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THE AMERICAN UNIVERSITY IN CAIRO

الجامعة الأمريكية بالقاهرة

The American University in Cairo

School of Business

**The Relationship between Leverage and Equity Returns in Arab Stock
Markets**

A Thesis Submitted to

The Department of Management

in partial fulfillment of the requirements for

the degree of Master of Science in Finance

by

Sahar Essam Eldin Shalaby

Under the supervision of

Dr Aliaa Bassiouny

September / 2020

Acknowledgment

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Abstract

The effect of financial leverage on firm's performance is one of the most examined and debated issues in finance with an extensive empirical literature that directly or indirectly suggests a role for financial leverage in explaining the cross-sectional dispersion in expected stock returns. This thesis examines the effect of financial leverage on the cross section of equity returns of publicly listed non-financial firms in the Arab Markets. The thesis focused on four main stock exchanges: Amman Stock Exchange, Egyptian Stock Exchange, Kuwait Stock Exchange and Saudi Stock Exchange (Tadawul). The sampling period extended from the first quarter of 2006 to the last quarter of 2019. The total number of eligible firms was 536, 162 firms from Egypt, 123 firms from Jordan, 116 firms from Kuwait, and 135 firms from Saudi Arabia. The Capital Asset Pricing Model, the Fama French 3-factor model and the Fama-French 5-factor model were used to test the relationship between leverage -measured as the book value of total liabilities divided by book the value of assets - and equity returns. The results showed that leverage change and leverage level have no significant relations with stock returns for all countries included in this study.

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1. Introduction

1.1. Overview

The effect of financial leverage on firm's performance is one of the most examined and debated issues in finance with an extensive empirical literature that directly or indirectly suggests a role for financial leverage and distress in explaining the cross-sectional dispersion in expected stock returns (Doshi et al., 2019). In spite of the fact that theories suggest the presence of a relationship between financial leverage and equity returns, empirical studies showed conflicting results regarding the nature of this relationship which makes it far from agreed upon.

There are clear benefits for firms to take on financial leverage, but they entail an additional level of risk. Financial leverage helps in magnifying the Return on Equity (ROE) for profitable firms which should help them earn higher rate of returns than the than the interest they pay on debt (Ward & Price, 2006), provide tax shield benefits (Myers, 2001), and decreases agency costs (Jensen, 1986). But such advantages entail a higher level of bankruptcy risk. Myer's (1984) Static Trade-off Theory proposes that the value of the firm can be separated into the value of the unlevered firm plus the value of the tax-shield created from debt minus agency and bankruptcy costs. Therefore, debt will only add value to the firm if the present value of the tax shield surpasses the costs associated with the debt. Since the main objective of any management is to maximize the shareholders' wealth, finding the optimal leverage level can help achieve this goal. De Wet (2006) showed that firm's value can significantly increase when the firm approach an optimal capital structure of debt and equity.

Given the importance of the question, there is a large and extensive literature that empirically examined the theoretical arguments around the benefits of financial leverage on a firm. The results of such studies have been far from conclusive given the variety of approaches to study the relationship between leverage and firm performance. In defining firm's performance, some studies attempted to link the financial leverage with the firm's profitability (Hall & Weiss, 1967; Hamada, 1972; Baker, 1973; Dimitrov & Jain, 2005; Davydov, 2016). Others tested the effect of financial leverage on the market value of the

firm through its stock returns (Arditti, 1967; Christie, 1982; Bhandari, 1988; Cai & Zang, 2011; Friewald et al., 2018).

The definition of what constitutes financial leverage is also far from agreed upon. Measures of financial leverage included book value of debt to market value of equity (Arditti, 1967), market value of debt to market value of equity, (Bhandari, 1988), market value of long-term debt divided by replacement value of assets (McConnel & Servaes, 1995), total liabilities divided by total assets (Cai & Zang, 2011), and some measured leverage inversely through the equity to assets ratio (Baker, 1973).

In addition to the lack of consensus around the dependent and independent variables, the sample itself is a source of the differences in results. Studies done on different markets with different samples showed different results regarding the nature of the relationship between financial leverage and firm's value. Early studies found a positive relationship between leverage and firm's value (Hamada, 1972; Baker, 1973; Bhandari, 1988). Other studies found a negative relationship between leverage and stock returns on US stocks such as Hall and Weiss (1976), Dimitrov and Jain (2005), and Cai and Zang (2011). A recent study by Davydov (2016) on BRIC countries reported a negative relationship between leverage, bank debt in particular, and stock returns.

1.2. Research Contribution

The main contribution of this thesis is to fill the gap where no study has examined the effect of financial leverage on stock returns in the Arab markets. Given the importance of the question and the lack of consensus, it is therefore imperative to examine this question. The main aim of this thesis is therefore to examine the effect of financial leverage on the cross section of stock returns of publicly listed non-financial firms in the Arab stock market. The purpose of this thesis is to shed the light on the importance of testing the effect of leverage on equity returns of the firms listed in Arab Stock markets. This is crucial not only for management to be able to maximize their shareholders' wealth, but also for investors to consider the effect of leverage as a factor in their valuation of firms. Moreover, this is an important direction for policy makers to take value adding decisions within the economies of the Arab markets.

The thesis focuses on firms listed on the on the following exchanges: Egyptian Stock Exchange, Jordan (Amman) Stock Exchange, Kuwait Stock Exchange, and Saudi Stock Exchange (Tadawul). Other stock markets as Morocco (Casablanca) Stock Exchange, Tunisia (Tunis) Stock exchange were excluded because of unavailability of the required data while Bahrain Bourse, Oman (Muscat) Stock Exchange, UAE and Qatar Stock Exchange were excluded because their sample size was too small to be considered in the analysis.

To carry out this study, quarterly stock prices, market capitalization, total liabilities, book value of assets, book value of equity, and operating income were obtained for the period 2006 to 2019 for a total of 536 firms divided as 162 firms from Egypt, 123 firms from Jordan, 116 firms from Kuwait, , and 135 firms from Saudi Arabia. This thesis measures the financial leverage as book value of total liabilities divided by book value of total assets and it uses stock returns as the main measure of financial performance since the main objective of the firm is to maximize value rather than just pure accounting profitability. Results showed no significant relationship between leverage and stock returns of the firms listed in the Arab markets contrary to recent evidence on US and other international markets. The thesis therefore provides a discussion of the uniqueness and rationale of this result in light of specific characteristics of Arab stock market.

1.3. Thesis Structure

This thesis is organized as follows. Section 1 provides and overview about the topic in addition to the research contribution. Section 2 provides a critical review of previous studies examining the effect of financial leverage on firms' performance and the research gap and motivation for the thesis. Section 3 presents the data and the methodology used in the thesis. Section 4 presents the analysis of the results. And finally, conclusion is presented in Section 5 with a discussion of the results and areas for future research.

2. Literature Review

2.1. Theoretical Framework

Early studies tackling financial leverage have provided a theoretical framework on how it affects the firms' value. Miller and Modigliani (1958) initiated the debate on the issue with their first proposition where they argued that the value of the firm is independent of its capital structure. This proposition was developed under the conditions of a perfectly efficient market. In this proposition, an assumption was made that companies do not pay taxes. Another assumption entails no bankruptcy costs. The third assumption is that the market has no asymmetric information. In this proposition, Miller and Modigliani (1958) argued that the value of the firm is captured through the present value of the future cash flows. Since there is an assumption that companies do not pay taxes and hence no benefits from tax-deductibility, the capital structure should not affect the value of the firm.

