Determinants of Capital Structure: the case of MENA countries

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Abstract

This thesis examines the determinants of capital structure in the MENA countries. The main interest is to investigate both financial firms specially banks and non-financial firms. This study test the main theories of capital structure, namely: trade off theory and pecking order theory. The countries included in this thesis are Saudi Arabia, United Arab Emirates (Include both Abo-Dhabi and Dubai stock indexes), Bahrain, Qatar, Kuwait, Oman, Egypt, Morocco, Tunisia, Palestine and Jordan. The characteristics it covers as suggested by previous literature are tangibility, profitability, risk, debt tax shield, growth, dividends,size, cash flow and liquidity. It will also investigate the effect of the industry, credit rating and ownership structure on the capital structure

This study also investigates the determinants of capital structure in Islamic and conventional banks. This is one of the first attempts to empirically examine the determinants of capital structure in Islamic and conventional banks in general and in MENA countries in particular. This study fills the gap in this important area of research and can provide a base for future research on capital structure in Islamic banks. This thesis use different models to test the capital structure and these are Panel data models (OLS, Fixed, and Random); Tobit and Dynamical model (Arellano-Bover Blundell-Bond), Structural Equation Modeling (SEM) and Generalized Regression Neural Networks (GRNN).

The results suggest that the three methods used in this study lead to similar results with a few exceptions in some countries. This thesis finds that the relation between leverage and the determinants of capital structure is different when using the market or the book leverage. It also finds that the determinants of capital structure between the MENA countries are different. For example, profitability attribute relation with leverage follow the trade-off theory in some countries and follow the picking order theory in other countries. Also, liquidity is significant in all the countries in the sample and have a negative relation to leverage. In addition, tangibility is found to have a mixed results with some countries following the trade-off theory and other countries which follow the trade-off theory but overall it is a key determinant of capital structure.

Additionally, the findings show that although that the majority of firms in the MENA countries don't pay dividends the relation between the long term debt and leverage is negative in all the countries in the sample. The growth opportunities have a negative relation in Bahrain, Egypt, Jordan, Kuwait, Morocco, Palestine, Qatar and Tunisia but positive in rest of the countries. The cash flow attribute have a negative relation with leverage in all the countries in the sample except Saudi Arabia

and Qatar when using the short and long term debt. Furthermore, the ownership variable is expected to have a negative relation when the ultimate owner is an institution. The results show that overall when there is an ultimate owner the leverage will have a negative relation. Suggesting that ultimate owners will force managers to keep a low debt in firms capital structure.

This PhD also attempt to investigate the capital structure in banks within the MENA countries. A special focus is on the differences between the Islamic banks and conventional banks capital structure. First, the findings show that the banks follow the same determinants of capital structure as non-financial firms and that regulations are not the main determinant of capital structure in banks. Then, This study show that there is a difference in capital structure of Islamic banks in comparison with conventional banks. The findings for the dividends variable show that Islamic banks do not follow the pecking order theory but conventional banks don't.

The results of the size variable show that when Islamic banks are large they use less debt in their capital structure. Growth variable show mixed results depending on the use of book or market leverage. Ownership structure show that when there is an ultimate owner leverage increase which is the reverse of the relation in the non-financial firms. The age variable is negative in relation to the book leverage and positive with the market leverage. Also, credit rating relation is different between the two banks, as it is positive with the conventional banks and negative with Islamic banks. Therefore, this study conclude that the main capital structure theories are applicable to MENA countries. Also indicate that Islamic banks have a different capital structure to conventional banks.

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Dedication

To my Father Saleh, who I miss everyday,
To Sara and Hesa who supported me through the journey.

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Authors declaration

At no time during the registration for the degree of Doctor of Philosophy has the author been registered for any other University award.

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Attendance at research training courses in:
Structural Equation Modelling at University of Southampton
Panel Data using Stata course at CASS.

Attendance and participation at staff seminars and PhD symposia during which research work was presented.Relevant scientific seminars and conferences were regularly attended at which work was often presented.

Publications :

Journal of Behavior Economics (JEBO) *Paper submitted:* Is the Capital Structure of Islamic Banks different? A Comparative Study with Conventional Banks in MENA countries. **Under Review**

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List of Abbreviations

ANN   Artificial Neural Networks

ATM   Automated Teller Machine

BIS   Bank of International Settlement

CB   Conventional Banks

CMA   Capital Market Authority

CR   Credit Rating

DPD   Dynamical Panel Data Model

FE   Fixed Effects Model

GCC   Gulf Cooperation Council countries

GDP   Gross domestic product

GNS   Gross National Saving

GRNN   Generalized Regression Neural Networks

IB   Islamic Banks

IMF   International Monetary Fund

MC   Market Cap

MENA   Middle East and North Africa countries

MoF   Ministry of Finance

OLS   Ordinary Least Square

OW   Ownership Structure

PBUH   Peace Be Upon Him

PLS   Partial Least Square

PLS   Profit Loss Sharing

POT   Pecking Order Theory

RE   Random Effect Model

SC   Securities Commission

SEM   Structural Equation Modelling

TBM   Tobit Model

TOT   Trade Off Theory

UAE   United Aram Emirates

UN   United Nations

UNDP   United Nations Development Programme

WACC   Weighted Average Cost of Capital

WB   World Bank

Glossary of Arabic Words

Ijarah

is an exchange transaction in which a known benefit arising from a specified asset is made available in return for a payment, but where ownership of the asset itself is not transferred.

Ijma

is a term referring to the consensus or agreement of the Muslim community basically on religious issues.

Ijtihad

is a term of Islamic law that describes the process of making a legal decision by independent interpretation of the legal sources, the Qur'an and the Sunnah.

Istisna

is a contract of exchange with deferred delivery, applied to specified made-to-order items.

Mudaraba

is a contract of partnership in which one side provides capital and other side provides labor.

Musawama

is a term that describes a sale in which the seller is not obligated to disclose the price paid to create or obtain the good or service.

Musharka

is a joint enterprise or partnership structure with profit/loss sharing implications that is used in Islamic finance instead of interest-bearing loans.

Qiyas

is the process of deductive analogy in which the teachings of the Hadith are compared and contrasted with those of the Qur'an, in order to apply a known injunction to a new circumstance and create a new injunction.

Quran

is the central religious book of Islam, which the revelation from God.

Riba

it refers to the charged interest which is forbidden under Sharia law because it is exploitive.

Salam

is a contract in which advance payment is made for goods to be delivered at a future date, following Islam and Islamic shariah.

Sharia Law

is the Islamic legal system derived from the religious precepts of Islam, particularly the Quran and the Hadith.

Sunnah

is the verbally transmitted record of the teachings, deeds and sayings, silent permissions or disapprovals of the Islamic prophet Muhammad, as well as various reports about Muhammad's companions.

Urf

is a term referring to the custom, or 'knowledge', of a given society. To be recognized in an Islamic society it must be compatible with the Sharia law.

Zakkat

payment made annually under Islamic law on certain kinds of property and used for charitable and religious purposes, one of the Five Pillars of Islam.

Chapter 1

Introduction

1.1 Introduction

The original work of Modigliani and Miller (1958) sets the foundation for the new corporate finance theory. They argued that under several assumptions the capital structure have no effect on the value of the company. Half a century since their propositions and the debate is still on. The importance of the problem is what fuels more researchers to study what determines a company capital structure. The purpose of this thesis is to compare different approaches used in testing the determinants of capital structure. The thesis data is from the Middle East and North Africa (MENA) region which includes countries with unique tax systems. This study also shed light on the difference in determining the capital between these countries. The majority of studies in the chosen countries exclude the financial firms based on the fact that they are regulated. This study use both the financial and non financial firms following recent evidence which suggested that the capital structure of financial firms also follows classic determinants.

1.2 The objectives of the study

The main objectives of the study are:

- To investigate empirically the capital structure theories which are the Trade-

off-theory and the pecking order theory in the MENA countries for the non-financial firms. Using different methods namely the Panel Data Models , Tobit Model, Structural Equation Modeling (SEM) and Artificial Neural Networks (ANN).

- To Study the cross-country differences in capital structure between the MENA countries.

- To Compare the empirical approaches used to study capital structure which are the Panel Data Models , Tobit Model, Structural Equation Modeling (SEM) and Artificial Neural Networks (ANN).

- To investigate empirically the capital structure theories which are the Trade-off-theory, The pecking order theory in the MENA countries for the financial firms. Using different methods namely the Panel Data Models , Tobit Model, Structural Equation Modeling (SEM) and Artificial Neural Networks (ANN).

- To compare the capital structure of Islamic banks and Conventional banks in the MENA countries.

- To Investigate and empirically test the relationship between Capital structure and Credit Rating by following the model of Kisgen (2006), this study will also model the relation using SEM and ANN for for the banks sample only.

1.3 The contribution and significance of the study

The common practice in the literature is biased towards a single approach. A gap exists in the literature in terms of methodological comparisons. While several studies did compare different models like OLS, Panel Data and SEM, this is the first study to our knowledge that uses the majority of the approaches in the same study.

This thesis could be used as a guide to the different approaches used to study the determinants of capital structure.

This study use the Panel data models which are the OLS, Fixed effect and Random effect. We also use the Dynamical model suggested by Arellano and Bond (1991) to test the speed of adjustment. Then, we use the Partial Least Square Structural Equation Modeling (PLS-SEM) to investigate the different attributes of capital structure.This approach does have several advantages over the panel data models. Finally, we use the GRNN models to check the robustness of our results as this tool provided the variable impact using the Artificial Neural Networks.

Moreover, despite the importance of MENA countries which include the Gulf Council Countries (GCC) as the largest oil producers in the world, to our knowledge this is the first study to apply the SEM and GRNN approaches in this region.

Furthermore, financial institutions are excluded in the literature due to the fact that they are under the government regulations and therefore they do not have a choice to make in regards to their capital structure. However, despite the existence of regulations which control the banks leverage behavior bankers still have some flexibility within a specific range were they could determine their capital structure. This thesis will include financial and non-financial companies which is a major contribution since no study has examined banks in the selected area. We also compare the Islamic and Conventional banks' capital structure in the MENA countries. Evidence by Octavia and Brown (2010) and Gropp and Heider (2010) suggest that regulations are of second order and that banks do follow the classic determinants of capital structure.

Additionally, the classic capital structure determinants that affect the capital structure choice are mostly similar across the studies in the literature. Limited studies used Kisgen (2006) model of credit rating to test the relationship with capital struc-

ture in the MENA countries. He argues that credit rating has an impact on the choice of corporation financing.

1.4 Thesis organization

The thesis will be divided into seven chapters. Chapter one is the introduction chapter. Chapter two will provide an in depth background about the economic, financial and institutional environment in the MENA countries. This will include the economic measures such as the Gross Domestic Product (GDP), external balances, unemployment, population, immigration, currency and inflation. Then the financial background will include the capital markets, access to finance, accesses to credit, financial stability,efficiency and Islamic finance. Finally, an overview of the institutional characteristics such as accounting standards, quality of investor laws, ease of doing business, regulators, stock exchanges and tax systems. Chapter three will provide a literature review of the main theories of capital structure. First, it discuss the cost of capital and the cost of debt. Then it will provide a theoretical review of the main theories of capital structure such as Modigliani-Miller modes, trade-off theory, pecking order theory, agency cost theory and market timing theory. Then, it will provide a review of the empirical evidence from different parts of the world. First it start with the cross-country comparison studies. Then it provide a survey of the studies conducted in the developed, developing and MENA countries. This chapter also include a discussion of the methods used in approaching the capital structure as well as the measures widely used in the previous studies. Chapter four will start with the data used in this study, and the variables chosen and pre-analysis statistics. Then a discussion of the different methodologies used which are the Panel Data analysis and the Partial Least Square Structural Equation modeling PLS-SEM and The Generalized Regression Neural Networks (GRNN). After that, The correlation matrices and factor loadings will be presented and discussed.

Chapter five include the findings for the determinants of capital structure in the non-financial firms in the MENA countries. This PhD test the classic determinants of capital structure for ten countries and do a cross section comparison to see the differences. This chapter also study the effect of the industry classification and ownership structure on capital structure. In this chapter three approaches are used as stated before which are Panel Data Models, SEM, ANN.

Chapter six investigate the determinants of capital structure in financial firms. The focus of this chapter is on the Banks in the MENA countries. This chapter also include a comparison between the Islamic and Conventional banks. In this chapter Panel Data Models, SEM, ANN are used. In this chapter a test of the credit rating and ownership structure for a pooled sample of banks from the MENA countries is presented.

Chapter seven gives a summary of the results, findings and a theoretical discussion. It also provide the implications and limitations of this thesis. Finally, it concludes the thesis and recommend future research areas that researchers could follow.

Part I

Background and Literature Review

Chapter 2

Background

2.1 Introduction

T his chapter will present an overview about the economic, financial and institutional backgrounds of the MENA countries. Screening these countries background is important for several reasons. First, it will identify the main characteristics of these countries. Then, it will explore the main economic indicators which will help us understand the behaviour of the leverage choice in the later chapters.

Our main interest in this chapter is to highlight the differences between the MENA countries and the other regions as well as finding similarities and differences between them. Generally, the MENA region constitutes countries with very high income mainly from exporting oil and countries with very low income which are dependent on foreign aid. These issues make this area interesting and worth researching.

2.2 Economics Background

This section reviews the leading features of the MENA countries. These include the main economic indicators like gross domestic product (GDP), annual GDP growth rate, GDP per capita in US dollars, the annual gross national saving (GNS) as a percentage of (GDP), external trade, unemployment, population and immigration and currency and inflation.

2.2.1 Gross Domestic Product (GDP)

The MENA region represents a considerable portion of the world GDP. In 2013 the total nominal GDP reached 3296 billion US dollars which represents 5.1% of the world GDP. Several countries have a very high GDP such as Turkey and Saudi Arabia which between them share almost 47.5% of the region's total GDP. Saudi Arabia GDP is 745 billion while Turkey GDP is around 820 billion in 2013. On the other hand, the majority of the countries in the region are small economies such as Bahrain, Jordan, Lebanon, Syria, Tunisia, Palestine and Yemen. These countries for example if combined will only result in 291 billion US dollars which represent only 35% of the size of the largest economy in MENA countries which is Turkey. Table 2.1 demonstrating the value of the GDP for the MENA countries in the last 9 years.

Table 2.2 shows that the majority of the countries experienced a stable growth rate in the last decade.Moreover, the real GDP growth rate in the MENA region was similar to the World and North America with a value of 2.25%; although it was significantly higher in 2012 reaching 5.75%. All economies in the world were hit by the financial crises of (2008-2009) and it did have a strong effect on MENA countries as they record their lowest growth rate. However, since then the majority of countries have bounced back to their pre-crises levels except the countries who are in the middle of political conflicts such as Egypt, Syria, Tunisia and Libya. The countries with the highest growth rate in 2013 are Bahrain, Oman and Saudi Arabia. This is due to the increase in the oil price during this year. However, we also notice that Libya did have a sharp fluctuation in the last 3 years. This is due to the political change and the distribution of the oil which led the country to a negative growth rate. Furthermore, Syria did not report any figures since the uprising started in 2011 and before that as well. Iran was hit hard in 2013 and suffered a negative annual growth

Table 2.1: Gross Domestic Product (GDP) in US$ billions

Country Name	2005	2006	2007	2008	2009	2010	2011	2012	2013
Algeria	103B	117B	135B	171B	137B	161B	199B	204B	210B
Bahrain	16B	19B	22B	26B	23B	26B	29B	30B	33B
Egypt	90B	107B	130B	163B	189B	219B	236B	263B	272B
Iran	192B	223B	286B	356B	363B	423B	528B	503B	369B
Iraq	50B	65B	89B	132B	112B	143B	191B	216B	223B
Jordan	13B	15B	17B	22B	24B	26B	29B	31B	34B
Kuwait	81B	102B	115B	147B	106B	120B	161B	183B	n/a
Lebanon	21B	22B	25B	29B	35B	38B	40B	43B	44B
Libya	44B	56B	72B	93B	62B	75B	35B	82B	75B
Morocco	60B	66B	75B	89B	91B	91B	99B	96B	104B
Oman	31B	37B	42B	61B	48B	59B	70B	78B	81B
Qatar	45B	61B	80B	115B	98B	125B	170B	190B	202B
Saudi Arabia	328B	377B	416B	520B	429B	527B	670B	734B	745B
Syria	29B	33B	40B	n/a	n/a	n/a	n/a	n/a	n/a
Tunisia	32B	34B	39B	45B	43B	44B	46B	45B	47B
Turkey	483B	531B	647B	730B	615B	731B	775B	789B	820B
UAE	181B	222B	258B	315B	255B	287B	349B	384B	n/a
Palestine	5B	5B	5B	6B	7B	8B	10B	10B	n/a
Yemen	17B	19B	26B	30B	28B	32B	29B	32B	36B
Totals	1819B	2111B	2518B	3051B	2664B	3135B	3665B	3914B	3296B

[1]Source: IMF

for the first time in the last decade and this is due to the new sanctions imposed by the European Countries who decided to join the US in its oil ban.

Moreover, the GDP per capita average in the MENA countries is around $8,550. This is considered to be significant in comparison with other regions. The MENA countries are closer to the levels of Latin America and the Caribbean region as well as East Asia and Pacific where the average GDP per capita is $10,008 and $9,115 respectively. However, the region is still significantly far from the developed economies in the region of North America and Europe and Central Asia where the first is almost 6 times and the second is almost 3 times the average of the MENA countries. Countries in the MENA region vary in their averages significantly. As Table 2.3 show several countries have a substantial average while other countries have a low average. For example, we could see that countries like Qatar and Kuwait

Table 2.2: Annual Growth Rates of Real GDP

Country Name	2005	2006	2007	2008	2009	2010	2011	2012	2013
Algeria	5.90	1.70	3.40	2.00	1.60	3.60	2.80	3.30	2.70
Bahrain	6.77	6.47	8.29	6.24	2.55	4.34	2.10	3.40	5.49
Egypt	4.47	6.84	7.09	7.16	4.69	5.15	1.76	2.21	2.10
Iran	4.62	5.89	7.82	0.58	3.94	5.89	3.00	3.00	-5.80
Iraq	4.40	10.16	1.38	6.61	5.81	6.90	9.68	9.16	3.95
Jordan	8.14	8.12	8.18	7.23	5.48	2.34	2.56	2.65	2.83
Kuwait	10.08	7.52	5.99	2.48	-7.08	-2.37	6.30	6.19	n/a
Lebanon	2.70	1.60	9.40	9.10	10.30	8.00	2.00	2.20	0.90
Libya	9.90	5.90	6.00	3.80	2.10	5.00	-62.08	104.48	-9.37
Morocco	2.98	7.76	2.71	5.59	4.76	3.64	4.99	2.69	4.41
Oman	3.99	5.50	6.80	12.80	1.10	5.60	4.49	4.99	5.07
Qatar	7.49	26.17	17.99	17.66	11.96	16.73	14.79	2.56	5.55
Saudi Arabia	7.26	5.58	5.99	8.43	1.83	7.43	8.57	5.81	3.80
Syria	6.20	5.00	5.70	n/a	n/a	n/a	n/a	n/a	n/a
Tunisia	3.82	5.65	6.22	4.74	3.61	3.61	-0.23	4.09	2.81
Turkey	8.40	6.89	4.67	0.66	-4.83	9.16	8.77	2.13	4.05
UAE	4.86	9.84	3.18	3.19	-4.80	1.67	3.88	4.37	n/a
Palestine	8.84	-5.84	-2.91	-7.74	19.54	3.44	7.66	13.84	n/a
Yemen	5.59	3.17	3.34	4.01	4.13	3.32	-15.09	2.47	4.16

[2]Source: IMF

have a superior average with values of \$76,025 and \$37,056 consequently. Also, countries like Bahrain, Oman, Saudi Arabia and United Arab Emirates do have considerably high averages. In a different manner, the likes of Egypt, Morocco, Palestine, Syria and Yemen are considered to have a low average of GDP per capita. The reasons behind the extraordinary averages in Kuwait and Qatar include the mix of high income from oil and the small population.

