parentheses are the robust standard errors. *, ** and *** indicate the two-tailed significance at the 10%, 5% and 1% levels, respectively. The specification test is used to specify that the industry dummies are jointly significant

the relationship between earnings volatility and firm leverage is not statistically significant (Park et al., 2013).

The non-debt tax shield variable has a varying effect on capital structure with and without controlling for industry effects. It shows a positive relationship with leverage without controlling for industry effect and a positive relationship when controlling for industry effect. However, overall, the non-debt tax shield variable is statistically insignificant.

5.4. Robustness Tests

To ensure the robustness of our conclusion, we perform two further specifications. First, to ensure that the main results are not driven from any size difference among the two groups of corporations.

5.4.1. $10 Million total assets cut-off

Therefore, to avoid that the results are not biased by size difference and for robustness check, we repeated the regression analysis after applying $10 million total assets cut-off, following the same approach performed by Burgman (1996), Lee and Kowk (1988), and Park et al., (2013)[9]. Table 7 shows that our main conclusions remain unchanged and confirm the main results reported in Table 5.

Second, Since OLS estimator is not fully able to capture the unobserved factors that might be linked to firms' capital structure (Alnori and Alqahtani, 2019). Therefore, and for robustness purposes, we performed an alternative econometric method (i.e. the Panel

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9   Theses studies compare the leverage ratios between US multinational and domestic corporations.

Table 7: Regression results comparing the leverage levels between majors-cities and non-majors-cities after applying $10 million total assets cut-off

Variables	(1)	(2)	(3)	(4)
	Pooled OLS		Industry FEs	
	M-leverage	B-leverage	M-leverage	B-leverage
Location	0.0542*** (0.00962)	0.0574*** (0.0113)	0.0695*** (0.00974)	0.0663*** (0.0103)
Profitability	−0.547*** (0.0515)	−0.384*** (0.0563)	−0.571*** (0.0529)	−0.430*** (0.0513)
Size	0.0444*** (0.00341)	0.0364*** (0.00386)	0.0450*** (0.00343)	0.0463*** (0.00364)
MB	−0.0467*** (0.00429)	−0.0321*** (0.00403)	−0.0321*** (0.00375)	−0.0145*** (0.00346)
Tang	0.104*** (0.0229)	0.167*** (0.0240)	0.179*** (0.0246)	0.294*** (0.0274)
Earnings vol	0.0978 (0.160)	0.0448 (0.180)	−0.0775 (0.146)	−0.0808 (0.137)
Dep	−0.380* (0.195)	−0.292 (0.223)	−0.109 (0.192)	0.0770 (0.201)
Constant	−0.0842*** (0.0287)	−0.0756** (0.0331)	0.136*** (0.0441)	0.155*** (0.0458)
Time dummies	Yes	Yes	Yes	Yes
Industry dummies	No	No	Yes	Yes
Observations	975	975	975	975
R-squared	0.532	0.368	0.663	0.596

Table 8 presents the regression results for the model analyzing the effect of size when comparing the leverage ratios between majors and non-majors firms after applying $10 million total assets cut-off.Therefore, after applying alternative total assets, the results still confirm the main findings which are reported in Table 6. The dependent variables in our regression are market leverage (M-leverage) and book leverage (B-leverage). Location is an indicator variable that equals 1 when a firm is complying with sharia and 0 otherwise. The control variables are profitability, size, MB, Tang, earnings volatility and non-debt tax shield. Two estimators are used: pooled OLS and industry fixed effects. The numbers in the parentheses are the robust standard errors by firm. *, ** and *** indicate the two-tailed significance at the 10%, 5% and 1% levels, respectively. The specification test is used to specify that the industry dummies are jointly significant

5.4.2. Alternative methodology

Table 8: Regression results comparing the leverage levels between majors-cities and non-majors-cities after applying alternative method (i.e., Random Effects)

Variables	(1)	(2)	(3)	(4)
	M-leverage	B-leverage	M-leverage	B-leverage
Location	0.0651*** (0.0234)	0.0803*** (0.0300)	0.0612*** (0.0233)	0.0818*** (0.0304)
Profitability	−0.592*** (0.0847)	−0.462*** (0.0788)	−0.534*** (0.0805)	−0.462*** (0.0793)
Size	0.0842*** (0.0112)	0.0887*** (0.0124)	0.0761*** (0.0105)	0.0901*** (0.0131)
MB	−0.0250*** (0.00429)	−0.00445 (0.00391)	−0.0240*** (0.00511)	−0.00890* (0.00514)
Tang	0.0993** (0.0457)	0.231*** (0.0487)	0.103** (0.0460)	0.231*** (0.0484)
Earnings vol	0.0857 (0.137)	0.0730 (0.163)	0.178 (0.131)	0.0785 (0.174)
Dep	−0.00126 (0.229)	−0.592*** (0.228)	−0.194 (0.215)	−0.546** (0.218)
Constant	−0.365*** (0.0717)	−0.451*** (0.0863)	−0.297*** (0.0697)	−0.466*** (0.0951)
Time dummies	Yes	Yes	Yes	Yes
Industry dummies	No	No	Yes	Yes
Observations	975	975	975	975
R-squared	0.5018	0.3214	0.5126	0.3239

This table presents regression results showing the effect of location on Saudi firms' capital structure decisions over the period 2009-2016 after applying random effect panel data method. Column 1 (2) shows regression results showing the effect of board size on market (book) leverage ratios without industry fixed effect. Column 3 (4) presents the results of the effect of location on market (book) leverage including industry random effect. The main independent variable is location. The control variables are (profitability, MB, Size, Tang, Earnings Volatility and Dep). The definitions of all applied variables are reported in Table 1. The numbers in the parentheses are the robust standard error. *, ** and *** present the two-tailed significance at the 10%, 5% and 1% levels, respectively

data Random Effects)[10] to control for the mentioned firms-related unobserved factors. The results shown in Table 8 confirm that our conclusion is still the same after using an alternative methodology.

6. CONCLUSION

Empirical evidence on the importance of firms' location on their capital structure is lacking in emerging markets. In this article, we attempt to identify the impact of firms' headquarters locations on their capital structure choice by using a sample of Saudi Arabian firms over the years 2005-2016.

We find that firms' location plays a significant role in determining firms' capital structure choices. More specifically, firms which their headquarter operates in non-major cities have significantly lower leverage levels in their capital structure, in comparison to firms which their headquarters is in major cities. In our view, the lower debt levels of the former reflect that higher information asymmetric cost and adverse selection problem, in comparison to the latter, making the external financing more costly, and therefore their capital structure includes less debt.

These findings contribute to finance theory and the existing literature by shedding light on the significant role of geographic locations of the firms on their capital structure within emerging markets setting. Theoretically, the pecking order theory's information asymmetry, in comparison to the trade-off and the agency theories, is better able to explain capital structure variations among firms which their headquarters are in major and non-major cities.

The results of this study have valuable practical implications for regulators, investors and analysts. The significant effect of the firm's location on its capital structure decisions helps regulators, analysts and investors to have more understanding about firms' capital structure decisions. Further, regulators and policymakers in emerging markets should do collective work to develop the bond market so firms can have an accessible external financing channel. Finally, since emerging markets requires further development, future research may examine the linkage between firms' location and alternative financing decisions, such as dividends policy and cash holdings in an emerging market setting.

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10   The fixed Effects estimator is not applicable due to the sample size.

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