Later in their second proposition, Miller and Modigliani (1963) eased the limitation to better suit the real world and revised their first proposition. At first, they concluded that the increase in equity returns for the common stocks of firms with debt in their capital structure is explained by the risk premium that compensate for the relative financial risk. Later in this proposition, companies were assumed to be paying taxes, bankruptcy costs were considered, agency costs were assumed to be existing, and information was not symmetrical. When Miller and Modigliani (1963) revised their propositions regarding taxes, they concluded that tax deductibility resulted from including debt in the capital structure increases the firm's value. Later in 1977, they extended their argument taking into consideration taxes and bankruptcy costs concluding that with personal taxes taken into account, there are no corporate benefits from leverage because individual investors will require higher pre-tax return on debt to compensate for the income tax which will eventually offset the benefits of debt for the company.

2.2. Leverage and Asset Pricing Models

The role of leverage appeared in the asset pricing literature and was tested with developments of asset pricing models. Fama and French (1992, 1993, 1995) in their development of the Fama French 3 Factor Model. They found that size and book-to-market

factors are the important additional factors to extend the Capital Asset Pricing Model (CAPM) to explain stock returns of NYSE, AMEX, and NASDAQ stocks. In examining the role of leverage, they found that the book-to-market absorbs the effect of leverage which therefore does not warrant it as a separate factor in asset pricing models. The study showed puzzling results where leverage affects stock returns in two opposite ways, depending on which variable is used: Market leverage or book leverage.

In the study, market leverage was proved to have a positive relationship with stock returns while book leverage was proved to have a negative one. The study concluded that both variables give opposite effects on stock returns and that they are close in magnitude so the effect of leverage should be the difference between both book leverage and market leverage. The difference between book and market leverage is simply the book-to-market, thus, book-to-market ratio captures the distress effect and it increases when the market value of debt deviates from its book value as the market perceive the firm's performance as weak and accordingly the book-to-market ratio increases.

2.3. Empirical Studies

Miller and Modigliani's (1958, 1963, 1977) propositions, which were theoretical in nature, instigated a series of empirical studies to test the theory and to measure the effect of leverage on the firm's value. Several early studies captured firm's value through the firm's profitability. Hall and Weiss (1967) for example examined profits after tax as a proxy returns, and the ratio of equity to assets to test the leverage. Results showed a positive relation between profits and equity to assets ratio, which in other words, is an inverse relationship between profits and leverage as profits serve as a proxy for returns. On the other hand, Hamada (1972) used profitability to measure the effect of leverage on the firms' values. He used profits after taxes and interest as a proxy for returns and adjusted the rate of returns of the stocks to what it could have been if the firm had no debt in its capital structure. The study reported positive relationship between leverage and profits after taxes and interest, which means a positive relationship between leverage and equity returns. However, the two studies focused on firms' profitability which, on its own, does not equal value and does not guarantee future returns.

On the other hand, Arditti (1967) directly tested the effect of leverage on the firm's value through the stock returns on a sample of listed firms in Standard & Poor's Composite Index of Industrials, Railroads, and Utilities in the period from 1946 to 1963. Using the geometric mean of all the returns as the dependent variable and leverage as the ratio of book value to market value of equity, his study found a negative insignificant relation between leverage and returns, which means that firms' values are independent of their capital structure. Black and Scholes (1974) attempted to link the volatility of stock returns with financial leverage through their "leverage effect hypothesis" which states that the decrease in the equity value causes the debt-equity ratio to increase resulting in a volatility in the equity returns. In addition, studies on the Black and Scholes's hypothesis, on data between 1962 and 1978 were done using the price per share of equity and the face value of debt of the companies, found out that the volatility of stock returns increases with any increase in leverage (Christie, 1982).

Other studies, tackled the effect of leverage on the firm's value from an economic perspective by measuring the relationship reported between profitability and leverage (inversely through the equity to assets ratio) and found out that a negative significant relationship between profits and equity to assets exists which means that profits are positively related to leverage (Baker ,1973). Furthermore, a study by Bhandari (1988) used Fama-Macbeth to test the effect of leverage on the stock returns. The study used the Debt to Equity Ratio as a proxy for financial leverage and the results showed a positive relation between leverage and stock returns when controlling the beta and the size of the firms. A study by Schwert (1989), who built on Black and Scholes's and Christie's studies, studied the volatility of stock returns and the factors causing it. He related the volatility in the stock prices to different variables including financial leverage. The study concluded that the increase in financial leverage increases the stock returns volatility and explains a small part of the volatility. While the study found a relationship between volatility of stocks and increase in financial leverage, the study did not determine the nature or the direction of this relationship.

Another study by McConnel and Servaes (1995) on 1,943 non-financial firms listed in NYSE from 1976 to 1989 examined the relation between financial leverage and corporate value. The results showed mixed results whereas values of high-growth firms

showed negative relation with financial leverage while values of low-growth firms showed positive relation with leverage. Lally (2004) extended on the work of Fama and French and Miller Modigliani's propositions and tested the effect of leverage on the cost of capital of firms operating in different industries. The study used industries' cost of equity and proved that both Cost of Equity and WACC falls when firms add leverage to their capital structures and thus affect firm's value.

A study by Dimitrov and Jain (2005) extended the former studies that linked financial statements with contemporaneous returns. In examining the relationship between leverage and returns, the authors considered accounting earnings as proxies for economic performance which they considered as a value-relevant measure that reflects stock returns. The study used financial leverage and growth in assets as measures for value-relevance on data from New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and National Association of Securities Dealers Automated Quotations (NASDAQ) common stocks. They measured the change in financial leverage as the difference between the end of period and the beginning of period financial leverage and they defined financial leverage as long-term debt and short-term debt divided by total assets. They measured net external financing by dividing the net debt financing plus net equity financing by the beginning of period net assets for a given fiscal year. They tested the effect of change in leverage over the market value of equity and the book-to-market ratio and found out that there is a negative significant relation between stock-adjusted returns and leverage. They also reported that leverage is negatively related to future stock-adjusted returns.

A latter study by Cai and Zang (2011) built on Dimitrov and Jain's (2005) study. They studied the effect of changes in leverage in the general setting, not post corporate events. The study was done on monthly stock returns and market capitalization from US stocks on data from 1975 to 2002. They sorted the data obtained into ten portfolios where portfolio one included the firms with lowest changes in leverage ratio (mostly negative) and portfolio ten included the firms with highest changes in leverage ratio. The portfolios' returns were calculated in an equal value and a weighted value basis. The average portfolio returns showed a decrease with increase in leverage. They accounted for systematic risk by using the Capital Asset Pricing Model and the three and four-factor by Fama French and the results were the same. The results of the study were consistent with the debt overhang

theory by Myers (1977) which states that although the increase in debt cause an increase in the future cash flows from investments and hence in the NPV of these projects, however, after deducting the debt obligation, the remaining payoff for the shareholders is lower than the initial cost of the investment and accordingly the increase of debt affects the stock prices negatively. This result aligns with the final conclusion of Dimitrov and Jain (2005), however, Cai and Zang (2011) concluded no evidence that leverage affects the future operating performance measured by ROA or EBITDA. They also concluded that the change in leverage contains information that is relevant to the stock price and that the stock price reacts immediately to these changes.