In addition, a distinct feature that is obvious in the MENA region is the significant difference in the gross national saving as a percentage of GDP. Although, the average for the MENA region is considered high with 31.6% the average savings of the world is 25%. It is due mainly to oil exporting countries who are the reason behind the high average. As Table 2.4 illustrates countries like Algeria, Kuwait, Libya, Qatar and Saudi Arabia have around 50% of their GDP as savings. However, coun-

Table 2.3: Annual Gross Domestic Product (GDP) per capita in US dollars

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
Algeria	3141	3514	3992	4990	3943	4567	5528	5694	5683	4561
Bahrain	18324	21156	24171	28416	18563	19420	22918	23477	23930	22264
Egypt	1283	1506	1771	2160	2453	2776	2930	3112	3146	2348
Iran	2925	3429	4312	4857	4927	5638	6599	7211	5568	5052
Iraq	1794	2266	3003	4328	3575	4278	5529	6305	6708	4198
Jordan	2300	2689	2990	3757	3987	4326	4618	4879	5207	3862
Kuwait	27015	31907	33733	42824	30410	33481	43723	45824	44585	37056
Lebanon	5713	5903	6639	7795	8983	9501	9856	10311	10793	8388
Libya	8204	9328	11239	14186	10071	11729	5513	12778	14761	10867
Morocco	1973	2152	2439	2851	2885	2850	3082	2999	3260	2721
Oman	11806	13784	15369	21808	16734	23351	23380	24765	24729	19525
Palestine	1456	1443	1576	1856	1963	2339	2665	2783	n/a	2010
Qatar	50121	58443	65007	79582	59676	74901	98031	99731	98737	76025
Saudi Arabia	14079	15625	16678	20157	16095	19113	23599	25085	25163	19510
Syria	1510	1705	2014	2554	2557	2803	n/a	n/a	n/a	2190
Tunisia	3218	3394	3807	4345	4169	4198	4335	4232	4533	4026
Turkey	7040	7626	9245	10272	8528	10017	10471	10609	11236	9449
UAE	43989	52486	57468	65992	51270	54411	63626	64840	64780	57651
Yemen	798	882	971	1171	1061	1272	1343	1377	1461	1149

[3]Source: IMF

tries such as Egypt, Jordan, Lebanon, Palestine, Tunisia, Turkey and Yemen have low savings which are below the world average. We can see that the oil exporter countries have a substantially high average of around 43.4%. But, countries in the non-exporting category have a low average of around 15.3%. The results of the non-exporting are considered below the world average by around 48.8%.

2.2.2 External Balance

The external balance on goods and services is also called the net exports. It is calculated as the difference between the value of the exports and imports. The countries who have a positive value are said to have a surplus and the countries that have a negative value are facing a deficit. The soaring prices of oil which started In 2006 through to the end of 2014 meant that oil exporters experienced a high level of surplus. For example, Saudi Arabia, Kuwait, Qatar did all benefit from the oil prices and the value of external balance in 2013 was around 21.2%, 45%

Table 2.4: Annual Gross National Savings (GNS) as a percentage of (GDP)

Country	2005	2006	2007	2008	2009	2010	2011	2012	2013	Average
Algeria	51.9	54.6	57.0	57.6	47.1	49.2	46.1	42.4	47.7	50.4
Bahrain	35.4	38.2	42.7	44.1	30.2	34.5	37.3	42.0	39.2	38.2
Egypt	21.2	20.4	22.9	22.9	16.8	17.5	14.5	13.6	13.5	18.2
Iran	39.0	39.2	46.4	44.4	42.5	47.7	43.9	35.0	37.6	41.7
Iraq	38.8	24.5	18.6	40.0	16.3	24.4	31.8	27.3	23.5	27.2
Jordan	16.1	18.7	13.2	16.4	19.5	16.0	12.6	7.4	17.3	15.2
Kuwait	56.8	64.7	57.2	58.5	43.0	52.2	59.6	62.2	59.2	57.0
Lebanon	8.2	16.8	21.0	20.9	24.4	23.6	14.1	8.6	7.9	16.2
Libya	64.8	73.0	73.2	77.7	54.1	59.1	29.2	52.4	46.5	58.9
Morocco	30.6	31.6	32.4	32.9	30.2	30.9	27.8	26.3	29.5	30.2
Oman	39.9	41.6	37.6	41.9	24.1	33.6	46.3	44.6	41.7	39.0
Palestine	-2.0	2.0	26.0	30.0	7.0	9.0	0.0	6.0	n/a	9.8
Qatar	63.7	59.2	59.0	58.0	46.1	57.2	55.7	55.4	56.3	56.7
Saudi Arabia	47.6	48.5	48.9	52.8	36.6	43.4	50.7	51.0	48.2	47.5
Syria	19.2	24.3	21.2	18.9	18.5	20.9	n/a	n/a	n/a	20.5
Tunisia	20.8	21.6	21.5	22.1	21.9	21.6	17.6	18.2	18.1	20.4
Turkey	15.4	16.0	15.1	16.1	12.8	13.3	14.1	14.7	14.2	14.6
UAE	31.6	34.5	30.7	30.1	24.2	25.0	31.5	32.6	31.5	30.2
Yemen	22.3	17.5	10.2	10.8	3.3	7.9	1.4	9.3	6.0	9.9
Oil exporter	45.5	46.3	45.8	48.9	35.8	41.6	41.8	42.8	41.9	43.4
Non-Oil exporter	15.1	17.1	18.9	19.8	15.5	16.2	10.6	11.1	12.8	15.3
World	23.4	24.7	24.9	24.7	22.7	23.9	24.7	24.8	25.0	24.3

[4]Source:IMF

and 45.8% respectively. However, several countries were facing a negative level such as Palestine, Lebanon, Jordan and Morocco as Figure 2.1 shows.

Non-oil exporters in the MENA countries suffered critically from negative trade balances. Although it is not bad to have a deficit in trade balance in the short term, it is considered to be a problem when it is persistent. The Algeria trade balance decreased significantly since the levels of 2005. Although the exports did increase by 29.2% the large increase in imports by 63% led the country to hit a low in 2013 in terms of trade balance. Therefore, the external balance as a percentage of GDP represented only 2.8% in 2013. Also, Egypt continues to have a deficit in their trade balance. The deficit increased from 2005 to 2013 by 68% mainly with the increase in imports. Jordan and Lebanon also face the same problem as Egypt. A significant increase in imports without the exports matching these imports meant

both countries have suffered from a deficit since 2005. However, their levels did increase from 2005 to 2013 by 55% and 56.7% respectively. Moreover, Morocco, Syria and Tunisia did have a deficit in their balance of trade for the same reasons. The exports are increasing at a larger rate than the exports. The trade balance deficit was more than doubled in Morocco for the last 10 years. It did decrease by -1.8% for Syria although this number is not correct due to the political conflict in the country. It also increased by 19% for Tunisia. Turkey and Palestine also faced a negative level with their negative trade balance increasing by 2.5 times in Turkey and 18% in Palestine. Yemen did have a positive trade balance for the year 2011 but there is no data available for the 2012 and 2013.

The export revenues for most of the oil exporting countries depend on the price of oil. On the other hand, the imports are mostly to satisfy the domestic demand for goods. However, the majority of oil exporters in the MENA countries faced a long term problem of a less diversified economy. The oil producing countries in this study all faced a healthy positive trade balance. This is connected to the extreme revenues they received from the high price of oil. First, Bahrain, Saudi Arabia, Kuwait have had a solid increase in their trade balance in the last 9 years. The growth rate is around 87%, 41% and 66% from 2005 to 2013. The average increase per year is around 9.6%, 4.6% and 7.3% respectively. Likewise, Iraq and Iran and Libya also benefited from the increased oil prices. Iran did have an increase of 50%. Iraq increase was substantial due to the fact that it was in a war until 2005 where the trade balance was 165 and now reached 28550 with an increase of almost 99.4%. Libya also faced the same problem as Iraq where there was a sharp fluctuation in their trade balance. A deep drop started with the Arab uprising in 2011 where the trade balance dropped by 182% due to the disturbance in oil production. It increased again to normal levels in 2012 only to drop again in 2013. Also, Oman,

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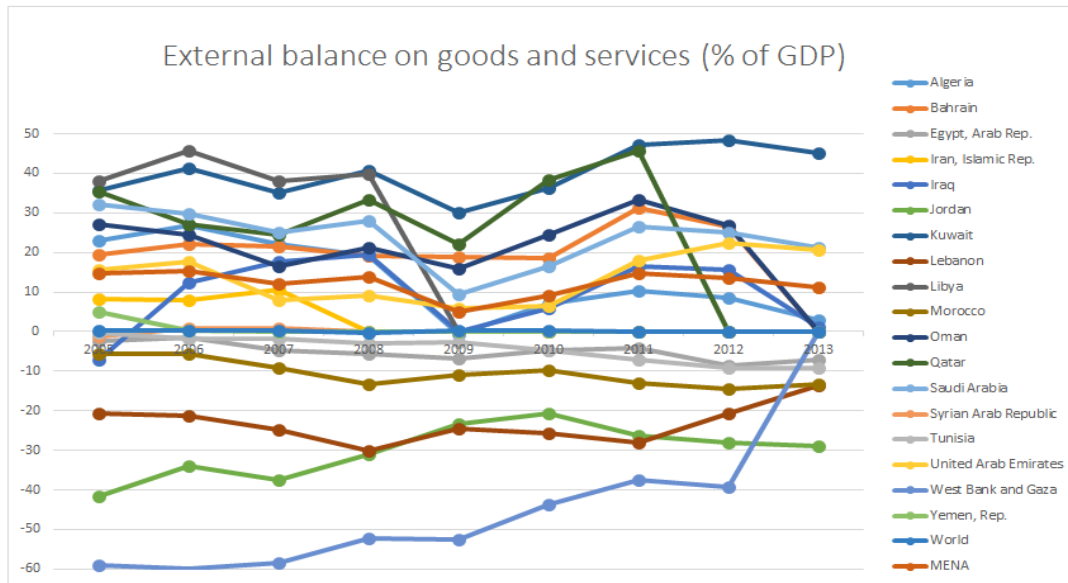
[5]Source: IMF

Figure 2.1: External Balance as a percentage of (GDP)

Qatar and United Arab Emirates are all members of the Gulf Cooperation Council (GCC) and oil exports have faced a deficit in the last decade. Their deficit increased from 2005 to 2013 by 79.1% for Oman, 71.4% for Qatar and 66.5% for UAE.

The MENA countries trade with a broad number of countries, with the exception of countries which face sanctions such as Iran, Iraq, Lebanon and Libya. In general the main regions exporting to the MENA countries are Asia with 35.6% and Europe with 28.9% and the MENA region with 17.8%. On the other hand, the major importers from the region are Asia with 13% and the MENA region with 17.8%. The MENA region countries contribute around 7% of the World total trade.

2.2.3 Unemployment

One of the major challenges facing countries in the MENA region is the high long-term unemployment rate. The unemployment varies between the different countries in the region. In the GCC countries with a small population such as Kuwait, Qatar and the UAE the unemployment is very low with values of 1.5%, 0.6% and 3.8%

Table 2.5: Unemployment as a percentage of total labor force)

Country Name	2005	2006	2007	2008	2009	2010	2011	2012	2013
Algeria	15.3	12.3	13.8	11.3	10.2	10	9.9	9.8	n/a
Bahrain	8.8	8.5	8.2	7.8	7.6	7.5	7.4	7.4	n/a
Egypt	11.2	10.6	8.9	8.7	9.4	9	12	11.9	n/a
Iran	12.1	11.6	10.6	10.5	12	13.5	13.3	13.1	n/a
Iraq	18	17.5	16.9	15.3	15.3	15.2	15.2	15.1	n/a
Jordan	14.9	14	13.1	12.7	12.9	12.5	12.9	12.2	n/a
Kuwait	2	1.6	1.6	1.6	1.6	1.6	1.6	1.5	n/a
Lebanon	8	8.1	9	9	8.9	8.9	8.9	8.9	n/a
Libya	9.1	9	8.9	8.8	8.7	8.6	8.1	8.9	n/a
Morocco	11	9.7	9.7	9.6	9.1	9.1	8.9	9	n/a
Oman	8.5	8.5	8.5	8.5	8.4	8.3	8.2	8.1	n/a
Qatar	1.2	0.9	0.5	0.4	0.3	0.4	0.6	0.6	n/a
Saudi Arabia	5	6.3	5.7	5.1	5.4	5.5	4.4	5.6	n/a
Syria	9.2	8.2	8.4	10.9	8.1	8.4	8.4	8.3	n/a
Tunisia	12.9	12.5	12.4	12.4	13.3	13	12.9	12.8	n/a
Turkey	10.6	10.2	10.3	11	14	11.9	9.8	9.2	n/a
UAE	3.1	3.3	3.4	4	4	4	4	3.8	n/a
Palestine	26	23.6	21.6	26	24.5	23.7	21	23	n/a
Yemen	16.1	15.7	15.3	15	14.6	17.8	17.7	17.6	n/a

[6]Source: IMF

respectively. On the other hand, countries with a large population such as Saudi Arabia and Oman have a considerable high unemployment rate. The rate in Saudi Arabia is 5.6% and in Oman 8.1%. The special case is Bahrain which does have a small population but at the same time a high unemployment rate in comparison with similar sized countries in the region such as Qatar and UAE. The percentage is 7.4%.

Other countries in the MENA region do have a significantly high unemployment rate ranging between 8 and 23 percent. Countries in North Africa which are Algeria, Egypt, Libya, Morocco and Tunisia share a high number of unemployed citizens. Algeria did decrease the unemployment from 15.3% in 2005 to 9.8% in 2012. Furthermore, Morocco also did decrease the unemployment rate from 11% to 9% from 2005-2013. One of the main reasons behind that is the stable political status in the

two countries. On the other hand, Egypt did decrease the unemployment from 2005 to 2011 by 2.2% but the Arab rising in 2011 had an effect on the unemployment rate increasing to record levels of 12% in 2011 and 11.9% in 2012. The case in Egypt is the same as in Libya where levels increased after the revolution. Tunisia always has a high unemployment rate. The rate was over 12% from 2005 to 2012, reaching at peak in 2009 with a figure of 13.3%. The rest of the countries in the MENA region also have a high unemployment rate. These are Iran, Iraq, Jordan, Lebanon, Syria, Turkey, Palestine and Yemen.

It is better to discuss Iraq and Syria first simply because these are countries with unstable political issues. Iraq has recently been in a war and the situation is still uncertain. Moreover, the situation is even worse in Syria. The civil war is still ongoing and numbers of refugees increasing. The war has claimed 180,000 lives up to now, and the economic loss is estimated at $144 Billion (US) which is the equivalent of two and a half times the 2010 (GDP). Also, Iran suffered greatly from the 2008-2009 financial crisis. The unemployment rate in 2008 was 10.5% and increased to 12%, 13.5% and 13.3% from 2009-2011. This also has a relationship with the Iranian Nuclear program and the sanctions imposed on them. Turkey did have a noticeably high rate as well, as Table 2.5 shows the financial crisis had a strong effect on unemployment reaching 14% in 2009 from 11% the previous year. In addition, the unemployment rate did improve in the years 2011-2012 reaching better levels than before the crisis of 9.8% and 9.2% in that order. Jordan's rate did decrease from 14.9% in 2005 to 12.2% in 2012. Lebanon on the other hand, had a stable unemployment rate ranging from 8-9% through the last decade.

According to OSullivan et al. (2011) the two countries with the largest level of unemployment are Palestine and Yemen. Their levels have been increasing substantially in the last 15 years. Yemen has had a high rate through the last 9 years.

It has also increased in the last three years. The unemployment rate was around 17.6% for the year 2012. It is understandable for a country like Palestine to face such economic turmoil. Therefore, it is not shocking to find out that the unemployment rates are the highest in the area. The rate was 23% in 2012. OSullivan et al. (2011) also points out that these figures are the official ones and that non official numbers would be higher than these levels. They stress that the unemployment levels are higher in a certain group of the population. As they point out the percentage is high in the youthful and especially fresh graduates.

2.2.4 Population and Immigration

The MENA countries have different levels of resources and population. The total population is around 468 million which represents 6.5% of the population of the world. The population varies from countries with high population such as Egypt, Iran and Turkey with 82 million, 77.4 million and 74.9 respectively to countries with low population such as Bahrain and Qatar who have 1.3 and 2.1 million inhabitants only. Several reasons contribute to the high growth experienced by the region. These are the improvement in health care and standard of living plus a high fertility rate.

As Table 2.6 shows all the countries in our sample have experienced a growth in the population over the last 7 years. For example as we can see from the table countries like Qatar, UAE, Oman, Bahrain and Kuwait have a very high rate of growth, where the increase in the population was 164%, 125%, 44%,51% and 46% respectively. On the other hand, the rest of the countries had an average of 15% over the period from 2005-2013. The countries with the lowest growth are Tunisia and Morocco where the growth was 8.5% and 9.5%.

It is also notable that the majority of the rich countries used to have a small population and the low income countries have a large population. This situation

Table 2.6: Total Population in Thousands

Country Name	2005	2006	2007	2008	2009	2010	2011	2012	2013
Algeria	33961	34507	35097	35725	36383	37063	37763	38482	39208
Bahrain	880	951	1032	1116	1192	1252	1293	1318	1332
Egypt	71778	72991	74230	75492	76775	78076	79392	80722	82056
Iran	70152	70977	71809	72661	73543	74462	75424	76424	77447
Iraq	27377	28064	28741	29430	30163	30962	31760	32578	33417
Jordan	5411	5536	5661	5786	5915	6046	6181	6318	6459
Kuwait	2296	2417	2555	2702	2850	2992	3125	3250	3369
Lebanon	3987	4080	4140	4186	4247	4341	4383	4425	4467
Libya	5594	5686	5782	5877	5964	6041	6103	6155	6202
Morocco	30125	30395	30667	30955	31277	31642	32059	32521	33008
Oman	2522	2555	2570	2594	2663	2803	3025	3314	3632
Qatar	821	968	1152	1359	1564	1750	1911	2051	2169
Saudi Arabia	24690	25372	25916	26366	26796	27258	27762	28288	28829
Syria	18167	18805	19561	20346	21032	21533	21962	22399	22846
Tunisia	10029	10128	10225	10329	10440	10549	10674	10778	10887
Turkey	67743	68626	69497	70364	71241	72138	73059	73997	74933
UAE	4149	4876	5797	6799	7718	8442	8925	9206	9346
Palestine	3320	3406	3494	3597	3702	3811	3927	4047	4170
Yemen	20140	20662	21182	21704	22230	22763	23304	23852	24407
Totals	403144	411002	419109	427387	435695	443922	452032	460124	468184

[7]Source: IMF

led to high income countries which are the GCC countries and Libya spending on transforming their countries from deserts to modern countries. This transformation with no labour led them to import labour from their neighboring countries as well as other countries. This led to the foreign work force becoming dominant in these countries.

It is also notable that the majority of the rich countries used to have a small population and the low income countries a large population. A recent report by the (UN) shows the figures of the in and out in the whole world. Table 2.7 demonstrates the numbers of immigrants in the different countries in the MENA region, as well as the number of expats living abroad either in MENA countries or other countries. We notice that the countries could be classified into two groups. The first group is countries where there is a large number of immigrants in some extreme cases

Table 2.7: Total Immigration in Thousands

Country	In				Out			
	Total	MENA	Others	Mena	Total	MENA	Others	Mena
Algeria	270.4	114.4	156.0	42%	1,716.2	35.7	1,680.5	2%
Bahrain	729.4	129.3	600.1	18%	61.7	16.2	45.5	26%
Egypt	297.4	191.4	106.1	64%	3,469.4	2,885.9	583.6	83%
Iran	2,649.5	84.4	2,565.2	3%	1,058.6	35.5	1,023.1	3%
Iraq	95.8	69.3	26.4	72%	2,318.7	1,434.1	884.6	62%
Jordan	2,925.8	2,862.5	63.3	98%	639.2	494.0	145.2	77%
Kuwait	2,028.1	344.6	1,683.4	17%	323.0	247.1	75.9	77%
Lebanon	849.7	825.9	23.8	97%	683.1	119.7	563.4	18%
Libya	756.0	508.7	247.2	67%	142.2	18.0	124.2	13%
Morocco	50.8	25.3	25.4	50%	2,854.5	48.8	2,805.7	2%
Oman	1,112.0	68.4	1,043.6	6%	24.0	12.5	11.5	52%
Palestine	256.5	162.6	93.9	63%	3,640.2	3,503.4	136.8	96%
Qatar	1,601.0	284.2	1,316.8	18%	19.9	13.9	6.1	70%
Saudi Arabia	9,060.4	2,492.6	6,567.8	28%	262.9	98.0	164.9	37%
Syrian	1,394.2	1,001.6	392.6	72%	681.0	373.9	307.1	55%
Tunisia	36.5	14.2	22.3	39%	643.6	26.5	617.1	4%
Turkey	1,864.9	59.1	1,805.8	3%	3,109.0	184.5	2,924.5	6%
United Arab Emirates	7,827.0	1,315.4	6,511.6	17%	131.5	74.2	57.3	56%
Yemen	314.7	28.1	286.6	9%	923.2	810.3	112.9	88%

[8]Source: United Nation

higher than the citizens. On the other hand, a second group is countries with a large number of citizens and a large number of expats who live outside the country of origin. Countries with a very large foreign population are Bahrain 69%, Kuwait 60.1%, Qatar 73% and UAE 83.75%. In these countries the foreigners are more than the natives. This is linked with the development of the oil industry. These foreigners are mainly from outside the MENA countries, the percentages are 18%, 17%, 18% and 17% respectively. Therefore, the majority of the foreigners are from non-MENA countries.

In addition, there are also countries with a medium foreign population such as Jordan 45%, Lebanon 19%, Libya 12%, Oman 30%, Saudi Arabia 31.4%. The reason we did not list Jordan and Lebanon with the first group is that the majority of the foreigners are refugees either from Palestine, Iraq and Syria. Then there is Libya,

Oman and Saudi Arabia. These three countries are all oil exporters and have a considerably high number of foreigners in their countries. Saudi Arabia has the largest population of foreign workers in the region with the number reaching 9 million at the end of 2013. This practise did lead to a big challenge in these countries where citizens could not find jobs and this will be discussed later in the section of unemployment.

Countries with a large population did have a reverse effect. While the oil exporting countries were importing work force these countries were exporting workers either to the oil countries or other countries. Table 2.7 under the section out we can see the figures for the countries in MENA region. Countries with a significantly high number of expatriates living abroad as a percentage of the total population are Jordan 9.9%, Kuwait 9.59%, Lebanon 15.29% and Morocco 8.65%. Also Palestine has around 87.30% of the population as refugees in neighbouring countries. Furthermore, the countries with the large number of expats as a number are Palestine, Egypt, Turkey, Morocco, Iraq, Algeria and Iran. In total there are 22.7 million expats from the MENA countries in which 10.4 million are in other MENA countries.

2.2.5 Currency and Inflation

The MENA countries' currencies are classified into 3 exchange rate regimes. First, countries which peg their currency to the US dollar which is also called the fixed exchange rate system. These are the GCC countries with the exception of Kuwait. These countries are Bahrain, Oman, Qatar, Saudi Arabia and UAE. Using the fixed-exchange rate helped these countries to keep the level of inflation low and avoid currency fluctuations. It also gave confidence to investors. However, these benefits are at a cost as they have less flexibility to react to temporal shocks that they face. For example, these countries will have to follow the US interest rates strictly. The only tool they have to reduce inflation is to cut spending and to reduce credit to the

private sector. Ambitious plans for a currency monetary union were being promised in the last decades but never materialised.

The second regime is the managed float regime used by the remaining countries in the MENA region. In this system countries manage their exchange rates by selling and buying currencies. It could be either managed against a major currency such as the US dollar or the Euro or it can be floated with no major currency to correspond to. Countries that manage to float their currencies to the US dollar include Egypt, Iraq, Kuwait, Libya and Syria. Moreover, countries in North Africa such as Algeria, Morocco and Tunisia manage to float their currencies against the Euro. Yemen and Iran on the other hand are float managed freely without a major currency. The only country in the MENA region with free float exchange rate is Turkey.
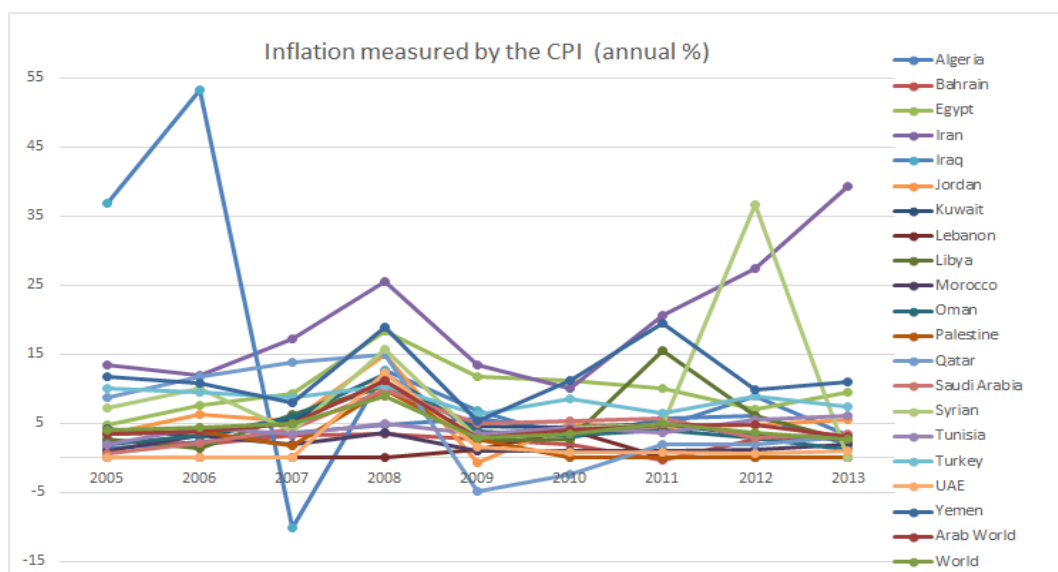
Figure 2.2: Annual Inflation for MENA countries

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Source: IMF

The inflation rate in the MENA countries averaged 6.96% between 2005 and 2013. This is higher than the world for the same period where the average is around 4.46%. Overall the countries did have a stable inflation rate from 2005 to 2007.

However, the whole world including the MENA region faced soaring inflation rates in the year 2008. This is due to the high fuel prices in 2008 reaching a record peak of 145 in July 2008. The oil prices eventually crashed with the start of the financial crises. In this year the world average inflation was 9.01% and the MENA countries average was above that with a rate of 11.87%. After that, the inflation rates did decrease to stable rates.

Figure 2.2 shows the inflation rates in the countries in the MENA region. It also shows the average inflation in the Arab world which includes the majority of the countries in the MENA region in addition to the World average inflation. The GCC countries in general had a reasonable inflation rate through the last decade with the exception of the year 2008 which we discussed earlier. The average inflation rate for Bahrain, Kuwait, Oman, Saudi Arabia and UAE is below the 5% mark. Qatar is the only country with an average higher than that which is equal to 5.45%. On the other hand Bahrain and UAE did have a low inflation rate of 2.41% and 2.89% respectively.

Additionally, countries in the North Africa region also have an average inflation rate closer to this experienced by the GCC countries and the World. Algeria, Morocco and Tunisia all have an average inflation below the World average of 4.46%. The exception is Egypt who through the last 9 years faced a high inflation rate. However, Morocco had a low inflation rate average at 1.79%.Jordan, Lebanon, Libya, Palestine had an acceptable averages ranging between 2.59% and 5.57%. Also, Turkey faced a high inflation and the average was 8.51% for the last decade.

Countries which faced political uncertainty or sanctions also faced a high inflation rates. These were Iran, Iraq Syria and Yemen. The averages were 19.89% for Iran, 12.92% for Iraq, 10.71% for Syria and 11.84% for Yemen. Iran had faced an extremely high inflation rate for the previous three years. The inflation was 39.27%

in 2013 which is the highest in the last 9 years. Iraq on the other hand had high inflation in the years 2005 to 2007 due to the war. The last reported figure of Inflation for Syria in 2012 was also the highest with a value of 36.70%.

2.3 Financial Background

This section provides an evaluation of the capital markets, the banking system and the Islamic finance. Our focus is to discover the special features of these areas and show how this research would fill the gap in the wider context taking into consideration that the region is vital in the advancement and improvement of the financial markets and the Islamic finance. Financial market development is vital to the overall development of an economy. When the financial system operates effectively it does enhance the availability and transparency of the information. That brings down transaction costs, which would enhance asset allocation and would increase the growth. A Country's main objective is to boost growth which is the main factor in decreasing poverty.

In this section we discuss the development of the capital markets in MENA countries including stock markets and bond markets. We overview the different measures of development such as size, liquidity. We then discuss the access to finance which is measured by the creditworthiness of borrowers and lowering financing obstacles that are facing consumers and businesses. Finally we discuss the financial stability and efficiency of the economies in the MENA countries.

2.3.1 Capital Market

The data in this section is obtained from World Bank data base extracted it from the S&P Emerging market data base. We obtain data to quantify different measures which would help in understanding the developments of the financial sector in the MENA countries. These measures are size and market liquidity. It is worth mentioning that cross-country comparisons using these measures should be made with

caution as differences in accounting standards could limit their accuracy.

Bond Market

Fixed income market or bond market is one of the bases of the capital markets. However, it is underdeveloped in the MENA countries. Its importance comes from the fact that it does offer the risk free products which are used in the financial market as the measure for setting the prices of other products that have risk in the financial markets. In a recent report by the Bank of International Settlements it is reported that the MENA countries fixed income assets to GDP is equal to 4% only which is considered low in comparison with other regions. For example, the ratio in Asia is around 12%.The majority of the bonds issued in the region are government bonds which represent around 82% of all issues. The reason for that is that bank lending is the dominant source of capital in the region.

Stock Market

We overview the following measures for size which are market cap and number of listed local firms.Then, we explore the market liquidity measures which are the value of shares traded as a percentage of GDP and the value of shares traded as a percentage of market capitalization.

As Figure 2.3 shows, the size of the stock market in the MENA countries varies widely. It also shows the negative effect the 2008 financial crises on the market value of firms.The largest two markets are Saudi Arabia and Turkey with values of $373 billion and $308 billion US dollars respectively. Iran also has a medium sized market with a value of $140 billion and Qatar is $126 billion US dollars. Kuwait, UAE, Egypt and Morocco have a size of $97, $67,$58 and $52 billion dollars.

In addition, the sum of the values of the market capitalization of Jordan, Oman, Bahrain, Lebanon, Tunisia and Palestine is equal to $ 57.9 billion dollars which is less than the size of the capital market of Egypt. Several countries which are facing
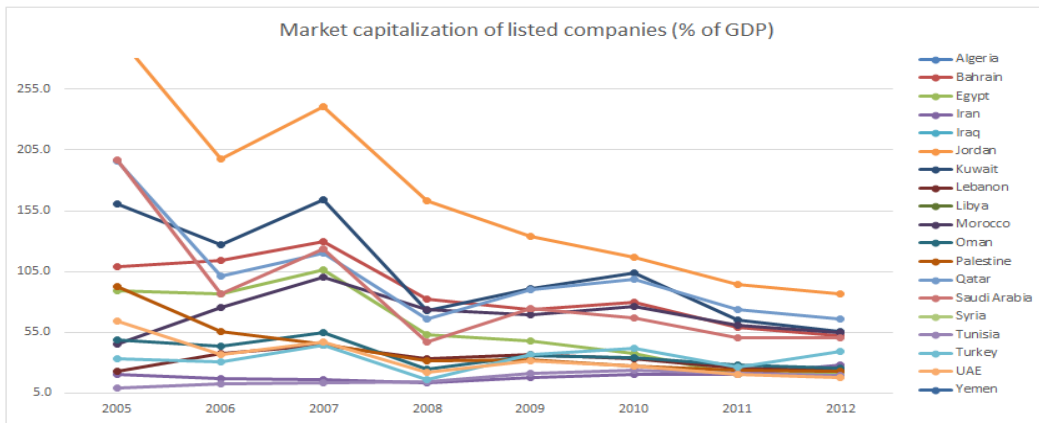
(a) Market Capitalization of Listed companies
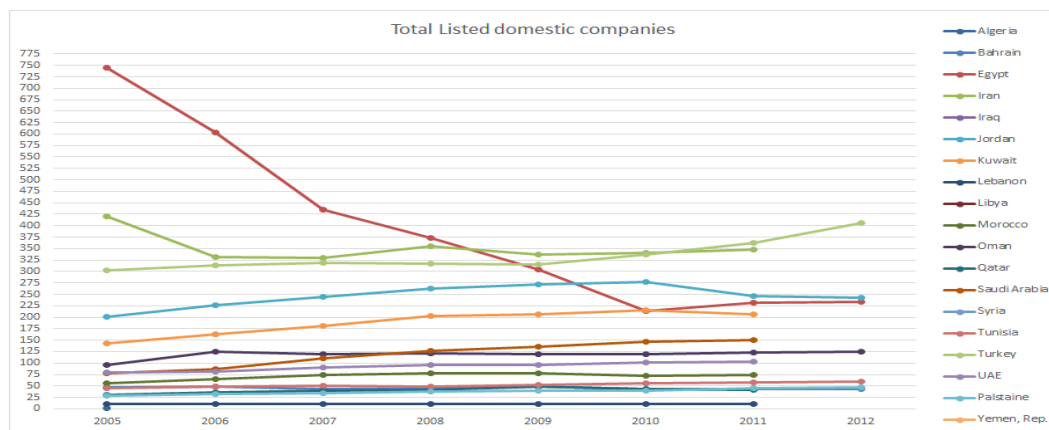
(b)Total Listed Domestic Companies

Figure 2.3: Capital Market Size Measures

political uncertainty such as Algeria,Iraq, Libya and Syria have no available data. On the other hand Yemen does not have a stock market.

In addition Figure 2.3 shows the number of listed firms in each economy which is also a measure of the size of the capital market. As the Figure demonstrates several countries have an increase in the number of listed firms while others have decreased. For example, Turkey has listed 103 companies since 2005 which equals 25%. On the other hand, Saudi Arabia doubled the number of listed firms in 2005 to

reach 158 firms. Kuwait and Jordan both added 46 and 42 firms to their exchange. However, it is worth noting that both Kuwait and Jordan had a higher number of firms in 2010 but decreased after that due to several companies exiting and mergers and acquisitions of firms. Palestine had a dramatic increase of 50% while Morocco and Qatar increased 30%. Moreover, Oman, Tunisia and UAE also had an increase of around 25% in the listed firms number.

Several countries had a massive decrease in the number of firms listed. For example, Egypt had a substantial decrease due to a restructure of the market. In addition, 40% of the firms that were listed in Iran in 2005 exited. In Bahrain 8.8% and Lebanon 9.5% of firms exited in 2013 in comparison to 2005. Like we mentioned before there is no data available for Algeria,Iraq, Libya and Syria and Yemen.

Market liquidity

The liquidity of the market is the capacity to simply buy and sell securities. Two measures of liquidity are the total value of the shares traded divided by GDP. The second measure is the turnover ratio. Both measures are important to determine the size of the market and the economy as well.