Building on Cai and Zang (2011), Davydov (2016) tested the effect of leverage on corporates' performance in emerging markets while focusing on the source of debt and how different sources of debt can affect the company's performance differently. Davydov (2016) tested his hypothesis on 700 publicly traded industrial companies from Brazil, Russia, India and China on data from 2003 to 2012 aiming to explain the differences in companies' performances with the same debt ratio. The main variable in this study was the bank debt ratio which was calculated by obtaining the ratio of bank debt to total amount of long-term interest-bearing debt. He measured profitability through the return on assets ratio ROA and the market-based measure on the firm's performance through Tobin's Q (the ratio of the market value of the firm to the replacement value of its assets). He divided the firms into bank dependent firms (if bank debt ratio is more than 50%) and bank independent firms (if bank debt ratio is below 50%). The results showed no significant difference between the accounting performance (ROA) between bank dependent and bank independent firms. However, the results showed that bank debt affected the market valuation of bank dependent firms negatively which was broadly consistent with the debt overhang theory tested by Cai and Zang (2011).

Similarly, a study by Ashraf et al. (2017) examined the effect of leverage on the equity returns of Shariah compliance portfolios, as Shariah standards prohibit investing in companies with high leverage ratios (more than 33%) and low investment in real assets (less than two-thirds of total assets or market value of equity). Their study was done on data from USA (S&P 500), Japan (S&P Japan 500) and Europe (S&P Europe 350) during the period between 2000 to 2013 applying two different Shariah standards; Morgan Stanley

Capital International (MSCI) and Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). Firstly, the data was screened for business activities, 5% income threshold from non-permissible activities. Secondly, the data was screened for financial standards compliance. They then tested the performance of Shariah portfolios against the market portfolios. The results showed that Shariah portfolios underperformed the market portfolio in normal conditions and had higher-adjusted returns than the market portfolio during the financial crisis 2007-2009.

Moreover, Koseoglu (2014) tested the existence of leverage premium and the direction of the relationship between leverage and stock return in Istanbul Exchange. The study was done on all the listed non-financial companies (470 firms) on data from 2005 to 2013. Data was divided into three portfolios; a size portfolio with firms listed according to their market capitalization, a value portfolio with firms arranged by their B/M ratios, and finally, a leverage portfolio in which firms were arranged based on their leverage ratios. Monthly returns represented the dependent variable in the regression analysis and regressed on market excess returns and the three portfolios. CAPM and Fama-French three and four factor models were then used to test the effect of leverage. The results showed that the inclusion of the leverage portfolio increased the explanatory factor of the model and the results were consistent with Cai and Zang (2011) as the relationship between leverage and stock returns on stocks from Istanbul exchange turned out to be negative. On the other hand, a study by Friewald et al. (2018) on the effects of debt refinancing on the equity returns showed that stocks with highly leveraged firms earns excess return when controlling for debt refinancing.

The results of the different studies attempting to define the relation between financial leverage and equity returns are puzzling. What makes the capital structure debate especially intriguing is that the theories lead to such different, and in some ways diametrically opposed decisions and outcomes (Barclay & Smith, 2005). An explanation for this puzzle was provided by Schmid (2010) who aligned with Fama and French (1992) that market leverage is positively related to stock returns while book leverage does not have a relationship with stock returns and is much less informative. In fact, many studies focused on the tax deductibility resulting from debt ignoring the non-tax benefits. Initial studies suggested that leverage should positively affects firm's value. Later studies started

to conditionalize and limit the positive effect of leverage on firm's value and hence equity returns.

Ward and Price (2006) who argued that leverage increases the value of the firm also stated that benefits of debt gets eroded when interest rates increase. According to Korteweg (2010), cross-sectional regressions captured a negative relation between profitability and leverage because higher profits increase the value of equity and accordingly the leverage ratio decreases, so even if leverage is positively related with profits, the relationship will be captured as a negative one. While the relationship between leverage and equity returns is proven to be inconsistent across markets, no studies were done to test the nature of this relationship in the Arab market.

2.4. Research Gap

The main aim of this thesis is to examine the effect of financial leverage on equity returns of the Arab markets. This study will contribute to the literature by filling the gap in several ways. First, mostly this is the first study to examine this question on the cross section of firms listed on Arab stock markets. Second, there is still a controversy in literature about the effect of financial leverage on stock returns. Third, Arab stock markets provide an interesting setting to examine this question due to the availability of Islamic financial products which are not typical outside the region. This enables the control on the effect of using Islamic financial product on the cross section of equity returns. While bond markets are not popular in the region as a vehicle of financing, Islamic sukuks have grown in popularity.

3. Methodology

3.1. Population and Sampling

This thesis examines the question about the relationship between financial leverage and firm's performance in Arab Markets. The study is limited to non-financial firms listed in those markets. First, the researcher needed to identify the Arab markets to be used. She started by retrieving quarterly financial and trading data for all listed stocks in the following markets: Bahrain Bourse, Egyptian Stock Exchange, Jordan (Amman) Stock Exchange, Kuwait Stock Market, Morocco (Casablanca) Stock Exchange, Oman (Muscat) Stock Exchange, Qatar Stock Exchange, Saudi Arabia Stock Market (Tadawul), Tunisia (Tunis) Stock Exchange, United Arab Emirates (Abu Dhabi & Dubai) Stock Exchanges. Data on all listed firms in each market was retrieved from Thomson Reuters DataStream. Qatar, Oman, Bahrain and UAE were excluded for their small sample sizes. Morocco and Tunisia were excluded as the needed quarterly data was not available. The final sample included Egyptian Stock Market, Jordan (Amman) Stock Market, Kuwait Stock Market, and Saudi Arabia Stock Market (Tadawul).

The sampling period extended from the first quarter of 2006 to the last quarter of 2019. The selection of the sampling period was based on the fact that very limited Arab markets data was available before 2006 and so to be able to have a consistent as well as large enough data the sampling date was limited to start from 2006.

3.2. Research Variables

The main variables obtained for the analysis for each firm from 2006 (or listing) to 2019 were:

3.2.1. Dependent variable.

The main dependent variable used to measure firm's performance in this thesis is firm's level stock returns. To calculate this, quarterly stock prices - from all listed non-financial firms in the Arab countries' stock exchanges were obtained.

3.2.2. Independent variables.

Firm's level independent variables include:

○ Book leverage: Equal to the book value of total liabilities divided by book the value of assets (Arditti, 1967; Cai & Zang, 2011). Both values were obtained from quarterly financial statements. Leverage was calculated as such because in the Arab markets, debt is not publicly traded so firms mainly depend on bank debt which makes book value of debt. Book value of equity was used when calculating leverage because market value of equity is highly positively related to stock prices and thus will affect the results.

○ Change in leverage: Change in leverage was calculated as the percentage change in book leverage from the previous quarter.

3.2.3. Control variables.

- Variables for the CAPM Stock Market Return.
 - EGX 30 is used to calculate the market return for Egyptian Stock Exchange.
 - Amman General Price Index is used to calculate the market return for Amman Stock Exchange.
 - Thomson Reuters Kuwait Total Return Index is used to calculate the market return for Kuwait Stock Exchange because Kuwait Stock Exchange Index is only available for 5 years.
 - Tadawul FF Index is used to calculate the market return for Saudi Arabia Stock Exchange.
- Variables for the Fama-French 5 factors.
 - Size Factor Returns (SMB): Market Capitalization for each firm.
 - Book to Market factor returns (HML): Book value of Equity divided by Market Capitalization for each firm.
 - Operating Profitability (RMW). Operating Profitability was calculated as the operating income divided by the book value of equity. Both variables obtained from quarterly financial statements.
 - Investment (CMA). Investment: is calculated as the percentage change in the book value of assets from the previous quarter using quarterly financial statements.