We first start with the turnover ratio. It is calculated by dividing the value of the shares traded by the market capitalization. Figure 2.4 shows the ratio for the countries in the MENA region. We notice that the largest two markets are Saudi Arabia and Turkey. The turnover ratio for Saudi Arabia is 144% and Turkey is 136%. It is worth noting that the ratio for Saudi Arabia was even higher in 2005 at 231%. But the collapse of the market in 2006 did have an effect on the size of the market. After that, we notice that Egypt has a ratio of 37.8% , UAE's ratio is 25.3% and Kuwait's ratio is 23.2%. Then, Iran, Oman, Qatar and Tunisia all have a ratio between 17% and 12%. In cintrast, Jordan, Morocco, Lebanon are the economies with a low ratio. Interestingly Bahrain's ratio is only 1.9%. There is no available data for the rest of
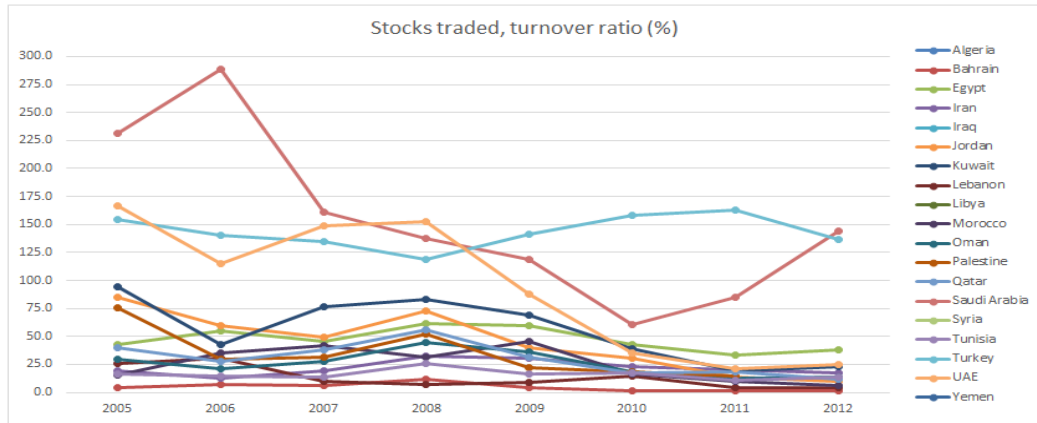
(a)Stock Traded Turnover ratio
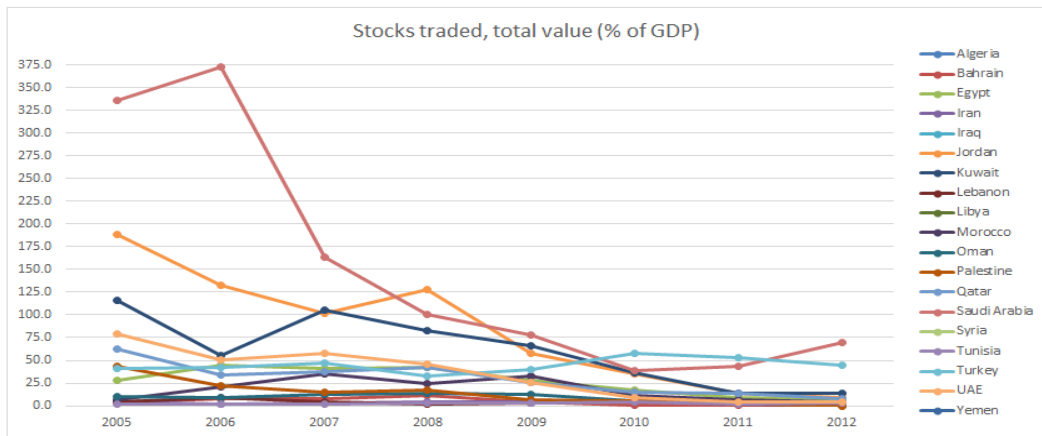
(b) Stock Traded Total value

Figure 2.4: Market Liquidity Measures

the countries.

Secondly, the ratio of the stock traded value as a percentage of the GDP. This is a measure of the size of the economy. Again the results of this ratio do complement the turnover ratio. Figure 2.4 illustrates that Saudi Arabia and Turkey are the largest two economies in the MENA region. The third largest economy is Kuwait, and Jordan is the fourth with a ratio of 9%. Qatar and Egypt have a ratio of 7.7% and 8.1% respectively. It is also worth mentioning that the rest of the countries have

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a ratio less than 5%. This shows that the countries in the MENA countries have diffrent sizes either using the turnover ratio or the traded stock value to the market capitalization. The economy with the highest growth is Tunisia with a 67% from 2005 to 2012 but Turkey and Iran had a 6% and 3% respectively. All the other countries in the MENA region did have a large decrease in their ratio. The countries with the significant decreases are Jordan and UAE and Palestine.

2.3.2 Access to Finance
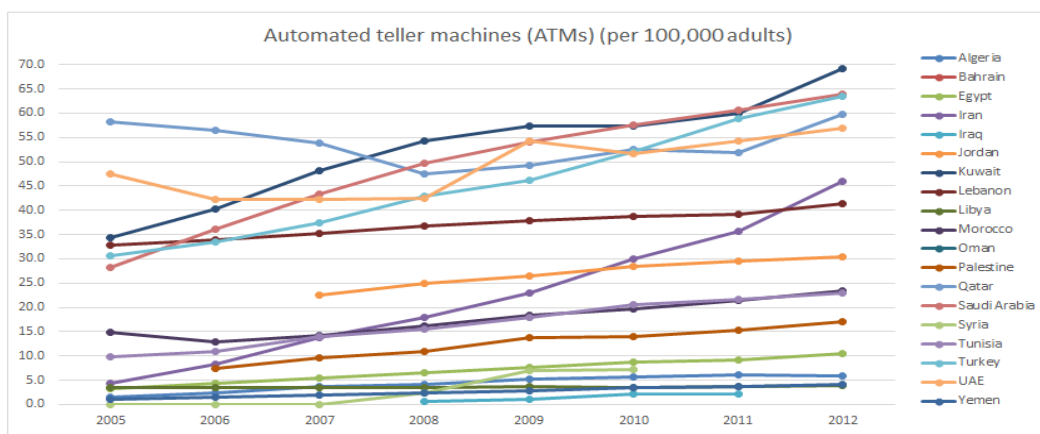
(a)ATMs per 100,000 Adults
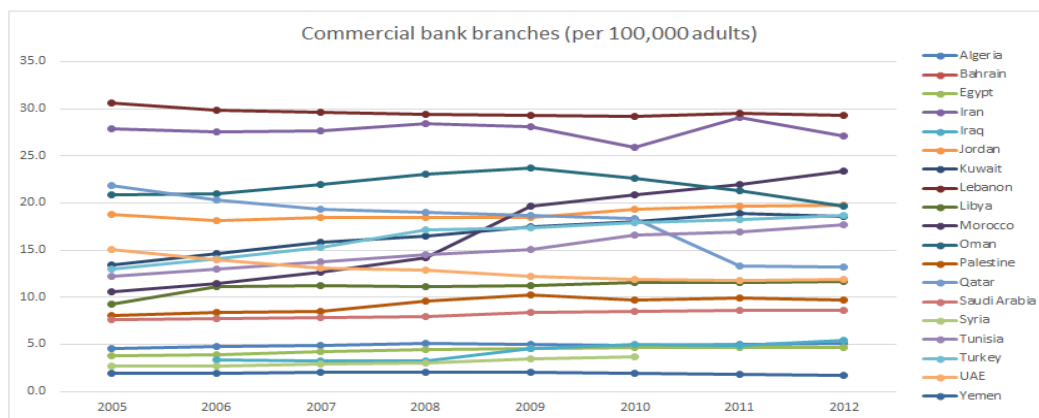
(b)Comercial Banks Branches per 100,000 adults

Figure 2.5: Access to Finance Measures

The stable financial system characteristics could be making efficient savings and quality investments. Smooth access to banking services lowers the transaction costs and increases reliability. Several measures are used to quantify the financial access which are value of deposits and loans, and outreach indicators which include number of branches and number of cash machines. Another measure is the number of point of sale terminals but data for this indicator is not available and therefore we exclude it. Figure 2.5 shows the number of cash machines (Automated Teller Machines ATMs) per 100,000 adults. It is a computerized device that provides the clients with access to all financial transactions in a public place. The advances of the technology in recent years have allowed customers of banks to do all kinds of transactions through these machines. This increased the importance of their accessibility. The numbers vary in the MENA countries where countries have a significant increase and other countries improve slightly.

Before we discuss the improvement over the last decade it is important to point out that there is a difference between the GCC countries group and the other countries. Average of the number is 53.6, 52.6, 49.1 and 48.9 for Qatar, Kuwait, Saudi Arabia and UAE. Data for Bahrain and Oman is not available but we do expect them to be within this range. After that we notice that Turkey has a close rate to the GCC countries with an average of 45.6. Lebanon, Jordan and Iran all have a rate between 20 and 30. Morocco, Tunisia and Palestine have an average rate of 17.6, 16.6 and 12.5 in that order. Finally, Egypt, Algeria, Libya, Syria, Yemen and Iraq all have a low average below 8 ATMs per 100,000.

The country with the highest improvement is abnormally Iran. The number increased from 4.4 in 2005 to 46.1 in 2012 with an increase of 234%. Then, Algeria and Egypt which improved by 138% and 115%. Then Iraq and Syria which improved significantly by 114% and 115% respectively. It is worth mentioning that the

improvement in Iraq is due to the redevelopment of Iraq after the war and the case of Syria is due to the fact that they only started operating ATMs in 2002. Yemen also has a high increase of around 137%.
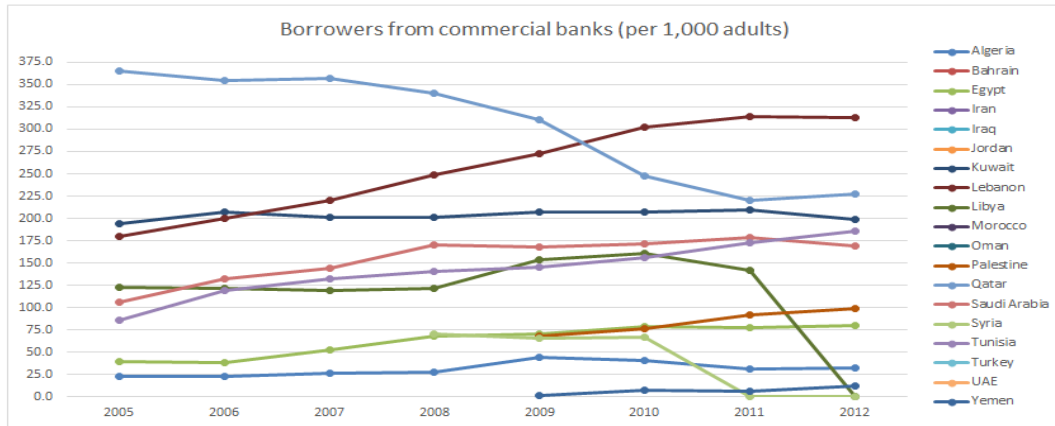
(a)Borrowers from commercial banks
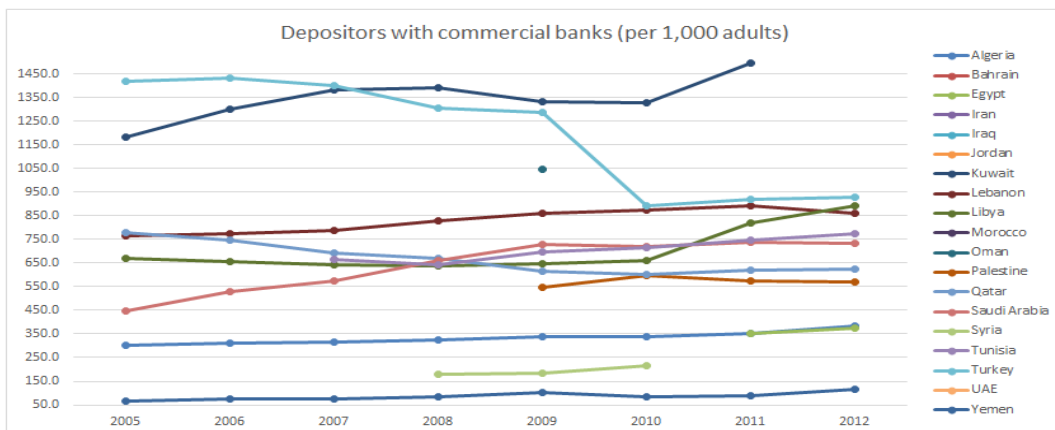
(b Depositors with commercial banks)

Figure 2.6: Depositors and Borrowers from Commercial Banks

Financial inclusion is the supply of financial services for example banking services to low income and poor people. On the other hand, the opposite is called financial exclusion where the financial services are exclusive to the medium and high income society or the services are expensive and not affordable by the low

income segment. Two measures presented by the IMF which measure usage dimensions of the financial inclusion are the number of depositors from commercial banks per 1000 adults and number of borrowers from commercial banks per 1000 adults.

Figure 2.6 shows both measures. Several MENA countries do not provide data for these measures. These are Bahrain, Iran, Iraq, Jordan, Morocco and UAE. The MENA countries with a high increased rate in 2012 are Algeria, Libya and Yemen. The rate of increase was 9%, 9% and 27% respectively. However, Kuwait and Syria did not report recent data for this measure. Kuwait's last reported rate is for 2011 and it shows an increase of 12% in comparison with 2010. Syria also had a high increase of 27% between 2009 and 2010. Economies which faced a decrease include Lebanon -3%, Palestine -1% and Saudi Arabia -1%.Furthermore, Figure 2.6 also shows the borrowers from commercial banks. Countries with a high growth are Yemen, Palestine and Tunisia. On the other hand, countries with a decrease include Libya, Kuwait and Saudi Arabia.

2.3.3 Access to Credit

Financial institutions are intermediaries between depositors and borrowers, they are demanded by regulators to reduce obstacles facing business and people. This cannot be done without the banks having the protection of the legal system and the availability of the credit information. When legal systems are weak or the collateral law enforcement is lacking, banks will opt to issue fewer loans and therefore slow the development of the economy. Therefore, this section first starts by discussing these two measures which are the strength of legal rights index and the depth of credit information index.

The first measure is the strength of the legal rights index which measures laws of bankruptcy and collateral which would protect the lenders' rights. The measure

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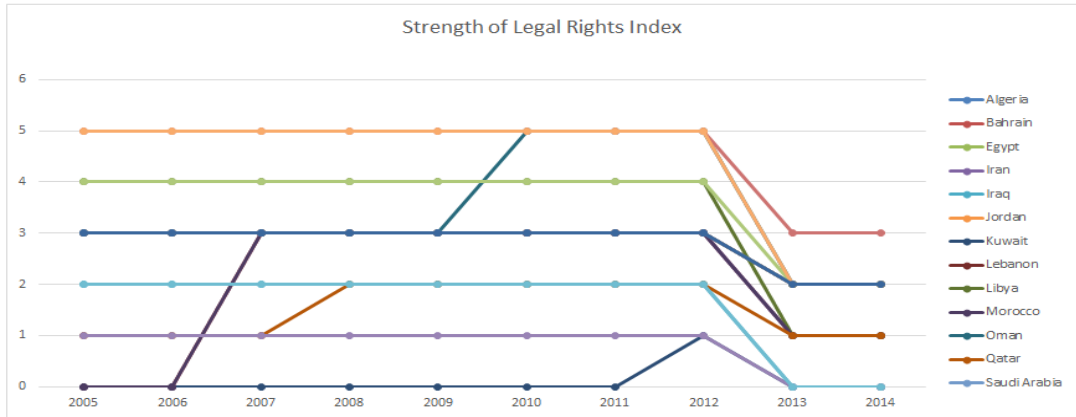
(a) Strength of Legal Index
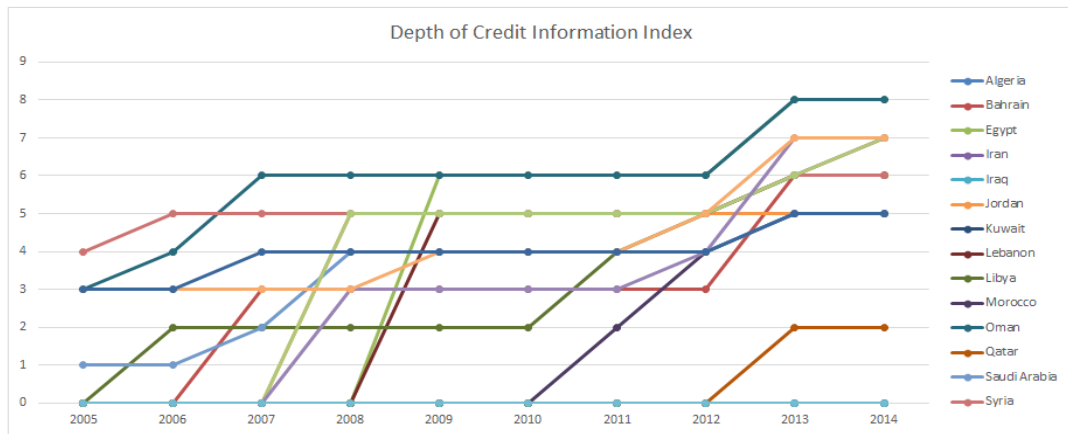
(b)Depth of Credit Information

Figure 2.7: Access to Credit Measures

ranges from 0 to 12 and as 2.7 shows the MENA countries' average score is con-

sidered low with a score of 3. The index scores increased dramatically in 2013 and

2014. The country with the highest score in 2014 is Saudi Arabia. The rest of the

countries have a score of 1 or 2. Two countries scored 0 which are Turkey and

UAE. This indicator is a disappointing one as the majority of countries did improve

previously scoring high in 2012 and 2011 reaching a score of 5, but since then they

dropped. This might have serious implications in the credit markets in the MENA

countries as banks will be reluctant to provide loans.

The second measure is the depth of the credit information index which measures the availability of the credit information through either public or private credit agencies. The score ranges between 0 for the lowest and 8 for the highest. Figure 2.7 shows the scores of the MENA countries. The figures shows how the countries vary widely between highest score and lowest score. Egypt and Oman scored 8 in the index, while Bahrain, Tunisia, Turkey and Palestine scored 7. On the other hand, countries which scored 0 and therefore do not have agencies to provide credit information are Algeria, Iran, Iraq, Kuwait and UAE.

To sum up we find that MENA countries vary widely in their level of access to credit. Overall, the majority of countries have a low legal rights index and depth of credit information in comparison to the world or other regions.

2.3.4 Financial Stability and efficiency

Efficiency

The efficiency of the banking sector is important for the economic development of the economy and to sustain a healthy financial system. There are two measures of efficiency which are the ratio of bank nonperforming loans to total gross loans and the interest rate spread. The first one which is the bank non-performing loans identify the quality of the loans in the banking system portfolio. Nonperforming loans are loans where the debtor has not made the scheduled payment for more than 90 days. These are either defaulted loans or close to being defaulted. The total gross loans is the total amount of loans issued by the banking sector in an economy. Therefore this ratio would explain how much of the loans are defaulted. On the other hand the interest rate spread is a measure of the difference between the cost of mobilizing liabilities and the earnings on asset. When the difference is narrow it indicates low transaction costs and thus encourages more investment.