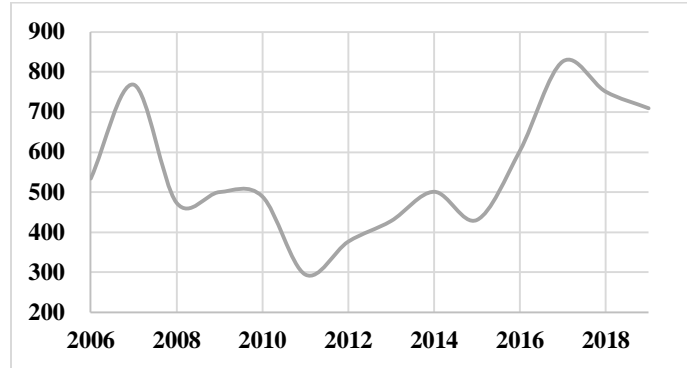
3.3. Data Collection

The initial data retrieved consisted of a total 960 firms, 216 firms from Egypt, 133 firms from Jordan, 135 firms from Kuwait, 108 firms from Oman, 43 firms from Qatar, 201 firms from Saudi Arabia and 124 firms from United Arab Emirates. However, for a company to be eligible for inclusion it must have all the data available for at least four consecutive quarters. Financial firms and companies with negative shareholders equity were excluded from the collected data. Firms with negative book value of equity or negative total liabilities were also excluded from the sample. The total number of eligible firms was 536, 162 firms from Egypt, 123 firms from Jordan, 116 firms from Kuwait, and 135 firms from Saudi Arabia. However, Oman, Qatar and UAE were excluded for their small sample size.

The Egyptian Stock Exchange had a total 247 listed firms as of 2019, according to the World Federation of Exchanges. The total market capitalization of the EGX reached EGP 709 billion as of 2019 which is equivalent to USD 44.51 billion (fig. 1). The Egyptian Stock Exchange has 17 sectors on top of which is the Banks sectors accounting for EGP 204 billion, Real Estate accounting for EGP 96 billion, Industrial Goods and Services and Automobiles accounting for EGP 88 billion, and Chemicals accounting for EGP 81 billion as of May 2018. The average monthly exchange rate from 2006 to 2019 was 8.9 USD/EGP. The main index in the Egyptian Stock Exchange that was used to calculate the market return in the CAPM and Fama-French models was the EGX 30 Index which is a free-float capitalization weighted index representing the 30 most highly capitalized and liquid stocks traded on the Egyptian Exchange.

Figure 1

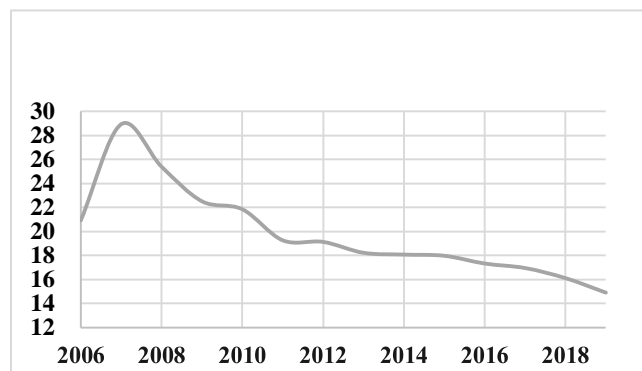
Total Market Cap 2006-2019 (Billion Egyptian Pound)



The Jordanian Stock Exchange (Amman Stock Exchange) had a total of 191 listed companies as of 2019. According to the World Federation of Exchanges, Amman Stock Exchange had a total of JOD 14.9 billion which is equivalent to USD 21 billion as of 2019 (fig. 2). Amman Stock Exchange has 3 main sectors: Financial, Services, and Industrial sectors. The average monthly exchange rate from 2006 to 2019 was 0.7 USD/JOD. The main index in Amman Stock Exchange is Amman Stock Exchange General Price Index which is a weighted index of the most highly capitalized and most liquid traded companies in the primary and secondary market. The index was used to calculate market return in the CAPM and Fama-French models.

Figure 2

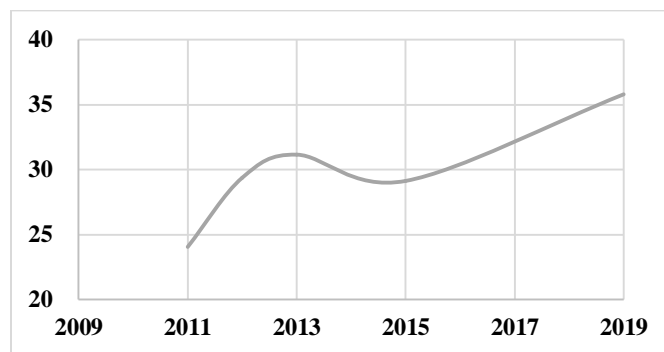
Total Market Cap 2006-2019 (Billion Jordanian Dinar)



The Kuwaiti Stock Exchange has a total of 174 listed companies as of 2019. According to the annual report of Kuwait Capital Market Authority and the World Federation of Exchanges, the Kuwaiti Stock Exchange had a total market capitalization of KWD 35.7 billion as of 2019 which is equivalent to USD 117 billion (fig. 3). The top sector in terms of market capitalization and liquidity is the Banking sector accounting for KWD 21.6 billion which is around 60% of the total market capitalization of the country. The monthly average USD/KWD exchange rate for the period between 2006 and 2019 was 0.29 USD/KWD. The telecommunication sector comes next with a total market capitalization of KWD 3.4 billion and then Industrial sector with KWD 3.1 billion. Since most of Kuwait Indices got delisted such as Kuwait Stock Exchange Weighted Index and Kuwait Stock Exchange Index, and the current Kuwait Index has been created only five years ago, Thomson Reuters Kuwait Total Return Index was used to calculate the market return for Kuwait Stock Exchange in the CAPM and Fama-French models.

Figure 3

Total Market Cap 2006-2019 (Billion Kuwait Dinar)

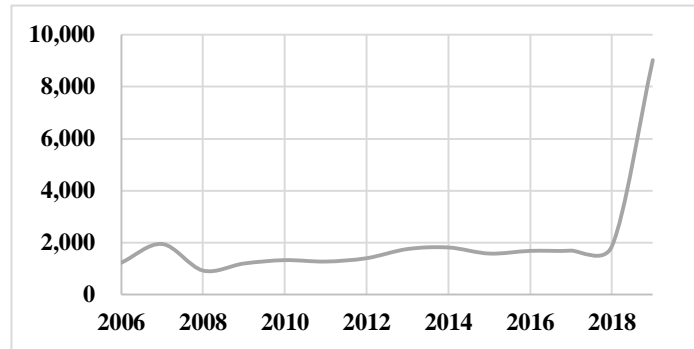


The Saudi Stock Exchange (Tadawul) had a total of 204 listed companies as of 2019, according to the World Federation of Exchanges. The total market capitalization of the listed companies accounted for a total of SAR 9,027.9 billion as of 2019 which is equivalent to USD 2,407 billion (fig. 4). The monthly average USD/SAR exchange rate for the period between 2006 and 2019 was 3.84 USD/SAR. Tadawul Stock Exchange consists of 21 sectors. The top sector representing the largest part of the market is the Banking & Insurance sector followed by Telecoms, Consumer Staples, and Utilities. The main index

Tadawul Stock Exchange that was used to calculate the market return in the CAPM and Fama-French models was Tadawul all-share index.

Figure 4

Total Market Cap 2006-2019 (Billion Saudi Riyal)



Tables 1-4 reports the summary statistics for the different variables used in the study including leverage level, leverage change, stock returns, market returns, market capitalization, book-to-market ratio, operating profitability, and Investment. The tables report the mean, median, standard deviation, minimum and maximum values for each variable in addition to the number of firms included in the study of each country.

Table 1***Summary Statistics for Panel A: Egypt (2006-2019)***

	Firm Leverage (%)	Firm Leverage Change (%)	Firm Level Return (%)	Stock Market Return (%)	Market Capitalization (thousands)	Book to Market Ratio	Operating Profitability (%)	Investment (%)
Mean	46.00	13.96	3.05	2.83	2,418,398	0.9650	2.91	3.40
Median	45.06	0.33	-1.20	3.10	392,131.5	0.8228	2.73	1.10
Standard Deviation	0.28	5.30	0.316	0.1726	5,837,155	0.6721	0.26	0.27
Minimum	0.03	-98.5	-91.30	-34.8	7000	0.0033	-1380.7	-87.8
Maximum	678.9	39360	595	56.6	93,604,989	6.0513	208.34	1151
N	162							

Panel A shows the summary statistics of the leverage, leverage change, firm-level return, stock market return, market capitalization, book-to-market, operating profitability, and investment for the 162 eligible firms listed in the Egyptian stock market. The average leverage ratio is 46% which is very close to the average level reported by Cai and Zang (2011) while the difference between the minimum and maximum value is quite large. The firm with the lowest leverage ratio is GMC Industrial and Commercial Group which belongs to the Trade and Distributors sector with 0.03% while the highest leverage ratio belongs to Arab Moltaqa Investments with 687.9% which belongs to the Non-bank Financial sector. The average leverage change is 14% and is quite dispersed with the standard deviation of 5.3% and range from the minimum value -98.5% and the maximum value 39360%.

Firms listed in the Egyptian Stock Exchange generate an average return of 3% per quarter. The standard deviation of returns is 0.316% which is relatively high and reflects the volatility in returns among firms as the minimum return is -91.3% and the maximum return is 595%. The average market capitalization is 2.4 billion EGP and the standard deviation is 5.8 million EGP which also shows the difference in size among firms with

firms having as low as EGP 7 million market cap, which belongs to Alex New Medical Center from the Healthcare sector, to as high as EGP 93 billion which belongs to Global Telecom from the Telecommunication sector. The average book-to-market ratio is below 1 which indicates that many stocks trade at a premium to their book values, however, this average can be affected by outliers as the minimum book to market ratio is extremely low and counts for 0.003. The average operating profitability for firms listed in the Egyptian Stock exchange is around 3% quarterly. The standard deviation is 0.26 which reflects the volatility in firms' profitability that ranged from -1380% and 208%. The average quarterly growth in total assets measured investment is 3.4% with a standard deviation of 0.27 as firms' investment varied between -87.8% and 1151%.

Table 2***Summary Statistics for Panel B: Jordan (2006-2019)***

	Firm Leverage (%)	Firm Leverage Change (%)	Firm Level Return (%)	Stock Market Return (%)	Market Capitalization (thousands)	Book to Market Ratio	Operating Profitability (%)	Investment (%)
Mean	39.77	15.24	-0.03	-0.5	87,854.09	1.2842	-1.15	1.27
Median	27.44	0.27	-2.08	-1.3	16,469.5	1.0376	0.52	-0.09
Standard Deviation	0.921	4.207	0.2085	0.0815	340,132.2	1.0054	0.472	0.202
Minimum	0.09	-96.20	-98.99	-31.4	694	0.0023	-1784	-47.4
Maximum	2,646.4	25,129	590	24.87	6,769,547	8.1660	625.8	858.7
N	123							

Panel B shows the summary statistics of the leverage, leverage change, firm-level return, stock market return, market capitalization, book-to-market, operating profitability, and investment for the 123 eligible firms listed in Amman stock market. The average leverage ratio is 39% which is slightly below the average level reported by Cai and Zang (2011) and the difference between the minimum 0.09% and maximum 2646% is quite large. While the average leverage change is 15% which is high considered that change has negative and positive values and the standard deviation is 4.2% which reflects volatility in leverage change that can be captured through the difference between the minimum value -96% and the maximum value 25120%.

Firms listed in Amman Stock Exchange generate an average return of -0.03% per quarter. The standard deviation of returns is 0.2% which reflects the volatility in returns among firms as the minimum return is -98% and the maximum return is 590%. The average market capitalization is JOD 87.8 million, and the standard deviation is JOD 340 million which also shows the difference in size among firms as the minimum value is JOD 694 thousands, which belongs to Ubour Logistics Services company from the services sector,

and the maximum value is JOD 6.7 billion, which belongs to The Arab Potash company from the Industrial sector. Unlike Egypt, the average book-to-market ratio is above 1 which indicates that many stocks trade at a discount to their book values. The average operating profitability for firms listed in the Egyptian Stock exchange is around -1% quarterly. The standard deviation is 0.47% which reflects the volatility in firms' profitability that ranged from -1780% to 602%. The average quarterly growth in total assets measured investment is 1% with a standard deviation of 0.2% as firms' investment varied between -47% and 850%.

Table 3

Summary Statistics for Panel C: Kuwait (2006-2019)

	Firm Leverage (%)	Firm Leverage Change (%)	Firm Level Return (%)	Stock Market Return (%)	Market Capitalization (thousands)	Book to Market Ratio	Operating Profitability (%)	Investment (%)
Mean	56.6	0.29	0.002469	1.16	119,539.4	1.482	0.4	0.9
Median	57.9	-0.03	0.00	0.67	33,428	1.258	0.4	0.1
Standard Deviation	0.228	0.148	0.264911	0.1114	344,851	1.024	0.133	0.137
Minimum	1.30	-88.2	-90.0	-42.0	296	0.013	-827.0	-80.0
Maximum	99.8	575.8	525.0	31.86	5,885,007	9.767	144.0	410.6
N	116							

Panel C shows the summary statistics of the leverage, leverage change, firm-level return, stock market return, market capitalization, book-to-market, operating profitability, and investment for the 116 eligible firms listed in Kuwait stock market. The average leverage ratio is 56% which is above the average level reported by Cai and Zang (2011) and above the average of all Arab markets included in the study. The difference between the minimum 1.3% and maximum 99.8% shows that Kuwaiti firms are conservative in using leverage. While the average leverage change is 0.2% which is normal given that

change has negative and positive values and the standard deviation is 0.14% which reflects very low volatility in leverage change. Firms listed in Kuwait Stock Exchange generate an average return of 0.2% per quarter.