When the spread is small it would mean that the market considers its customer to be of low risk; on the other hand if the spread is negative then it would indicate that the market considers the corporate firms to be lower in risk in comparison to the government.
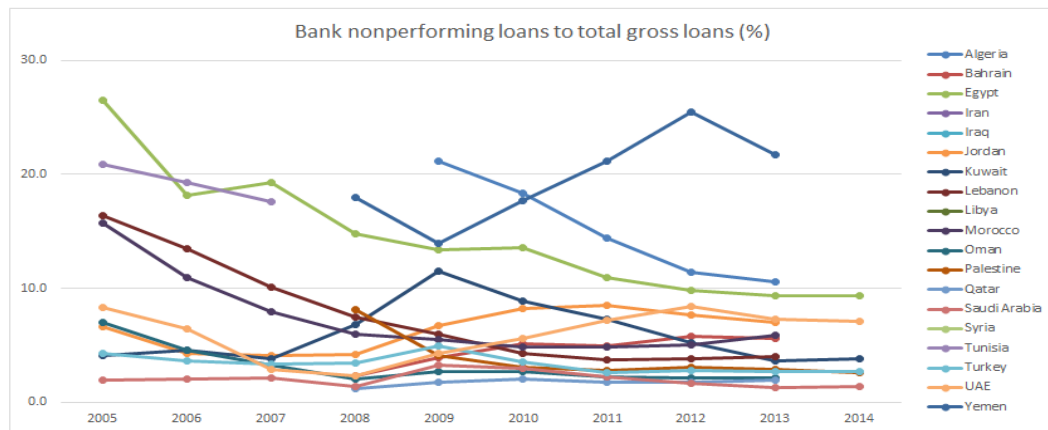
(a)Banks non-preforming loans to total gross loans
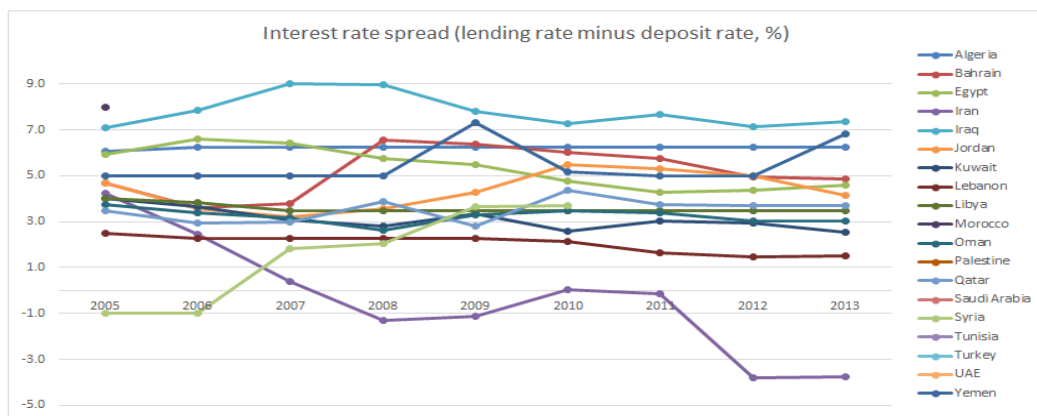
(b) Interest Rate Spread

Figure 2.8: Interest Rate spread and Banks non preforming loans

Figure 2.8 shows both of them for the sample of this study. First there is no available data for Iran, Iraq, Libya and Syria for the nonperforming loans ratio. The average for the world is around 4% and the average in the MENA region is 4.8%.

The following countries have a lower rate than the world and the MENA region: 1) Kuwait 3.6%, 2) Lebanon 4%, 3) Oman 2.1%, 4) Palestine 2.9%, 5) Qatar 1.9%, 6) Saudi Arabia 1.3% and Turkey 2.6%. On the other hand, the rest of the countries did have a higher level than the world and the MENA region. For example, Yemen's ratio is the highest in the region with 21.7%. Algeria and Egypt both have a high ratio of 10.6% and 9.3% respectively. Lastly, Jordan, Morocco, UAE have a percentage of 7%, 5.9% and 7.3%,

In addition, the interest rate spread is shown in the second chart of Figure 2.8. The majority of the countries are below the world average which is 3.9% in 2013. Yemen and Iraq are the countries with the highest percentages of 6.8% and 7.35% correspondingly. Algeria on the other hand has a stable rate of 6.25% for 2013 and has been within this range for the last decade. Bahrain, Egypt and Jordan are all within the same range between 4.2% and 4.8%. Countries with percentages lower than the average for the world are: 1) Kuwait 2.54%, 2) Oman 3%, 3) Libya 3.5%, 4) Qatar 3.7%. The country with the lowest positive value is Lebanon with around 1.52%. Interestingly Iran did have a negative ratio of -3.76%, which means that the market has more confidence in the corporate firms rather than the government.

Stability

As stable and efficient financial system is important to increase economic activity and welfare. Therefore instability could cause significant harm to the financial system. As Gadanecz and Jayaram (2008) discussed several measures are used to assess the stability of the economy and these include the ratio of bank capital to assets and the size of the domestic credit provided by the banking sector as a share of the GDP. We start first with the domestic credit to the private sector as a share of GDP. The world average for 2013 is 128% and the MENA region average is 35.2%. As Figure 2.8 shows there are countries with a high domestic credit to the private
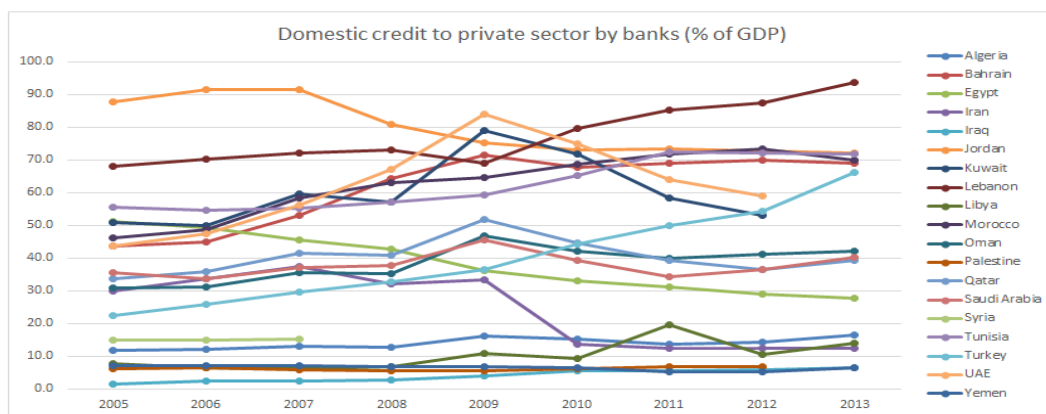
(a)Domestic credit to private sectory by Banks
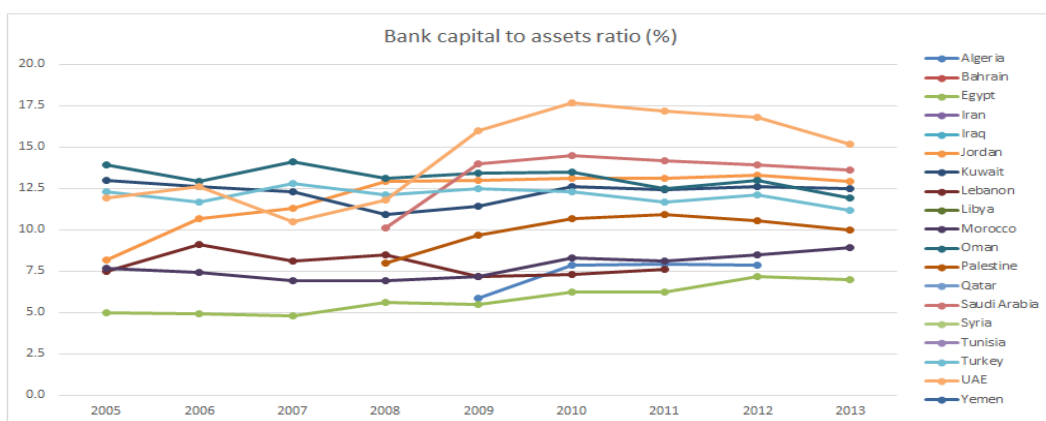
(b) Bank capital to asset ratio

Figure 2.9: Stability Measures

sector such as Jordan, Lebanon, Morocco, Tunisia and Turkey which are the non-oil exporting countries. On the other hand, countries with low percentages include Algeria, Iran, Iraq, Libya, Palestine and Yemen. Kuwait, Oman, Qatar, Saudi Arabia and UAE with values between 40% and 60%. Bahrain is the only GCC country with a high value of 70%. Egypt and Turkey have a value of 27% and 66% respectively. Secondly, the ratio of bank capital to assets. This measures the stability of the banks and also their solvency which could be used to assess the banks capacity

to deal with losses. The majority of countries do not report their figures. We notice that those in the GCC which reported their figures have a high ratio. These are Kuwait 12.5%, Oman 11.9% , Saudi Arabia 13.6% and UAE 15.2% in 2013. Likewise, Jordan's ratio is 12.9% and Turkey is 11.2%. Palestine, Morocco and Egypt all reported lower values than the GCC with their ratio around 10%, 8.9% and 7%. The world average is around 10% and the MENA average is 11.7%. The reason for high ratios in general all over the MENA region is the application of the Basel III requirement for capital which is around 8%. We could conclude from this that the majority of countries banks are stable and could deal with unexpected shocks to the economy.

2.3.5   Islamic Financial System

Islamic finance originated with the birth of Islam more than 1400 years ago when the Prophet Mohamed (PBUH) was in charge of his wife's trading operations. After that the Islamic partnerships or contract became the dominant contract in the business environment for centuries and the conventional system that pays interest is little used in daily transactions. These partnerships performed as the foundations for economic function of the Islamic area at that time. The reason for that is that they united the most important roles for welfare interest; these parts of production are capital, labour and entrepreneurship. The investor supplied the money and the entrepreneur managed the business, while they shared an agreed percentage of the profits. If there was a loss, the investor will lose his money and the entrepreneur will lose his time and labour Khan and Mirakhor (1989).

The cornerstone of the Islamic financial system, as explained by Iqbal (1997), is the absolute prohibition of the payment or receipt of any assured or guaranteed rate of return, which prevents the use of debt-based instruments and cancels the concept of interest. The system's main focus is risk sharing that promotes en-

trepreneurship, discourages approximate behavior, and underlines the importance of contracts. Whether in loans or sales, the banning of interest (Riba) is the central principle of the system. Interest can be defined as any positive predetermined rate fixed to the maturity and is considered forbidden. The general consensus among Islamic researchers is that it covers not only overcharging of interest but also the charging of interest as practiced widely.

Although the most important restriction is that the Islamic financial system must work under the ban of interest, it is crucial to understand that what Islamic law forbids is the fixed return on financial transactions, and not the uncertain rate of return that represents profits. For this reason profit sharing is the basis of modern Islamic banking. To explain further, Islamic banks do not pay interest on their customer accounts. Instead the customer funds are invested on the basis of profit sharing investment accounts (also called profit loss sharing accounts). In this setup the banks act as a fund manager where an agreed percentage can be taken out of the profit on the customer's account. The difference between the account holders and the shareholders is that the latter are entitled to get a percentage of the profits of the bank. The main source of profit for Islamic banks is the management fees they get from the account holders for managing their funds (Archer and Karim 2006).

Before we discuss further about Islamic banks it is important to explain that the main principle is to ban interest (Riba). Khan and Bhatti (2008) define Islamic Banking as an equity based system replacing interest with profit loss sharing products (PLS).By banning interest and commanding Zakat, which is a deduction of 2.5% on the wealth that remains unused through a full Islamic calendar year, capitalists are forced to not retain funds which could lead to handicapping the flow of funds to the market and making continuous supply of funds to be used to finance new investments. Several challenges are facing Islamic banks which are summarised by Khan

and Bhatti (2008). First, they carry more liquidity than conventional banks. Second, they commit 95% per cent of their funds to short term loans. The products used by Islamic banks under the principle of profit loss sharing (PLS), are summarised in Next Table.

Karim and Ali (1989) suggest that Islamic Banks are more reliant on issuing Equity and not using debt, this assumption will be validated. We are also interested to see if the determinants of capital structure are different between Islamic and conventional banks. We compare the results we get from the regression to find if there is a difference and if theory could explain it. To our knowledge this is the first study to shed the light on the capital structure of Islamic banks, therefore there is a very small number of previous studies in the literature.

Recently, the Islamic finance industry has rapidly grown at a substantial growth rate. Recent reports by Ernest and Young (2013) suggested that Islamic banking assets globally are worth around US$ 1.7 trillion. The same report also suggested that the average annual growth for the last four years is around 17.6%.These figures make studying Islamic finance and banking very important for both researchers and practitioners.

Islamic Finance is following the Islamic Law (Sharia) in financial transactions. The Islamic Law started with the revelations of the Prophet Mohammad Peace Upon him. Sharia is based on two sources. Primary sources such as the Quran and Sunnah which are the traditions and practice of Prophet Mohmmed. Secondary sources of Sharia are:

1. Agreement of scholars on an issue

2. *Qiyas* The use of Quran or Sunnah as means to solve a new problem

3. *Ijtihad* An opinion of a single Islamic scholar towards an issue

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4. *Urf* Common practices and customs

The two major principles of Sharia in financial transactions are:

1. the prohibition of Riba (Interest).

2. The transactions should not be in Haram (Forbidden) products or firms that deal in forbidden activities.

Two modes of Islamic financing are widely used in Islamic banks. These are:

1. Financing through participatory modes since Islamic finance prohibited the interest, it has been replaced with entrepreneurial contracts which could be either the Musharka or Modharbah.

   (a) **Mushrkah** is based on the idea that both parties are partners in the same project and they both share the profit and the risks involved. The investment capital could be unequal.

   (b) **Mudaraba** is when the partnership includes a partner giving the money and the other partner investing the money on behalf of the first partner for an agreed percentage of the profits. However, all losses in the capital are only suffered by the person who provided the fund, as the Mudarib will suffer the loss of his time or efforts.

2. Financing through debt creating modes

   - **Mudaraba** is a sale agreement where a party would provide goods for a deferred payment at an agreed profit margin. There are rules to this contract but the most important one is that the provider of the goods should be owned and in positions of the seller before the agreement.

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The other important rule is that the seller should disclose the price he paid to obtain the goods.

- **Musawama** is the same sale agreement as Mudaraba however, the only difference is that the seller is not obliged to disclose the price he paid for the good or the service.

- **Salam** is a sale agreement in which one party agrees to supply goods at a future date for current full payment. As in the agricultural industry where a bank would supply capital to a former in exchange for agricultural goods at the harvesting season, in this agreement the seller dose not yet own or possess the goods he is selling.

- **Istisna** is a contract to manufacture goods. It could be a Salam contract by full advance payment or by future payment. The delivery of the product will be at a future date as it takes time to manufacture it. It is mainly used in the construction and manufacturing industry.

- **Ijarah** is similar to the traditional leasing contract. But, there are a few conditions that should be agreed on in the contract to avoid Haram.

2.4 Institutional Background

The sample of this study constitutes 10 different countries. Therefore it is important before we compare the differences in capital structure to analyse the different institutional characteristics. In section 2.4.1 we discuss the accounting standards. In section 2.4.2 we provide the data about the investor protection laws. Section 2.4.3 is about the ease of doing business and what it measures. Then, in section 2.4.4 we talk about the regulators institutions and the stock exchanges. Finally, we discuss the different tax systems in the MENA countries in section 2.4.5

2.4.1 Accounting standards

Due to different accounting standards adopted by the countries in the MENA countries it is not possible to compare these standards. However, our interest is to investigate the quality of these accounting standards. Therefore, we use a measure constructed by the World Bank 'doing business' project. These measures range from 0 to 10 with higher values meaning more disclosure. However, a limited number of countries are included in this project. Figure 2.10 show the countries' ranking in this measure. Several countries have a high value such as Jordan, Syria and Tunisia who scored 9, 9 and 10 respectively. Moreover, Bahrain, Egypt and Libya all scored 8. It is worth mentioning that the improvement in Tunisia is significant in the last three years. Where it did scored 4,6,10 in 2012,2013,2014 respectively. Figure 2.10 shows the rest of the countries' scores.

2.4.2 Quality of Investor protection laws

Investors are interested in the laws in the country of their investments simply to know how they are protected. It is not possible to measure the protecting laws and their enforcements. Therefore, we use the property rights as an index for the sake of comparison of the MENA countries as suggested by Bae and Goyal (2009). This index is provided by the Heritage Foundation Index of Economic Freedom as well
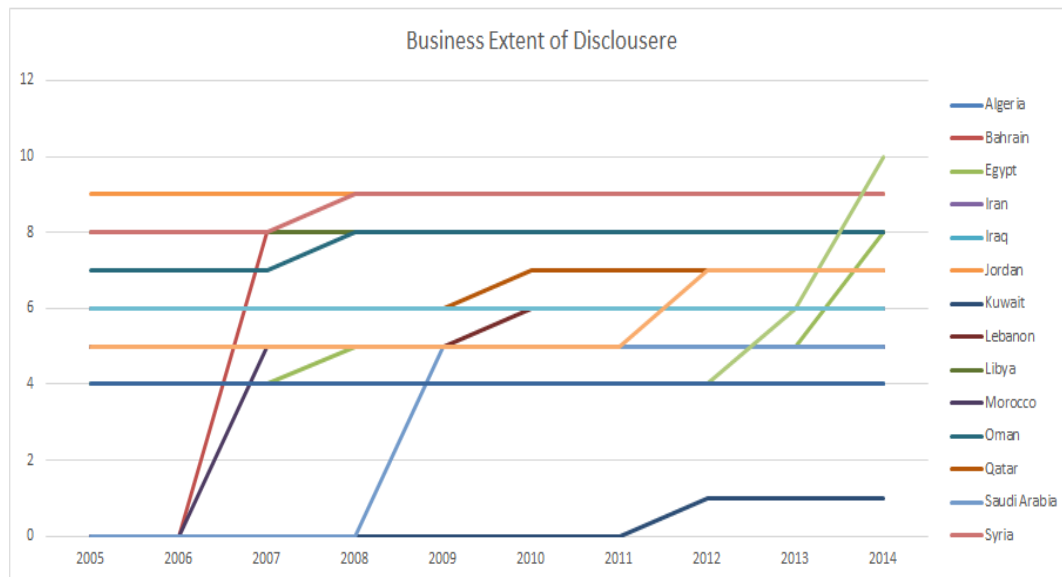
Figure 2.10: Business Extent of Disclosure

as other indicators which are presented in Table 2.8. The value of the property rights range between 0 for the worst and 100 for the best. From the table Bahrain, Qatar, Jordan and UAE have a high index in comparison to other countries in the MENA region. However, countries with a very low property rights index include Iran, Libya and Syria scoring only 10. It is worth mentioning that the region rank index includes 10 kinds of freedoms but this study only provide the freedoms related to the financial and economic context.

Based on the ranking for all of the freedoms in the region we could see that the GCC countries are top such as Bahrain, UAE and Qatar. However, in this index Turkey is considered in Europe and therefore the ranking is not relevant. Countries like Iran, Egypt and Iraq are ranked at the bottom and this is mainly affected by their low score in the property right index.

Table 2.8: Investors Protection and Economic Freedom

Country Name	Region Rank	Property Rights	Fiscal Freedom	Business Freedom	Monetary Freedom	Trade Freedom	Investment Freedom	Financial Freedom
Algeria	14	30.0	80.0	66.6	71.2	60.8	25.0	30.0
Bahrain	1	60.0	99.9	72.5	74.2	78.6	65.0	80.0
Egypt	12	20.0	85.8	65.4	67.4	70.0	50.0	40.0
Iran	15	10.0	81.2	57.0	48.7	41.4	0.0	10.0
Iraq	N/A	N/A	N/A	57.7	73.6	N/A	N/A	N/A
Jordan	5	60.0	93.7	59.1	80.6	79.6	70.0	60.0
Kuwait	7	45.0	97.7	58.6	74.0	76.2	55.0	50.0
Lebanon	10	20.0	91.3	54.7	72.0	75.8	60.0	60.0
Libya	N/A	10.0	95.0	46.8	71.4	80.0	5.0	20.0
Morocco	9	40.0	70.9	68.8	81.9	78.2	70.0	60.0
Oman	6	55.0	98.5	68.4	76.2	76.8	65.0	60.0
Qatar	3	70.0	99.7	70.5	79.7	81.8	45.0	50.0
Saudi Arabia	8	40.0	99.7	65.8	68.4	76.4	40.0	50.0
Syria	N/A	10.0	N/A	57.3	N/A	N/A	0.0	20.0
Tunisia	11	40.0	74.3	81.2	74.8	61.2	35.0	30.0
Turkey	32	45.0	76.1	61.0	72.4	84.6	75.0	60.0
UAE	2	55.0	99.5	74.7	83.8	82.4	40.0	50.0
Yemen	13	30.0	91.5	54.0	68.5	77.6	50.0	30.0

2.4.3 Ease of doing business

The ease of doing business is a measure published by the World Bank to rank the different economies. It is an average of different topics. The topics this measure covers are in Table 2.9. Therefore, it is an appropriate measure for the business friendly regulations in the MENA countries.

Table 2.9: Topics Included in Ease of Doing Business Index

Topics	
Starting a Business	Getting Credit
Registering Property	Trading Across Borders
Paying Taxes	Getting Electricity
Resolving Insolvency	Protecting Minority Investors
Dealing with Construction Permits	Enforcing Contracts

Figure 2.11 shows the ease of doing business index, the data is only available for the years 2013 and 2014. It shows that the countries who improved from 2013 are Tunisia, Egypt and Palestine. On the other hand, the countries with a significant drop are Iran and Qatar where each dropped 10 places. We can see that the highest

countries in the ranking are Tunisia, Oman, Morocco and Bahrain.
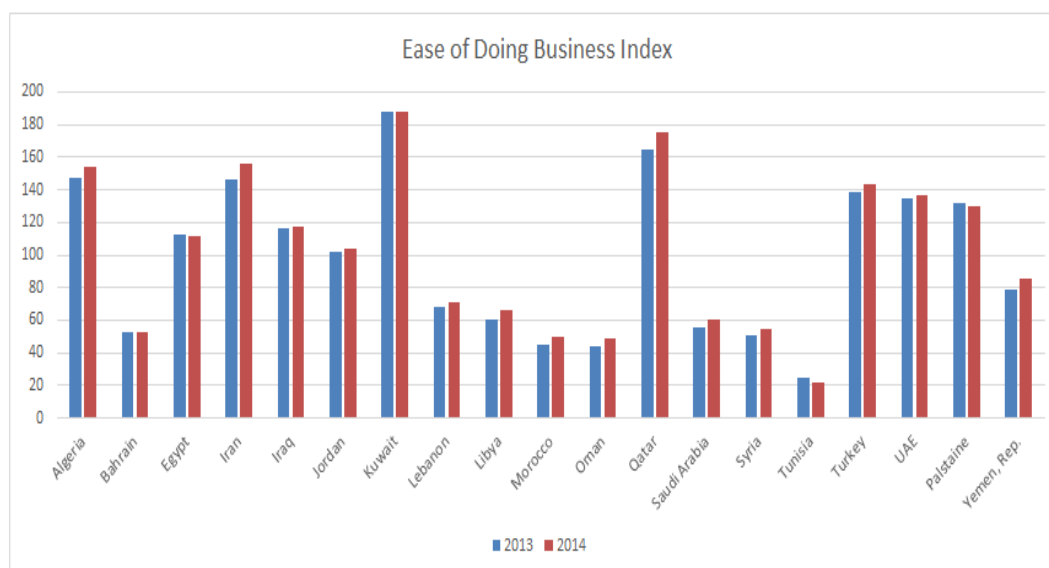
Figure 2.11: Ease of Doing Business

2.4.4 Regulators and Stock Exchanges

The development of the financial markets is in parallel with strong regulation and easy access to stock exchanges. In this section we discuss the stock exchanges ownership and history. We also discuss the regulators of the stock market as in Table 2.11. One distinctive feature is that the majority of the stock exchanges are either state owned or public institutions, which is not the norm in the world where most exchanges are privately owned. Currently only the Dubai financial market is private with around 20% of shares traded. Although the fact that the MENA exchange is currently owned or run by the government there is a shift of direction towards a private exchange.

Table 2.10 shows the details of the exchanges in the MENA region. The majority of the stock exchanges with the exception of Egypt and Tunisia are fairly new. Also, the only country with more than one exchange is the United Arab Emirates, with the Emirate of Dubai having 2 exchanges. Egypt stock exchange was called

Table 2.10: Stock Market Exchanges in MENA region

Country	Stock Exchange	Date of establishment	Ownership Structure
Algeria	Bourse D Alger	1993	State-owned
Bahrain	Bahrain Stock Exchange	1987	State-owned
Egypt	Egyptian Exchange3	1883	Public institution
Iraq	Iraq Stock Exchange	2004	Mutualised
Iran	Tehran Stock Exchange	1967	Public Institution
Jordan	Amman Stock Exchange	1999	Public institution
Kuwait	Kuwait Stock Exchange	1984	Public institution
Lebanon	Beirut Stock Exchange	1920	Public institution
Libya	Libyan Stock Market	2007	State-owned
Morocco	Bourse de Casablanca	1929	Mutualised
Oman	Muscat Securities Market	1988	State-owned
Palestine	Palestine Exchange	1995	Privately held
Qatar	Qatar Exchange	1997	State-owned
Saudi Arabia	Tadawul	1984	State-owned
Syria	Damascus Securities Exchange	2009	Public institution
Tunisia	Bourse de Tunis	1969	Mutualised
Turkey	Borsa Istanbul	1985	State-owned
United Arab Emirates	Dubai Financial Market	2000	State-owned
	Abu Dhabi Securities Exchange	2000	State-owned
	Nasdaq Dubai 4	2005	State-owned

the Alexandria Stock exchange and was established in 1883. Later the Cairo Stock Exchange was established in 1903. The Egyptian exchange used to be called the Cairo and Alexandria Stock Exchange (CASE). The Bourse de Tunis is the Tunisian stock exchange and it was founded in 1969 and Tehran Stock exchange was formed in 1967. The rest of the stock exchanges were all formed after 1980. The stock exchanges of Iraq, Libya and Syria were formed in 2004, 2007 and 2009 respectively.

In addition, the majority of the countries in the MENA region have established special government institutions to monitor and supervise the capital markets. They are either called the Capital Market Authority (CMA) or the Securities Commission (SC). Regulatory responsibilities and powers do vary between the countries. As Table 2.11 shows the establishment of these institutions is generally recent. These immature organizations although having extensive regulatory power and in some cases independence, do report to the Ministry of Finance (MoF). Despite few of them having independence from the government, most do rely on government monetary support. To sum up there is a decent effort in the regulations of the MENA

Table 2.11: Regulators of Capital Markets in MENA region

Country	Securities regulator	Established	Enforcement function in CMA
Algeria	Commission dorganisation et de surveillance des operations de bourse (COSOB)	1993	Direction for Development and Market Surveillance Disciplinary Chamber
Bahrain	Central Bank of Bahrain (CBB)	2006	Capital Markets Supervision Directorate
Egypt	Egyptian Financial Supervisory Authority (EFSA)	2009	Central Department for Enforcement
Iraq	Iraq Securities Commission (ISC)	2004	Inspection Department
Iran	Securities and Exchange Organization (SEO)	2006	Administration and supervisory duties
Jordan	Jordan Securities Commission (JSC)	1997	Legal and Enforcement Department
Kuwait	Capital Market Authority (CMA)	2010	Supervision sector
Lebanon	Capital Market Authority (CMA)	2011	Not yet developed
Libya	Capital Market Authority (CMA)	2013	Not yet developed
Morocco	Le Conseil Déontologique des Valeurs Mobilières (CDVM)	1993	Inquiries and Surveillance (and Examinations Joint Committee)
Oman	Capital Markets Authority (CMA)	1998	Department of Investigation and Enforcement
Palestinian	Palestine Capital Market Authority	2004	N/A
Qatar	Qatar Financial Markets Authority	2005	Surveillance Department,Disciplinary Committee Appeals Committee
Saudi Arabia	Capital Markets Authority (CMA)	2003	Enforcement Division
Syria	Syrian Commission on Financial Markets and Securities (SCFMS)	2005	Enforcement Division
Tunisia	Conseil du marché financier (CMF)	1994	Department of Market Surveillance Enforcement Department
Turkey	Capital Markets Board of Turkey (CMB)	1982	Financial regulatory and supervisory
UAE	Dubai Financial Services Authority	2004	Enforcement Committee
	Emirates Securities and Commodities Authority (ESCA)	2000	Licensing Supervision and Enforcement Department

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ource:Amico
(2014)

region stock exchanges, but there is more to be done.

2.4.5 Tax system

The tax in the MENA countries can be classified into two groups. Countries with heavy tax rates and countries with low or no tax rates at all. Table 2.12 shows the income tax rates and corporate tax rates among the countries in the region. As we can see the GCC countries with the exception of Saudi Arabia have no income tax. Saudi Arabia adopted the Islamic Zakat and therefore the Zakat is 2.5% of the income of the individuals. In contrast North African countries have a high income tax rate. For example, Morocco has the highest income tax rate of 38%. Likewise, Tunisia, Algeria, Iran and Turkey all have a high income tax rate of 35%.

The corporate tax rate is also the same as the income tax rate. The GCC countries in general have a low corporate tax with the UAE, Qatar and Bahrain all are with no corporate tax charges for local firms. Saudi Arabia apply the same for corporate tax rate as the income tax rate with a rate of 2.5%. Oman and Kuwait are the only GCC countries with high corporate tax rate of 12% and 15% respectively.

Jordan, Lebanon, Iraq and Palestine all have a rate of 15%. The rest of the MENA countries have a high corporate tax rate which is above 20%.

The last column of Table 2.12 shows the tax burden as a percentage of the GDP. This measure is important in showing which economies rely greatly on taxes. In Turkey the tax burden represent 27.7% of the GDP. Morocco and Tunisia also rely heavily on taxes with 23.7% and 21% of the GDP. Tariff rates are important tools to protect the local product and producers from competitive markets. It shows that countries like Iran have 21.8% which is considered to be high. The reason is that the tariff for automotive vehicles is 100%. The same rate is also applied in Egypt. The rest of the countries have a low rate below 15%.

Table 2.12: Tax and Tariff Rates in MENA countries

Country Name	Tariff Rate (%)	Income Tax Rate (%)	Corporate Tax Rate (%)	Tax Burden % of GDP
Algeria	12.1	35.0	25.0	12.2
Bahrain	5.7	0.0	0.0	3.4
Egypt	10.0	25.0	25.0	12.9
Iran	21.8	35.0	25.0	5.9
Iraq	N/A	15.0	15.0	N/A
Jordan	5.2	14.0	14.0	15.3
Kuwait	4.4	0.0	15.0	0.7
Lebanon	7.1	20.0	15.0	15.7
Libya	0.0	10.0	20.0	0.7
Morocco	3.4	38.0	30.0	23.7
Oman	4.1	0.0	12.0	2.5
Palestine	N/A	20.0	15.0	N/A
Qatar	4.1	0.0	0.0	5.1
Saudi Arabia	4.3	2.5	2.5	3.7
Syria	N/A	22.0	28.0	N/A
Tunisia	14.4	35.0	30.0	21.0
Turkey	2.7	35.0	20.0	27.7
United Arab Emirates	3.8	0.0	0.0	7.2
Yemen	6.2	20.0	20.0	7.0

Chapter 3

Literature Review

3.1 Introduction

T he capital structure theories are very important, due to the fact that every single company has to make a decision about what capital structure they should choose. In this chapter we discuss the main capital structure theories and their application. We start with section 3.2 where we review the cost of financing and the Weighted Average Cost Of Capital (WACC). Then, in section 3.3 we discuss the work of Modigliani-Miller. After that, section 3.4 is about the trade-off theory and section 3.5 is presenting the pecking order theory. Then, section 3.6 is about the agency cost theory and section 3.7 will review the market timing theory. After discussing the main theories in capital structure literature, this chapter will discuss the classifications used by international institutes to differentiate between economies. Then, a review of empirical results around the world. Next, a review of the capital structure in developed and developing economies. Finally, a review of the methodologies and approaches used to study capital structure.

3.2 Cost of Capital

The cost of capital is a very important tool for business valuation of investments. It is the rate of return that the debt or equity holders would accept in exchange for their supply of capital. Using this tool help firms to decide which projects or investments

they should take. It is also widely used as a discount rate to predict the present value of the investment cash flows. There are different methods for calculating the cost of capital, but we provide the most relevant one to capital structure which is the weighted average cost of capital (WACC).

Before we calculate the WACC we need the cost of debt and the cost of equity.

3.2.1 Cost of Debt

There are two methods to calculate the cost of debt. The yield to maturity approach and the debt rating approach. The approach of our interest is the yield to maturity approach. It is calculated by discounting the cash flows received and the cash payment over the period of financing. The following formula is used for the calculation:

$$P = C_0 - \left(\frac{C_1}{1+i} + \frac{C_2}{(1+i)^2} + ... + \frac{C_N}{(1+i)^N} \right) \tag{3.1}$$

where,

C_N is cash flow in period N

i is cost of debt financing

N is the number of periods

3.2.2 Cost of Equity

Several methods are used to estimate the cost of equity. These are the capital asset pricing model, dividend discount model and the bond yield plus risk premium. In this section we use the capital asset pricing model which is also called (CAPM).

$$E(Ri) = R_F + \beta_i[E(R_M) - R_F] \tag{3.2}$$

where,

β_i is the return sensitivity of stock i to changes in the market return

$E(R_M)$ is the expected return on the market

$E(R_M) - R_F$ is the expected market risk premium or equity risk premium (ERP)

3.2.3 Weighted Average Cost of Capital

The WACC can be defined as :

$$WACC = w_d r_d (1 - t) + w_p r_p + w_e r_e \tag{3.3}$$

where,

W_d is the proportion of debt that the company uses when it raises new funds

r_d is the before-tax marginal cost of debt

t is the company's marginal tax rate

w_p is the proportion of preferred stock the company uses when it raises new funds

r_p is the marginal cost of preferred stock

w_e is the proportion of equity that the company uses when it raises new funds r_e is the marginal cost of equity

3.3 Modigliani-Miller Theories

In their paper Modigliani and Miller (1958) argued that under a specific set of assumptions the company capital structure financing decision is irrelevant to its market value. These assumptions were relaxed later in subsequent studies to unlock a substantial amount of research towards capital structure theory.

The Modigliani and Miller (1958) restrictive assumptions are:

1. All investors have complete knowledge of what future returns will be.

2. All firms within an industry have the same risk regardless of capital structure.

3. No taxes.

4. No transactions costs.

5. Individuals can borrow as easily and at the same rate of interest as the corporation.

6. All earnings are paid out as dividends (thus, earnings are constant and there is no growth.

7. The average cost of capital is constant.

3.3.1 Modigliani and Miller (1958) First Proposition

In the first proposition they stated that:

$$V_j = (S_j + D_j) = \bar{X}_j/\rho_k, \text{ for any firm } j \text{ in class } k \qquad (3.4)$$

Where :

j is the company

$\bar{X}_j$ is the expected profit before deducting interest

D_j is the market value of the debt of company j

S_j is the market value of the common share of company j

V_j is the market value of all the securities or market value of the firm

ρ_k expected rate of return of any share in class k

Then they would conclude the following statement:

"The market value of any firm is independent of its capital structure and is given by capitalizing its expected return at the rate ρ_k appropriate to its class."

The same proposition can be expressed in a different way by solving it for the average cost of capital $\bar{x}_j/V_j$ which could be defined as the ratio of its expected return to the market value of all the securities. Then their proposition could be:

$$\frac{\bar{X}_j}{(S_j + D_j)} \equiv \frac{\bar{X}_j}{V_j} = \rho_k, \text{ for any firm } j \text{ in class } k \qquad (3.5)$$

Then, *"the average cost of capital to any firm is completely independent of its capital structure and is equal to capitalization rate of pure equity stream of its class"*.

3.3.2 Modigliani and Miller (1958) Second Proposition

They then derive from the First proposition that the rate of return on common stock in companies whose capital structure includes debt is a linear function of leverage and can be demonstrated by the following equation :

$$i_j = \rho_k + (\rho_k - r)D_j/S_j \tag{3.6}$$

which is expressed as *"the expected yield of a share of stock is equal to the appropriate capitalization rate ρ_k for a pure equity stream in the class, plus a premium related to financial risk equal to the debt-to-equity ratio times the spread between ρ_k and r."*

3.3.3 Modigliani and Miller (1963) Corrections

In this communication Modigliani and Miller (1963) revisited their previous propositions in an attempt to correct errors they committed. In their original paper Modigliani and Miller (1958) proposed that under a set of assumptions there is no relation between the firm capital structure and its value. They also added that firms should try to maximize their use of debt to take advantage of the tax shield. However, their new revised models state there is still a benefit of using debt over equity but it also includes risks and costs that should be taken into consideration. They also added that firms could use retained earnings as a substitute for debt as it could be cheaper in some instances.

3.4 Trade-off Theory

The two papers we discuss in the previous section which were done by Modigliani and Miller (1958) and Modigliani and Miller (1963) lead Kraus and Litzenberger (1973) to suggest a hypothesis. Their hypothesis is to introduce market imperfections in the form of the costs of bankruptcy and corporate taxes to the model.In other

words, we could assume that there are benefits and costs associated with the use of debt. The addition of the corporate tax to the model shows that using leverage would reduce the amount firms pay in corporate income tax. On the other hand, the use of bonds would require the firm to pay a fixed amount and if they cannot meet it they will be bankrupted and pay the costs. Therefore, we could say that Kraus and Litzenberger (1973) shifted the focus into deciding the level of debt that would take the most of the tax advantage and minimize the probability of bankruptcy to maximize the market value of the firm. The dynamic form of trade-off theory assumes that the actual capital structure of a particular firm at a particular moment in time does not necessarily equal the target capital structure of that firm but the firm dynamically adjusts its capital structure to a moving target.

As we can see in Figure 3.1. Where,

1. is the MM results when incorporating the corporate effects,

2. value of the firm reduces by bankruptcy penalties,

3. value added by the debt tax shield,

4. actual price of stock,

5. value of the stock if MM(1958) holds,

    $D0$ threshold debt level where bankruptcy becomes material,

    $D1$ optimal capital structure: marginal tax shelter benefits,

    So is the value of the stock if the firm uses no financial leverage.
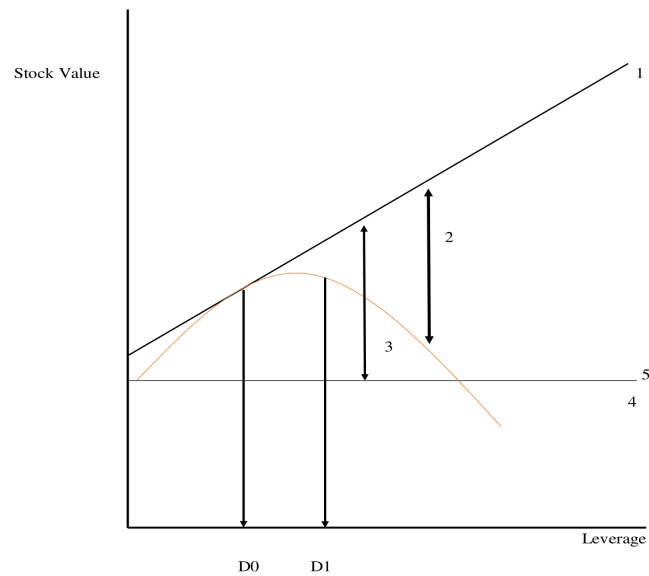
Figure 3.1: Trade-off Theory

3.5 Pecking Order Theory

It assumes that given information asymmetry between stake holders, firms will re-
sort to internally generated funds first to finance their growth, then debt before eq-
uity in order. The main backbone of the theory is the introduction of the asymmetric
information between the company insiders and outsiders and how this would affect
the firm capital structure. It is developed and supported by Myers and Majluf (1984)
and Myers (1984) who were the first to propose the Pecking order theory. However,
in fact it was first discussed in the literature by Donaldson (1961) who conducted
a survey study and found results to support this behavior of firms. It states that
investors or share holders have less information about the true value of the firm

assets and therefore will monitor the managers' financing decisions to forecast the future of the firm.