The standard deviation of returns is 0.26% which reflects the volatility in returns among firms as the minimum return is -90% and the maximum return is 525%. The average market capitalization is KWD 119 million and the standard deviation is KWD 344 million which also shows the difference in size among firms as the minimum value is KWD 296 thousands, and it belongs to Kuwait Cable Vision, which belongs to the consumer services sector, and the maximum value is KWD 5.8 billion, and it belongs to Zain Group from the telecommunication sector. Unlike Egypt, the average book-to-market ratio is above 1 and the highest among Arab markets included in the study which indicates that many stocks trade at a discount to their book values. The average operating profitability for firms listed in the Kuwait Stock Exchange is around 0.4% quarterly. The standard deviation is 0.13 which reflects the volatility in firms' profitability that ranged from -8.2 (-820%) and 1.4 (140%). The average quarterly growth in total assets measured investment is 0.9% with a standard deviation of 0.13 as firms' investment varied between -0.8 and 4.1.

Table 4***Summary Statistics for Panel D: Saudi Arabia (2006-2019)***

	Firm Leverage (%)	Firm Leverage Change (%)	Firm Level Return (%)	Stock Market Return (%)	Market Capitalization (thousands)	Book to Market Ratio	Operating Profitability (%)	Investment (%)
Mean	39.16	3.495	0.575	-0.2	10,484,365	0.576463	2.14	1.75
Median	37.75	0.133	-0.192	0.3	2,084,095	0.523465	2.15	0.74
Standard Deviation	0.2193	0.5654	0.1993	0.135	33,470,962	0.324459	0.1245	0.1418
Minimum	0.04	-98.99	72.894	-35.5	60,600	0.004	-758.11	-82.83
Maximum	97.83	3409.58	167.74	40.9	496,250,000	3.536	24.38	765.45
N	135							

Panel D shows the summary statistics of the leverage, leverage change, firm-level return, stock market return, market capitalization, book-to-market, operating profitability, and investment for the 135 eligible firms listed in Saudi Arabia stock market. The average leverage ratio is 39% which is below the average level reported by Cai and Zang (2010) among the lowest relative to all Arab markets included in the study. The minimum leverage level is 0.0004 and maximum 0.97 which also shows that Saudi firms are conservative in using leverage. While the average leverage change is 0.03 with a minimum value of -0.98 and a maximum leverage change of 34 times. Firms listed in Tadawul Stock Exchange generate an average return of 0.5% per quarter.

The standard deviation of returns is 0.19 reflecting the volatility in returns among firms as the minimum return is -0.7 and the maximum return 1.6. The average market

capitalization is SAR 10 billion and the standard deviation is SAR 33 billion which also shows the difference in size among firms as the minimum value is SAR 60 million, which belongs to Al Samaani for Metal Industries from the industrial sector, and the maximum value is SAR 496 billion, which belongs to Saudi Basic Industries from the materials sector, which make it the largest Arab market. The average book-to-market is close to 0.5 which is the lowest among the Arab markets included in the study which indicates that many stocks trade at a high premium to their book values. The average operating profitability for firms listed in the Tadawul Stock Exchange is around 2% quarterly which is affected by the negative outliers as the minimum value is -7.5 while the maximum is 0.24. The average quarterly growth in total assets measured investment is 1.7% with a standard deviation of 0.14 as firms' investment varied between -0.8 and 7.6.

3.4. Research Method

The main method employed in this thesis involved testing whether leverage affects equity returns using established asset pricing models. First, following Cai and Zhang (2011), the effect of leverage on returns against well-established asset pricing models was assessed using mainly the Capital Asset Pricing Model (CAPM), Fama-French 3 factor model, and Fama-French 5 factor model for firms in each country in the sample. The CAPM relied on one factor which is the stock market premium K_m calculated as the difference between the market return (k_m) and the risk-free rate (k_{rf}).

In Arab stock markets, the risk-free rates are usually very high which creates a long series of negative returns and so the models were run on returns directly. Fama French 3 factor model included market premium but two other factors were added: Size and value. Size was measured through the difference between the returns of the firms with smallest market capitalization and the returns of the firms with the highest market capitalization. Value was measured by dividing the firm's book value of equity by its market value. In the Fama French 5 factor model, two additional factors were added: Investment and profitability. Investment was measured through the growth in assets, and profitability was measured through dividing the operating income by the firm's equity.

The challenge in this estimation was that the values for the factors and their underlying portfolios were not readily available for the sample of Arab markets. Therefore,

and as a first step in the methodology, the various factors underlying the various models were constructed as follows:

1. Stock Market Return k_m : For the CAPM model, market returns k_m was calculated as each country's main index.
2. Size Factor (SMB): For the size factor, firms for each country were sorted according to their market capitalization. The firms were then divided into portfolios according to quantiles and then the size factor (SMB) was calculated as the average return of the portfolio of the smallest market capitalization firms minus the average return of the portfolio with the largest market capitalization firms.
3. Book-to-market factor (HML): Firms of each country were sorted according to their book-to-market ratio. Firms were then divided into portfolios according to quantiles and the book-to-market factor (HML) was calculated by taking the average return of the firms in the portfolio with the highest book-to-market ratio minus the average returns of the firms in the portfolio with the lowest book-to-market ratios.
4. Investment factor (CMA): Firms were sorted according to their investment ratio (change in assets), firms were then divided into portfolios where portfolio 1 was the first quantile with lowest investment ratio and portfolio 5 was the fifth quantile with the highest investment ratio. Investment factor was then calculated by taking the average return of the firms listed in the first portfolio minus the average return of the firms listed in the fifth portfolio (Conservative minus aggressive).
5. Profitability (RMW): This factor was calculated by sorting the firms of each country according to their profitability (operating profits divided by equity). Firms then were divided into portfolios based on quantiles where portfolio 1 had the firms with lowest profitability and portfolio 5 had the firms with highest profitability. The profitability factor was then calculated by taking the average return of the firms in the fifth portfolio minus the average returns of the firms in the first portfolio (Robust minus weak).

The model was then run for each country on individual firms as panel data rather than as leverage portfolios for several reasons. Firstly, the number of firms that were eligible according to the criteria mentioned before in each country was very limited and

accordingly, they were not enough to form portfolios. Secondly, firms in each country were not consistent throughout the years. As a result, the model was estimated sequentially on individual firms and the above-mentioned factors as follows:

- Model 1

$$r_{it} = \alpha_i + \beta_{\Delta LV,t} \Delta LV_t + \varepsilon_t$$

- Model 2

$$r_{it} = \alpha_i + \beta_{\Delta LV,t} \Delta LV_t + \beta_{LV,t} LV_t + \varepsilon_t$$

- Model 3

$$r_{it} = \alpha_i + \beta_{\Delta LV,t} \Delta LV_t + \beta_{\Delta LV,t} \Delta LV_t + \beta'_i F_t + \varepsilon_t$$

- Model 4

$$r_{it} = \alpha_i + \beta_{\Delta LV,t} \Delta LV_t + \beta_{\Delta LV,t} \Delta LV_t + \beta'_i F_t + \varepsilon_t$$

- Model 5

$$r_{it} = \alpha_i + \beta_{\Delta LV,t} \Delta LV_t + \beta_{\Delta LV,t} \Delta LV_t + \beta'_i F_t + \varepsilon_t$$

Where;

r_{it} : the quarterly returns of each firm.

ΔLV : the change in leverage during the most recent fiscal quarter.

LV : the leverage level measured as total liabilities divided by total assets.

F_t : a vector of the systematic factor returns for each asset pricing model. The factor in the CAPM estimations includes each stock market return, Fama-French size factor returns (SMB), Book to Market factor returns (HML), Operating Profitability (HML) and Investment (CMA).

ε_t : error term for quarter t.

4. Results

The fixed effects panel regression was run using the individual quarterly returns and the factors calculated through portfolios to find out the effect of the leverage on individual stocks. Model (1) included leverage change only as an independent variable with individual quarterly return as dependent variable. In model (2), the leverage level as an independent variable was added. In model (3), other market return to run the CAMP model was added. In model (4), the three factors of the Fama-French 3-factor model which are market return, market capitalization (SMB), and book-to-market (HML) were added. In model (5), the 5 factors of Fama-French which are market return, market capitalization (SMB), book-to-market (HML), investment (CMA) and profitability (HML) were added. The next sections show the results found for the two models for each country.

4.1. Egypt

Table 5 shows the panel regression on the 162 eligible firms listed in the Egyptian Stock Exchange from 2006 to 2019 where the dependent variable is individual stock returns and is tested in several models. Model (1) shows the regression between quarterly stock returns and leverage change and it shows a positive insignificant relation between both variables. In model (2) leverage level is added as an independent variable beside leverage change and the model shows positive insignificant relationship between leverage level as stock returns. In model (3) market return (CAPM) is added as an independent variable and the model shows a highly significant positive relationship between stock returns and market returns while leverage change and leverage level remain insignificant.

In model (4) Fama-French 3 factor model is run on the stock returns and the result shows that market return and the Size (SMB) factors are both significantly positively related with stock returns while book-to-market is insignificant. In model (5) Fama-French 5 factor model is run and results show that leverage change has negative insignificant relation with stock returns while leverage level has a positive insignificant one with all five factors having significant relationships with stock returns. The regression model includes 5547 observations and has an R^2 of 3.5% for the CAPM model, 7.2% for the Fama-French 3 factor model and 8.1% for the Fama-French 5 factor model.

Table 5

Egypt Results

Independent Variables and Statistics	Dependent Variable = Quarterly Stock Return				
	(1)	(2)	(3)	(4)	(5)
Leverage Change	0.0001	-0.0003	-0.0002	-0.0005	-0.0006
t-stat	(0.168)	(-0.418)	(-0.223)	(-0.592)	(-0.686)
Leverage Level		0.0311	0.0232	0.0373	0.0364
t-stat		(1.179)	(0.887)	(1.451)	(1.422)
Market Return			0.248	0.2407	0.2428
t-stat			(9.726)***	(9.567)***	(9.664)***
Size Factor				0.3699	0.2953
t-stat				(14.366)**	(9.240)***
				*	
Book to Market				.0012	-0.1131
t-stat				(0.036)	(-2.869)***
Investment					0.2618
t-stat					(-4.949)***
Profitability					-0.2473
t-stat					(-5.772)***
N	5547	5547	5547	5547	5547
R²	0.018	0.018	0.035	0.072	0.081

***, **, and* denote statistical significance at the 1%, 5%, and 10% levels, respectively

4.2. Jordan

Table 6 shows the panel regression on the 123 eligible firms listed in the Amman Stock Exchange from 2006 to 2019 where the independent variable is individual stock returns and is tested in several models. Model (1) shows the regression between quarterly stock returns and leverage change and it shows a negative insignificant relation between stock returns and leverage change. In model (2) leverage level is added as independent variable beside leverage change and the model shows negative insignificant relationship between leverage level as stock returns as well as leverage change. In model (3) market return (CAPM) is added as an independent variable and the model shows a highly significant positive relationship between stock returns and market returns while leverage change and leverage level remain insignificant.

In model (4) Fama-French 3 factor model is run on the stock returns and the result shows that market return is highly significant while the market capitalization (SMB) factor has a positive insignificant relationship with stock returns while book-to-market has a positive relationship that is significant at 10% confidence level. In model (5) Fama-French 5 factor model is run and the results show that leverage change and leverage level both have negative insignificant relationships with stock returns while market return has a positive highly significant relationship with stock returns, market capitalization and profitability are insignificant, book-to-market is poorly significant and investment factor is highly negatively related with stock returns. The regression model includes 3952 observations and has an R^2 of 6.2% for the CAPM model, 6.4% for the Fama-French 3 factor model and 6.7% for the Fama-French 5 factor model.

Table 6

Jordan Results

Independent Variables and Statistics	Dependent Variable = Quarterly Stock Return				
	(1)	(2)	(3)	(4)	(5)
Leverage Change t-stat	-0.0002 (-0.276)	-0.0001 (-0.195)	-0.0001 (-0.173)	-0.0001 (-0.174)	-9.55E-05 (-0.188)
Leverage Level t-stat		-0.0042 (-0.609)	-0.0051 (-0.752)	-0.0048 (-0.684)	-0.0051 (-0.746)
Market Return t-stat			0.6178 (11.551)** *	0.6023 (10.549)** *	0.6081 (10.482)***
Size Factor t-stat				0.0658 (1.182)	0.0097 (0.167)
Book to Market t-stat				0.0618 (1.755)*	0.0670 (1.775)*
Investment t-stat					-0.1397 (-2.869)***
Profitability t-stat					-0.0636 (-1.333)
N	3952	3952	3952	3952	3952
R²	0.029	0.029	0.062	0.064	0.067

***, **, and* denote statistical significance at the 1%, 5%, and 10% levels, respectively

4.3. Kuwait

Table 7 shows the panel regression on the 116 eligible firms listed in the Kuwait Stock Exchange from 2006 to 2019 where the independent variable is individual stock returns and is tested in several models. Model (1) shows the regression between quarterly stock returns and leverage change and it shows a positive significant relation between stock returns and leverage change. In model (2) leverage level is added as an independent variable besides leverage change and the model shows negative insignificant relationship between leverage level as stock returns while leverage change has a positive significant relationship with stock returns. In model (3) market return (CAPM) is added as an independent variable and the model shows a highly significant positive relationship between stock returns and market returns while the significance of the leverage change dropped, and leverage level remains insignificant.

In model (4) Fama-French 3 factor model is run on the stock returns and the result showed that market return, market capitalization (SMB) factor and book-to-market have positive significant relationship with stock returns while leverage level remains insignificant and leverage change turns insignificant when the other factors are added. In model (5) Fama-French 5 factor model is run and the results show that leverage change and leverage level both have insignificant relationships with stock returns while market return, market capitalization, and book-to-market have positive highly significant relationships with stock returns and the investment factor along with the profitability factor are highly negatively related with stock returns. The regression model includes 5072 observations and has an R^2 of 9.1% for the CAPM model, 12.8% for the Fama-French 3 factor model and 13.6% for the Fama-French 5 factor model.

Table 7

Kuwait Results

Independent Variables and Statistics	Dependent Variable = Quarterly Stock Return				
	(1)	(2)	(3)	(4)	(5)
Leverage Change	0.0620	0.0620	0.0476	0.0357	0.0361
t-stat	(2.452)**	(2.438)**	(1.950)*	(0.494)	(1.518)
Leverage Level		-0.0007	-0.0099	-0.0095	-0.0173
t-stat		(-0.019)	(-0.270)	(-0.265)	(-0.484)
Market Return			0.7018	0.5599	0.5734
t-stat			(20.763)**	(15.105)**	(15.482)**
			*	*	*
Size Factor				0.2178	0.1428
t-stat				(6.057)***	(3.473)***
Book to Market				0.3187	0.1925
t-stat				(9.103)***	(4.843)***
Investment					-0.1333
t-stat					(-2.550)**
Profitability					-0.2624
t-stat					(-6.666)***
N	5072	5072	5072	5072	5072
R²	0.012	0.012	0.091	0.128	0.136

***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively

4.4. Saudi Arabia

Table 8 shows the panel regression on the 135 eligible firms listed in Saudi Stock Exchange (Tadawul) from 2006 to 2019 where the independent variable is individual stock returns and is tested in several models. Model (1) shows the regression between quarterly

stock returns and leverage change and it shows a negative insignificant relation between stock returns and leverage change. In model (2) leverage level is added as an independent variable beside leverage change and the model shows positive insignificant relationship between leverage level as stock returns as while leverage change has a negative insignificant relationship with stock returns. In model (3) market return (CAPM) is added as an independent variable and model shows a highly significant positive relationship between stock returns and market returns while the significance of the leverage change and leverage level remain insignificant.