Furthermore, Baker and Wurgler (2002) state that the pecking order theory has no assumption about the optimal capital structure or leverage ratio. However, its main idea is that managers tend and try to minimize adverse costs and that the capital structure is the result of the firm financing requirement over time.

Myers (1984) suggested the following assumptions of the pecking order theory:

1. Firms prefer internal finance.

2. They adapt their target dividend payout ratios to their investment opportunities, although dividends are sticky and target payout ratios are only gradually adjusted to shifts in the extent of valuable investment opportunities.

3. Sticky dividend policies, plus unpredictable fluctuations in profitability and investment opportunities, mean that internally-generated cash flow may be more or less than investment outlays. If it is less, the firm first draws down its cash balance or marketable securities portfolio.

4. If external finance is required, firms issue the safest security first. That is, they start with debt, then possibly hybrid securities such as convertible bonds, then perhaps equity as a last resort.

3.6 Agency Cost Theory

In this theory the model is based on how to use capital structure as disciplinary tool to keep the interest of managers and share holders and debt holders in the same direction which is to maximize the value of the firm. Jensen and Meckling (1976) discuss two kinds of conflicts that might arise between the stakeholders of the firm. These are:

1. Conflict between managers and share holders.

2. Conflict between equity share holders and debt holders.

Harris and Raviv (1991) argue that the conflict between managers and share holder will generally be about operating decisions. This problem could be solved by using debt since it gives the power to the bond holders to force liquidation. Furthermore, Jensen (1986) states that using debt firms will incur interest payments which would decrease the cash flow available for self-interested managers.

On the other hand, conflict between share holders and debt holders because of the investment return is higher than the payment to the debt holders and then share holders will get most of the profit. However, if the investment returns are low the debt holders will suffer from the loss. Therefore, share holders might encourage risky investments that debt holders would not support.This is known as the asset substitution effect.

3.7 Market timing theory

The market timing theory is based on the idea that firms will issue equity based on the market condition in an effort to time the market. If the market is high and the market-to-book ratio is high then firms will prefer to issue equity. The theory changes the view that the current capital structure is the result of an optimizing strategy but that it is the sum of previous issues to time the market.

Furthermore, Baker and Wurgler (2002) argue that in addition to the condition market they find a significant relationship between business cycle and equity issuance. They also document a relationship between equity issuance and the share price. They notice that when firms are overvalued they always issue equity.

3.8 Countries Classification

Before we discuss the evidence around the world it is worth mentioning that different classifications exist in deciding the level of development in a certain country. Nielsen (n.d.) compares the different classifications by three different international

agencies. These are the World Bank (WB), the International Monetary Fund IMF and the United Nations Development Program (UNDP). According to their research there is different terminology used in the classification. The classification of the (IMF) divide countries into two main groups, advanced economies and emerging and developing economies.

On the other hand, the UNDP classifies countries into 3 main categories which are developed economies, economies in transition and developing economies. They also have other classifications based on fuel exporter or importer status and they use countries development level and measure it by the Gross National Income (GNI) per capita.However, the World Bank (WB) classification is broader and based on the level of income, with countries ranking from high income, upper middle income, lower middle income to low income.

Table 3.1: Countries Classification

Country	IMF	UNDP	World Bank
Algeria	Emerging and Developing	Developing	Upper middle income
Bahrain	Emerging and Developing	Developing	High income
Egypt	Emerging and Developing	Developing	Lower middle income
Iran	Emerging and Developing	Developing	Upper middle income
Iraq	Emerging and Developing	Developing	Upper middle income
Jordan	Emerging and Developing	Developing	Upper middle income
Kuwait	Emerging and Developing	Developing	High income
Lebanon	Emerging and Developing	Developing	Upper middle income
Libya	Emerging and Developing	Developing	Upper middle income
Morocco	Emerging and Developing	Developing	Lower middle income
Oman	Emerging and Developing	Developing	High income
Qatar	Emerging and Developing	Developing	High income
Saudi Arabia	Emerging and Developing	Developing	High income
Syria	Emerging and Developing	Developing	Lower middle income
Tunisia	Emerging and Developing	Developing	Upper middle income
Turkey	Emerging and Developing	Developing	Upper middle income
United Arab Emirates	Emerging and Developing	Developing	High income
Palestine	Emerging and Developing	N/A	Lower middle income
Yemen	Emerging and Developing	Developing	Lower middle income

[1]

Table 3.1 shows the countries in our sample classification by the three different

agency groups; all the countries in the sample are in the Emerging and Developing class by the IMF and the Developing class by the UNDP. However, the World Bank classification shows that the countries are different. The first category is the high income which includes the 6 GCC countries. After that we can see the upper middle income which includes Algeria, Iran, Iraq, Jordan, Lebanon, Libya, Tunisia and Turkey. Finally, the lower middle income which include the rest of the countries.

3.9 Capital Structure around the World

After clarifying the different classifications widely used by agencies to distinguish between economies, we can now group studies based on the classification we discussed earlier. In this section we are going to present an overview of the studies of capital structure based on the sample choice. The first section will discuss the comparison studies. The second section will discuss the studies in the developed economies. The third section will discuss the studies based on the developing economies. The last section will focus on the studies conducted on the MENA countries which is the main interest of this thesis.

3.9.1 Cross-Country Comparison Studies

The studies of capital structure started mainly by testing in a single country. After that researchers were interested in seeing if there is a difference in the way firms choose their capital structure in different countries. An advantage of cross-country comparison or international comparison is that it can be used to connect empirical results of capital structure with institutional differences as argued by Wald (1999). By using this approach researchers can observe and assess different institutional settings and their effect on the choice of capital structure.

The first study to do so was conducted by Rajan and Zingales (1995) where they studied and compared the G7 countries at that time. These countries were United States , Japan, Germany, France, Italy, United Kingdom and Canada. The main

Table 3.2: Cross-Country Comparison Studies

Papers	Countries in Sample	Sample	Years
Rajan and Zingales (1995)	G7 Countries	4557 Firms	1987-1991
De Jong et al. (2008)	42 Countries around the world.	11845 Firms	1997-2001
Demirguc-Kunt and Maksimovic (1996)	Developed and Developing Countries	9649 Firms	1980-1991
Wald (1999)	USA , Japan, UK, Germany, France.	4000 Firms	1991-1992
Booth et al. (2001)	Developing Countries ,	826 Firms	1980-1991

objective of their paper was to investigate if other countries' capital structures were different from the United States. They found that the level of leverage in firms is similar across 5 of the countries in the sample except for Germany and the UK which are lower in their leverage. They also added that there are substantial differences in the institutional characteristics. The differences could by summarized by different tax and bankruptcy codes, corporate control and banks' historical roles. Furthermore, they found that the correlation between leverage and other determinants of capital structure in the US is similar in other countries as well.

Furthermore,Wald (1999) investigated a sample of 5 developed economies, which are France, Germany, Japan, United Kingdom and United States. Although similar in choice of sample with Rajan and Zingales (1995), he explained that instead of focusing on testing theories, his focus will be on firm characteristics namely size, risk, growth and inventories. The results of his study are in line with Rajan and Zingales (1995) in terms of similar debt levels across countries. His findings included that profitability, research & development, tax and moral hazard have a predictable relation and are all stable for the countries in the sample. On the other hand, growth, risk, size and inventories have different relations in the countries of the study. The differences might suggest that institutional characteristics have substantial power in explaining capital structure.

After that, a study by Demirguc-Kunt and Maksimovic (1996) which focused on a larger sample included developed and developing economies. The sample included

30 countries and they based their selection criteria on availability of data. Although this paper was merged in the paper of Booth et al. (2001) at a later stage, this study does provide more details. The main contribution of this study is the link between the stock market development and the capital structure. The findings show that there is a significant relation between stock market development and both long-term and short-term debt in both developed and developing countries. When the sample is divided into 2 subsamples which are developed and developing countries the findings are remarkably different. The result shows that for developed markets more development would result in exchanging equity for debt financing. It also shows that in developing markets the results are different between large and small firms, where they suggest that the large firms increase their usage of leverage when the stock market develops and small firms will not be affected by the development of the stock market. This study provides a comprehensive examination of the institutional factors that affect the decisions of capital structure. This thesis applied the same examination of the countries of study in Chapter 2.

In a later study using the same sample Demirguc-Kunt and Maksimovic (1999) investigate the debt maturity association with financial markets and institutions. This study finds that there is a relation between the long-term debt of large firms and the stock market activity and banking sector size. They find a difference in the long-term debt between developed and developing countries where the first would have a larger amount of their total debt as long-term debt. They also conclude that firms in countries with a strong legal system would have more long-term debt and this debt will have a longer maturity. Finally they also note that their study provides an evidence that firms in developing countries would have a lower long-term debt value than firms in the developed markets. They finally, recommend that developing countries should try to improve the legal and financial infrastructure in order to make

it easier for firms to access long-term debt.

In addition, a key study by Booth et al. (2001) examines a sample of 10 developing countries. The main focus of the paper was to test if capital structure decisions differ if the firm is in a developed or developing country. They also study if the classic factors affecting capital structure of a single economy are the same in developed and developing countries. The findings of this study conclude that the same factors affect both developed and developing countries. Yet, several differences do exist and they conclude that this evidence proves the impact of institutional characteristics on capital structure.

De Jong et al. (2008) use a broad sample of 43 countries around the world; the sample includes both developed and developing countries. The main goal of their study is to investigate the effect of country specific factors both directly and indirectly. They argued that the literature focuses on the indirect effects. Their main results are that they give evidence that the assumption of equality in international comparison of firm factors is baseless. They also recommend that researchers should not use pooling regression and instead use country-specific analyses. Their results can be summarized as that although the majority of countries across the sample have similar results in a set of factors, different results were observed as well. The theory therefore could not be generalized without taking into consideration institutional effects.

Additionally, Bancel and Mittoo (2004) did a cross country study surveying 16 European countries in an attempt to understand how managers make their decisions about their firms' capital structure. The total sample included 720 firms and they compared the findings with the US firm's managers. They concluded that although institutional differences exist, the overall picture is that European managers base their decisions on the same factors as their US counterparts. However, they find

dissimilarities across countries on many dimensions especially between Scandinavian and non-Scandinavian countries. In addition, the quality of the legal system and cost of capital accounts for the variation in the level of debt. They also find a strong relation between growth opportunities and issuance of common equity. They also voiced their concern about the accuracy of answers by the managers and the motivations behind it. Finally they concluded that the evidence in their study is strongly supporting the trade-off theory and that firms would decide their optimal capital structure by balancing the trade-off between tax advantages and bankruptcy costs.

In addition, Nagano (2003) carried out a comparison study between East Asian countries capital structures which are Indonesia, Korea, Malaysia, Philippines and Thailand in the period after the Asian financial crises. They find a significant reliance of firms in these countries on the usage of external short-term debt. The sample of the study consisted of non-financial firms for the period from 1992 to 2001. The study concluded that cross-country investigation shows that the finance behaviour of the firms in these countries follows the pecking order theory. The firms first prefer the internal generated funds, then they will chose short-term bank loans. The study also concludes that there is no relationship between issuing equity and the level of debt which could be linked to the aftermath of the financial crisis which reveals that high stock prices are not the motivation of equity issuance in the region. The findings also show that there are differences in the determinants of capital structure between these countries.

Equally important is a study by Aggarwal (1990) on the capital structure of large Asian companies. The study focused on examining the role of country, industry and size in the decision of the firm capital structure. The paper used a sample of 474 Asian firms from 20 countries. Several conclusions were reached by this study

which are: 1) there is an empirically significant difference in international and within industry between the Asian companies. 2) The average equity to assets is to some extent comparable. This study used the average for the variables in the years 1981 and 1982.

3.9.2 Evidence from Developed Countries

In this section we discuss the major studies that were based on samples from the developed countries. We summarize and criticize the findings and conclusions they made. Table 3.3 provides a summary of these studies.

Table 3.3: Studies in Developed Countries

Papers	Countries in Sample	Sample	Years
Akhtar (2005)	Australia	4287 Firms	1992-2001
Goyal et al. (2002)	Defense US firms	61 Firms	1980-1995
Chen et al. (1999)	Dutch Firms (Netherlands)	51 Firms	1984-1995
Nikolaos and Maria (2007)	Greece	129	1997-2001
Mac an Bhaird and Lucey (2007)	Irish SMEs companies.	300 Firms	
Akhtar and Oliver (2009)	Japan	360 Firms	1994-2003
Sogorb-Mira (2005)	SMEs Spanish Firms	6482 Firms	1994-1998
Nikolaos and Maria (2007)	SMEs France and Greece	3258 Firms	1992-2002
de Miguel and Pindado (2001)	Spanish	133 Firms	1990-1997
Song (2005)	Swedish Firms	6000 Firms	1992-2000
Ted et al. (2011)	Swedish Stock Exchange	393 Firms	None
Drobetz and Fix (2005)	Swiss Firms	253 Firms	1991-2001
Gaud et al. (2005)	Swiss Stock Exchange	104 Firms	1991-2000
Ozkan (2001)	UK Firms	390 Firms	1984-1996
Al-Najjar and Hussainey (2011)	UK Firms	379 Firms	1991-2002
Fattouh et al. (2008)	UK listed company	6614 Firms	1988-1998
Baskin (1989)	United States of America.	378 Firms	1960-1972
Jandik and Makhija (2001)	US Electric and Gas Utilities.	134 Firms	1975-1994
Frank and Goyal (2009)	US Firms	4200 Firms	1950-2003
Leary and Roberts (2010)	US Firms	34470 Firms	1980-2005
Helwege and Liang (1996)	US Firms IPO after 1982.	367 Firms	1983-1992
Kayhan and Titman (2007)	US large firms	3100 Firms	1960-2003
Shyam-Sunder and C. Myers (1999)	US Large Firms	159 Firms	1971-1989
Frank and Goyal (2003)	US Public Firms	3800 Firms	1971-1998
Matjaz and Dusan (2009)	Slovenian Firms	4280	1999-2006

We first discuss the studies which were based on the United States as these were the starting point in the research of capital structure. These include but are

not limited to Frank and Goyal (2009) , Leary and Roberts (2010), Helwege and Liang (1996),Kayhan and Titman (2007), Shyam-Sunder and C. Myers (1999) and Jandik and Makhija (2001).

First, Frank and Goyal (2003) investigated the publicly US traded firms using a sample from 1971 to 1998. The first paper focused only on testing the pecking order theory. In a later study Frank and Goyal (2009) investigated the majority of the factors suggested to be important in the decision of capital structure using a larger sample from 1950-2003. Their findings in the first paper suggested that in large firms there is evidence of a pecking order theory. They also find that internal financing is not adequate to finance new investments and that external financing is used severely. Furthermore, in their second paper they found that the empirical evidence is consistent to some extent with the trade-off theory. They conclude that the evidence from publicly traded firms in the US firms identify weaknesses in the capital structure theories. They criticised the market timing theory claiming that the choice of capital structure could be the result of manager' optimization. They also argued that the pecking order theory does not take into consideration the industry mean leverage, as it does not account for industry differences. Then they commented on the fact that trade-off theory take into account many of the factors like size, tangibility, growth opportunities and industry leverage. However, a weakness of the theory is that the relation between leverage and profitability is ambiguous. This relation theoretically states that firms with high profitability tend to have lower bankruptcy costs and thus should use more debt, but empirically their study finds it is the opposite.

Leary and Roberts (2010) investigated the US firms between 1980 and 2005. Their findings show that the pecking order theory does not account for more than 50% of the financing decisions. They also note that when taking into account other

factors from other theories the accuracy of the model increases significantly. In their initial model by limiting or allowing firms capacities to vary they found that only 20% would follow the pecking order theory. On the other hand, when adding variables suggested by the trade-off theory their model classification power increased. Therefore, they suggested that a model with a wide range of determinants would precisely classify 80% of the decisions. They also heavily criticised the pecking-order theory suggesting that it is the result of incentives conflict.

Shyam-Sunder and C. Myers (1999) also tested the static trade-off theory against the pecking order models using a sample from large US firms in the period between 1971 and 1989. Instead of testing the theories in the same model, they test each theory separately to test statistical power. They conclude that the pecking order theory for the mature firm's sample they used is robust. They also found that the performance of the target adjustment model is fine when it is tested separately. Furthermore, they also suspect that the results could be extended to growth firms.

Furthermore, Helwege and Liang (1996) examined the presence of the pecking order using a panel of IPO firms. Their interest was to investigate a young firm's capital structure decisions after their IPOs. The findings of their papers are against the pecking order theory and in line with the optimal capital structure theory. This mainly is because in the optimal capital structure firms would use external financing even in the lack of the deficit in the earning simply to adjust and reach their target capital structure. They also conclude that the equity is not the last in order as suggested by the pecking order theory as it did seem to be used more than bank loans. The only findings supporting the pecking order is that they noticed that firms issuing public bonds are large in size and profitable.

In another study, Kayhan and Titman (2007) examined the effects of the firms histories in their capital structure; they used a sample from US large firms for the

period 1960-2003. The paper investigated how leverage is affected by stock price histories, cash flows and investment expenditures. Their results indicate that the variables they used have a strong effect on the change in capital structure. They conclude that their results support the optima capital structure theory, where firms try to adjust their capital towards a target debt ratio. However, they found that the speed of adjustment is considered to be slow. Also, as suggested by Shyam-Sunder and C. Myers (1999) and Frank and Goyal (2003) they argue that the increase in the leverage is linked with higher financial deficits.

In addition, Goyal et al. (2002) investigated a single industry which is US defense firms. They only tested the relationship between corporate debt and the growth. The reason behind their choice is that there was a significant change in the growth opportunities level in the period between 1980 and 1995. They concluded that their results proved that when growth opportunities are in decline firms would increase their use of debt.

Then, Baskin (1989) tested the pecking order theory using a US firms sample. The motivation of their study is the growing popularity of the pecking order theory at that time. The empirical evidence in their study shows that the pecking order hypothesis has more explanatory power than the static trade-off theory. This could be summarized as that they are in favor of the pecking order theory explanation of the variation of capital structure in the US firms.