In model (4) Fama-French 3 factor model is run on the stock returns and the result shows that market return, market capitalization (SMB) factor and book-to-market have positive significant relationship with stock returns while leverage level remains insignificant but turns negative and leverage change remains negative and insignificant. In model (5) Fama-French 5 factor model is run and the results show that leverage change and leverage level both have insignificant relationships with stock returns while market return, market capitalization, and book-to-market have positive highly significant relationships with stock returns and the investment factor along with the profitability factor are highly negatively related with stock returns. The regression model includes 5072 observations and has an R^2 of 9.1% for the CAPM model, 12.8% for the Fama-French 3 factor model and 13.6% for the Fama-French 5 factor model.

Table 8

Saudi Arabia Results

Independent Variables and Statistics	Dependent Variable = Quarterly Stock Return				
	(1)	(2)	(3)	(4)	(5)
Leverage Change	-0.0023	-0.0024	-0.0003	-0.0016	-0.0020
t-stat	(0.634)	(-0.496)	(-0.086)	(-0.415)	(-0.505)
Leverage Level		0.0156	0.0018	-0.0007	0.0056
t-stat		(0.556)	(0.073)	(-0.032)	(0.246)
Market Return			0.7235	0.7062	0.6458
t-stat			(35.954)**	(35.946)***	(32.778)***
			*		
Size Factor				0.5560	0.2053
t-stat				(28.786)***	(6.392)***
Book to Market				0.2825	0.3752
t-stat				(7.234)***	(9.731)***
Investment					-0.4122
t-stat					(-6.968)***
Profitability					-0.6190
t-stat					(-16.086)***
N	5407	5407	5407	5407	5407
R²	0.016	0.016	0.210	0.318	0.350

***, **, and* denote statistical significance at the 1%, 5%, and 10% levels, respectively

5. Discussion & Conclusion

The results showed that leverage change and leverage level have no significant relations with stock returns for all countries included in this study measured as book leverage, which aligns with Gomes and Schmid (2010).

The results of the regression model on the 162 firms listed in the Egyptian Stock Exchange from 2006 to 2019 showed insignificant relation between leverage and stock returns. This can be resulting from the fact that Egypt has been facing a long period of very high interest rates, to accommodate for the inflation rate that peaked after the 2011 revolution. This is similar to the personal tax concept of Miller and Modigliani (1977) except that in MM's propositions, individual investors required higher rates on debt while in Egypt -in an economy with inactive bond market- firms mainly depend on banks as sources of debt. With the interest rate surging, reaching around 19% in 2017, the benefits of debt from tax shield could have been offset.

The results show an insignificant relation between leverage and stock returns of the firms listed in Amman Stock Exchange. Although previous studies done on the firms listed in ASE to test the effect of leverage showed a negative relation between leverage and stock returns (Abu-Abbas et al., 2019). The study was done on only 56 firms from the period of 2011-2014. Not only that the sample size and period are too small, but the period during which the analysis took place was full of political turmoil that could have affected the results. Similarly, a study by Ramadan (2015) on only 1082 firm-year observation from 2000 to 2013 concluded that leverage has a negative relation with firms' values in ASE, however, the dependent variable in this study was Return on Assets and not Equity returns. In this study, the sample size was extended as well as the duration of the study to find out that leverage change and leverage level have no effect on the equity returns of the firms listed in Amman Stock Exchange.

The results show a positive relation between leverage and firm value for the firms listed in Kuwait Stock Exchange when other factors were not included. In a country that imposes no personal taxes nor corporate taxes on domestic firms, the positive relation between leverage and firm's value represents the non-tax benefits resulted reducing agency costs and asymmetric information (Alhashel, 2015). In a country like Kuwait where the

separation between ownership and management is very limited (Alhashel, 2015), higher agency costs are expected. Thus, when firms increase leverage, it reduces the cash flows in the hands of the management which reduces the risk of over investment, which is known as agency cost (Jensen, 1986). A study by Barakat and Ramesh (2003) focused on the role of taxes in determining capital structure in the Arab countries. The study concluded that non-tax benefits from leverage are positively related to firms' value in the non-taxed Arab economies including Kuwait. The results align with Alhashel's (2015) study on firms listed in Kuwait Stock Exchange between 2002 to 2007. The study aimed to measure the non-tax benefits of debt by measuring the effect of leverage on the stocks listed in an economy that imposes no taxes like Kuwait. However, when other factors were considered in the model, the effect of leverage disappeared. These results align with Fama and French's (1992) study in which they postulated that book-to-market absorbs the effect of leverage.

The results shown on Saudi Arabia can be explained by the nature of the taxation system of the country. In Saudi Arabia, no corporate taxes are imposed on Saudi citizens, instead, Saudi citizens are required to pay Zakat worth 2.5% of the net worth of the firm regardless of the capital structure. While the benefits of the leverage for any firm are presented in the tax shield created on interests and given the unique corporate tax code implemented in Saudi Arabia, the values of the firms listed in the Saudi market are independent of their capital structures. Accordingly, firms listed in the Saudi Arabian market tend to have relatively low levels of debt except for firms where the government is a main shareholder (Al-Sakran, 2001). This result supports a study by Barakat (2014) done on the firms of the industrial sector in the Saudi market in the period between 2009 to 2012. The study concluded no significant relation between financial leverage and firm's value.

This thesis tested the relationship between leverage and equity returns in the Arab markets. The thesis focused on four main stock exchanges: Amman Stock Exchange, Egyptian Stock Exchange, Kuwait Stock Exchange, and Saudi Stock Exchange (Tadawul). Qatar, Oman, Bahrain, and UAE were excluded for their small sample sizes. Morocco and Tunisia were excluded as the needed quarterly data was not available. Although several studies have been conducted to examine the relationship between leverage and equity returns in other markets, no similar study was done to examine this relationship within the

Arab markets. The Capital Asset Pricing Model, the Fama French 3-factor model and the Fama-French 5-factor model were used to test the relationship between leverage -measured as total liabilities divided by total assets- and equity returns of the firms listed in the Arab stock markets. Results showed no significant relationship between leverage and stock returns of the firms listed in the Arab markets which opposes the literature including Cai and Zhang's (2011) study.

The thesis should provide guidance to the regulators in the Arab markets on the importance of the availability of the data to be used in such studies. In addition, it provides researchers and policy makers with an empirical study about the implications that can be caused by and the cruciality of the effect of leverage on firms' values.

The study is subject some limitations. First, when collecting the data required for this study, many data were unavailable for some of the Arab markets. Second, some data were available but not consistently which resulted in a shuffled data and the fact that the sample size of each market is relatively small. Third, the small size of the sample did not allow for controlling for industries within each market to determine the effect of leverage on each industry individually, which should be considered in future research.

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