Furthermore, most studies drop firms which are regulated such as utilities, financial firms. Therefore, an interesting study by Jandik and Makhija (2001) focus on a single industry which is the electric and gas utility firms in the US. The reason behind choosing firms in a specific industry is to focus only on the firms characteristics as firms in the same industry will be exposed to the same macro-economic factors. They used variables representing both the trade-off theory and pecking order theory

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and found that both theories can explain the change in capital structure in regulated firms. Furthermore, Gropp and Heider (2010) influential paper has shed light on the capital structure of banks. Their findings disproved that banks are regulated and therefore do not have a choice to make in their capital structure. More details about bank structure are provided in Chapter six.

Now we present studies from the EU countries such as de Miguel and Pindado (2001), Song (2005),Ted et al. (2011),Drobetz and Fix (2005),Gaud et al. (2005),Nikolaos and Maria (2007),Sogorb-Mira (2005) and Chen et al. (1999).

First, Song (2005) and Ted et al. (2011) examined the capital structure in Swedish firms. Song included all the firms in Sweden and Ted et al. used a survey population of only 393 firms. Ted et al. (2011) are in support of the trade-off theory especially the fact that the majority of managers' answers indicated that they have a target capital structure. They found weak evidence of agency costs and transactions costs associated with the information asymmetry. They argued that the results are contradicting pecking order theory, but could be in support of signaling theory if we consider that the adoption of a target capital structure is a signal. In addition, Song (2005) finds that the results are to some extent supporting the trade-off theory. However, they argue that there are differences between the short term debt and long term debt. They also note that most firms in the Swedish market are heavily leveraged.

Second, Drobetz and Fix (2005) and Gaud et al. (2005) investigated the capital structure decisions in Swiss firms. Both studies used the same period and a similar sample of the listed Swiss firms. Although similar in data and models they found different results for the adjustment speed which is due to the differences in the leverage definitions used in both studies. In the study of Drobetz and Fix (2005) their findings show no conflict with the theories of the pecking order and trade-off

theory except for the profitability proxy where they found support for the pecking order as more profitable Swiss firms tend to use less leverage. Gaud et al. (2005) find that the size of the companies and the tangibility of the assets are positively related to leverage and that growth and profitability are negatively associated.

Third, both de Miguel and Pindado (2001) and Sogorb-Mira (2005) studied Spanish firms. However, the sample used is different simply because the first focused on the listed firms and the second focused on Small or Medium Enterprise. de Miguel and Pindado (2001) developed a target adjustment model by taking into account both firms and institutional characteristics. Their findings for the relationship between cash flow and debt support the pecking order theory. On the other hand, Sogorb-Mira (2005) finds that the pecking order theory preforms very well in the context of the SMEs, where their preferred choice of financing is the internal funds then the debt and their last resort is the issuance of equity. They also note that the behaviour of the Spanish SMEs is similar to those in developed countries.

Fourth, Nikolaos and Maria (2007) studied the capital structure of the listed firms in the Athena Stock Exchange in Greece using a sample of 129 firms from 1997 to 2001. The findings of the study show support for the pecking order theory in both the relation of the liquidity and interest coverage ratio. However, they found that the relation between size and debt is positive which is consistent with the trade-off theory. Furthermore, Chen et al. (1999) investigated Dutch firms using 51 firms. Their results are supporting the static trade-off theory and the pecking order theory but they found no relation with the asymmetric information behind the pecking order theory. Their study showed that the leverage ratio is low in the period between 1982 and 1992 in comparison with other EU countries.

Next we debate studies which use a sample from the United Kingdom such as Ozkan (2001),Al-Najjar and Hussainey (2011) and Fattouh et al. (2008).

First, Ozkan (2001) used data of 390 UK firms for the period from 1984 to 1996. Their findings support the hypothesis that firms have a long-term target leverage ratio and they adjust to this target quickly. This result is in support of the trade-off theory where the prediction is that there is a negative relation between leverage and non-debt tax shield. Their paper added further contribution in modelling the capital structure which will be discussed further in the methods used in the capital structure section.

Second, Fattouh et al. (2008) also investigate the UK listed companies using a conditional quantile regression. Their results are that profitability and non-debt tax shields are negatively related to leverage while size and tangibility are positively related to leverage. Their results are supporting both the trade-off theory and the pecking order theory.

Third, Al-Najjar and Hussainey (2011) explored the potential determinants of capital structure in the UK market. The sample they used consists of 379 firms and for the period from 1991 to 2002. They find that using different measures of leverage could change the results of the independent variables. They also find that tangibility, growth, size, risk and profitability are all determinants of capital structure. This also supports that both the pecking order theory and the trade-off theory could explain the capital structure of the firms in the UK.

Fourth, Bennett and Donnelly (1993) attempted to use the cross-sectional data to explain the choice of capital structure in the UK. As previously explained they found evidence to support both theories of capital structure. To clarify they find that non-debt tax, tangibility, size and profitability are all significant in explaining capital structure. They also found strong evidence for the industry classification in explaining the capital structure of the UK firms. Furthermore, they agree with Al-Najjar and Hussainey (2011) in that changing the definition of leverage leads to

different results especially when changing from the book value to the market value of leverage.

Several studies investigated other developed countries such as Akhtar and Oliver (2009) who chose Japan and Akhtar (2005) who chose a sample from Australia. In both studies the authors focused on the multinational and domestic firms in both countries. The findings of Akhtar (2005) shows differences in the capital structure of domestic and multinationals. They found that bankruptcy costs are only significant for the multinationals firms which might indicate that domestic firms follow a pecking order theory while multinational follow the trade-off theory. They also find that the industry classification is not consistent across the domestic and multinationals. Furthermore, in their study of Japanese firms Akhtar and Oliver (2009) also find different results between domestic and multinational firms. Their findings also indicate that multinational firms have less leverage and that Japanese bankruptcy costs are significant for multinationals only. The differences between the two categories of firms include age, tangibility, free cash flows, exchange rate risks, non-debt tax shield, growth, size and profitability.

3.9.3 Evidence from Developing countries

We first start with studies using a sample from China. These include Chen (2004), Huang and Song (2006) and Qian et al. (2007). Chen (2004) inspected a firm level panel data of listed Chinese firms. They claim that their findings do not support the trade-off theory or the pecking order theory and they suggest a new pecking order theory. They also argue that the reason behind their claim is that China has special institutional differences in comparison to Western economies. The conclusion of this study is that Chinese firms are theoretically different in their capital structure in comparison with other countries in the developed world. The difference is that they have a preference for short-term debt and that the amount of long term debt is lower.

Despite their theoretical predictions the findings are contradicting as they find that the Western finance theories are also applicable to the Chinese firms although with substantial institutional differences. But they only provide incomplete justification of the capital structure choice. Their conclusion is that firms in China prefer internal funds, equity and finally debt.

Then, a study by Huang and Song (2006) included a large sample of 1200 Chinese listed firms. They agree with Chen (2004) in that Chinese firms have a low amount of long term debt and have a special institutional environment. However, they suggest that the differences are that the economy is a command economy in transition and also that the Chinese listed firms are mostly state-owned firms. They conclude that Chinese listed firms have the same determinants of capital structure as firms in other countries. But they find the Chinese preference of equity over debt to be odd. Their explanations are that this might be the result of an immature bond market and the over valuation of the stocks. Their findings also include no significant impact of ownership structure on the capital structure of firms.

Furthermore, Qian et al. (2009) investigate a sample of 650 Chinese publicly listed firms. The main contribution of the paper is the use of the dynamic panel model to test the adjustment target speed which will be discussed later. However, their findings are that Chinese firms adjust to an optimal capital structure slowly. They also find a negative relation between leverage and volatility, growth, non-debt tax shield and profitability, in contrast to a positive relation with size, tangibility and government ownership.

Additionally, studies based on Pakistani firms were done by Sheikh and Wang (2011) and Hijazi and Tariq (2006). The first investigated the manufacturing industry and the latter the cement industry. Sheikh and Wang (2011) finds a high debt in the proportion of the capital structure in comparison with developed countries

Table 3.4: Studies in Developing Countries

Papers	Countries in Sample	Sample	Years	Type
Chen (2004)	Chinese Listed Companies	88	1995-2000	Non Financials
Qian et al. (2007)	Chinese Listed Firms	650 Firms	1999-2004	Non Financials
Sheikh and Wang (2011)	Pakistan	160	2003-2007	Non Financials
Balasundaram and Valeriu (2010)	SiriLankan Manufacturing		2003-2007	Non Financials
Nagano (2003)	East Asian Firms	2256	1992-2001	Non Financials
Suhaila and Wan Mahmood (2008)	Malaysian Firms	17	2000-2005	Non Financials
Hijazi and Tariq (2006)	Pakistani Cement Industry	22	1997-2001	Non Financials
Huang and Song (2006)	Chinese Listed Firms	1200	1994-2003	Non Financials
Kakani and Reddy (1998)	Indian Profitable and Large	100	1985-1995	Non Financials
Bradley et al. (1984)	Not known	821	1962-1981	Non Financials

and the same finding is also noted in Hijazi and Tariq (2006). Both studies find that there is an explanation of the major capital structure theories in explaining the capital structure. Moreover, a study in the Sri Lankan market by Balasundaram and Valeriu (2010) used the profitability as the dependent variable and find that there is a positive relation between leverage and 5 measures of profitability. On the other hand, Kakani and Reddy (1998) also investigate the manufacturing firm's capital structure in the Indian developing market. Their findings suggest that size is not significant in deciding capital structure and that profitability is significant.

In the same way several studies examined the Malaysian firms such as Suhaila and Wan Mahmood (2008) and Zain (2003). In Zain (2003) thesis the sample consist of two boards of the Malaysian market while Suhaila and Wan Mahmood (2008) use a small sample. Zain (2003) finds strong support for the pecking order theory especially in the past profitability being a determinant of capital structure. The study also finds that the non-debt tax shield is not significant and that firms in the second board have a high debt levels which is mainly short-term debt. The findings also show that industry classification (Sectors) have power to explain capital structure. On the other hand, Suhaila and Wan Mahmood (2008) use only 17 firms for the period from 2000 to 2005. They find a negative result between leverage, size and

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liquidity which is in agreement with Zain (2003) and that firms do follow pecking order theory in their capital structure choice.

3.9.4 Evidence from MENA countries

In this Section we include all the papers carried out in the MENA countries which is the area of this study. Table 3.5 summarises the studies done in the area of interest for this study. We can classify the studies into cross country studies and single-country studies.

Table 3.5: Studies MENA Countries

Papers	Countries in Sample	Sample Size	Years
Al-Ajmi et al. (2009)	Saudi Arabia	53 Firms	2003-2007
Al-Sakran (2001)	Saudi Arabia	35 Firms	1993-1997
Barakat and Rao (2003)	MENA Countries	461 Firms	1996-2001
Fakher et al. (2009)	Libyan Firms	55 Firms	1995-1999
Ba-Abbad and Ahmad-Zaluki (2012)	Listed Firms in Qatar	36 Firms	2004-2008
Barakat (2014)	Saudi Arabia	46 Firms	2009-2012
Sbeti and Moosa (2011)	Kuwait Firms	59 Firms	N/A
Eldomiaty (2007)	Egypt 100 with the largest market cap.	100 Firms	1998-2004
Sbeti (2010)	Saudi Kuwait Oman	986 Firms	1998-2005
Omet and Mashharawe(2002)	Jordanian, Kuwait, Oman, Saudi Arabia.	455 Firms	1996-2001
Zeitun and Tian (2007)	Jordan	167 Firms	1989-2003

First, we start with the cross-country studies. There is only one study with a focus on MENA countries and this is Barakat and Rao (2003). The focus of the paper is to investigate the role of taxes in capital structure choice. Their results are in support of the assumption of the portability of capital structure theory. The paper used a pooled regression model classifying the sample into taxed and non taxed economies. Although this approach might serve their purpose we cannot conclude anything in regard to institutional differences. Their results also have contradicting results with the theory. It is thought that taxed economies would have utilized the non-debt tax shield and vice versa; while their results were significant for non taxed economies and insignificant for taxed economies.

Omet and Mashharawe(2002) covered four countries which are Jordan, Kuwait, Oman and Saudi Arabia. They covered a period from 1996 to 2001 and include 455 firms from four economies. Their results show that countries in the sample do follow the main stream corporate finance theories. According to them the countries each have a unique taxation system, in which Jordan and Oman have a tax system and Kuwait has a tax-free system and Saudi Arabia have Zakat. They also find that the different tax systems the capital structure of the firms is not affected. Lastly, they recommend that an in depth study of the capital structure in the Arab world with more variables will reveal more about the leverage in these countries.

Furthermore, Sbeti (2010) who studied firms in Saudi Arabia, Kuwait and Oman agree with the results of Omet and Mashharawe(2002) and find that the capital structure in the countries of the study can be explained by the capital structure theories. In addition, she also finds that tax considerations make these countries have a weak effect. Sbeti (2010) also claims that her study is the first to implement a dynamic adjustment model which produces the result that firms in these countries do adjust their leverage to a target leverage ratio through time.

Second, several studies investigated Saudi Arabia such as Al-Sakran (2001), Al-Dohaiman (2008), Al-Ajmi et al. (2009) and Al-Tally (2014). Al-Sakran (2001) was one of the first to study the Saud Arabian firms. However, since the paper was before the stock market boom the sample of the study is small with 35 firms only making the sample. He concluded that despite the absence of taxes the levels of leverage were not low. Although this study was before the development of the stock market as we explain in the next studies these phenomena continue through the years and might be explained that managers or owners of firms prefer not to take debt either for religious or customs issues.

Al-Dohaiman (2008) examines the capital structure of both listed and non-listed

firms in Saudi Arabia. The initial sample included 80 listed firms in which 10 are banks and 8143 unlisted firms from all the industries. Their findings include that Saudi firms have a low amount of debt in comparison to developed countries which is an indication of firm preferring to finance their activities through equity rather than debt. This finding is to some extent in agreement with the findings of Chen (2004) in the Chinese market. The study suggests several stylized facts to explain the findings which include that the stocks in the market are overvalued, the weakness of the legal system for lenders and the immaturity of the bond market. The relations of profitability and liquidity support the pecking order while the trade-off theory has limited explanation with only the growth opportunities supporting.

Al-Ajmi et al. (2009) also studied the Saudi market before the boom and used balanced panel data of 53 listed firms for the period of 2003 to 2007; the study used 3 measures of book leverage only. They conclude that the three main theories of capital structure which are the pecking order, trade-off and agency theory have a partial explanation for Saudi firms financing decisions. They find that firms rely more on the short-term debt in contrast to long-term debt which might be explained by the dependency of Saudi firms on banks loans. Their empirical findings could be summarized in that they find a positive relation for profitability, size, growth and institutional ownership. On the other hand, the relation between leverage and tangibility, government ownership, family ownership, risk, dividend and liquidity is negative. They also highlight the absence of a secondary debt market as the main reason behind the economy being a banking economy.

Al-Tally (2014) is the only recent study which used recent data that include the boom in the Saudi stock market. The motivation of the study is collapse of the stock market in 2006 which resulted in a loss of around 66% of the total market value followed by the global financial crises in 2008. This study also finds a similar result

to the previous studies in which firms prefer equity over debt. The findings also reject the trade-off theory in that firms prefer the use of debt to take advantage of the non-debt tax shield. Also the study concluded that there is a positive relationship between profitability and leverage, also that the mean of the Zakat payment is constant when the leverage is below 30%.

Third, Zeitun and Tian (2007) researched capital structure in Jordanian firms. They chose a panel data sample of 167 firms for the period from 1989-2003. They claim that the Jordan economy has a unique setting with the large number of external shocks it went through for political uncertainty. They also added that the existence of the Islamic banks and the absence of a mature bond market in the economy is a unique feature. It is worth noting that this study focuses on firm performance as well as the capital structure. They conclude that their results for short term debt does support the pecking order theory in which firms with high profitability will have high portion of short term debt.

In addition, Al-Najjar (2008) find that when using single equation models Jordanian firms have the same determinants of capital structure as developed economies. In addition the findings of the study show that the agency theory has power in explaining capital structure decisions. It also shows that firms in the Jordanian market do have a target capital structure and a fast speed of adjustment. Also, it shows that firms use both short and long term debt to adjust their capital structure target. The study finds evidence for the signaling, agency, pecking order and bankruptcy theory. He recommended that research could be done by using a larger sample form the MENA countries which is the interest of this study.

Fourth, Eldomiaty (2007) carried out an interesting study about the economy of Egypt. He attempts to test the three main capital structure theories namely the trade-off theory, the pecking order theory and the cash flow theory. This study

used a sample of the largest 100 firms in terms of market cap in the Egyptian stock market (EGX100). He adopted the partial adjustment model for both the long-term and short-term debt and found that firms used both of them to adjust the leverage to a target leverage ratio using excessively long-term debt. The findings are supported mainly by the trade-off and pecking order theory and concluded that the common theories of capital structure do explain the behaviour of firms in the developing economies.

Furthermore, Eldomiaty and Ismail (2009) used a sample of 100 firms for the period from 1998-2004. Their sample was selected based on the firm being non-financial and chose the largest 100 firms by market value as they did in Eldomiaty (2007). They suggested that none of the capital structure theories provide the complete answer for the capital structure decisions. They used three definitions of leverage which are long-term, short-term and total debt investigating the three theories of capital structure we mentioned previously. Their findings show that the behaviour of the long-term and short-term debt show strong evidence of trade-off theory. Their contribution is the use of subset selection criteria using ten subset section criteria. The findings of their study are in line with Booth et al. (2001).

Then, Omran and Pointon (2009) studied the capital structure of the Egyptian stock exchange using 122 firms. Their main focus was to compare the capital structure of firms in different industries such as food, heavy industries, contracting and services. The study used 4 measures of debt which are the financial leverage, long-term debt, short-term debt and interest ratio. The conclusion of this study is that there are significant differences between the industries in terms of their leverage and different results for each definition of the leverage. Also they find a positive relation between long-term debt and tangibility and a negative relation with higher business risks. On the other hand, they find a negative relation between short-

term debt and size, growth in earnings and growth of assets especially in heavy industries.

In addition, a recent study by Wahba (2014) investigated the capital structure, ownership and firm performance in Egyptian firms. The study used a sample of the 50 most active firms for the years from 2008 to 2010 and the data from 2011 onward was excluded due to the Egyptian revolution. The findings of the study suggest that in addition to the firm characteristics the stake holders do have an effect. The study is focused on the relationship between the firm performance and capital structure taking into consideration other variables. The findings also suggest that there is no effective arrangement for capital structure nor ownership structure but that different arrangements are not equally good. To sum up, the relation between performance and capital structure is positive.

Fifth, Fakher et al. (2009) try to explore the Libyan market. The results of this study show their strong support for the static-trade off theory and the agency cost theory; however, not the asymmetry theory. On the other hand, one study is based on the Qatar economy is by Ba-Abbad and Ahmad-Zaluki (2012). The reason is that the number of firms in Qatar is small with only 39 listed firms. Their results show that companies in Qatar also follow the main stream capital structure theories. They also indicated a low value of debt and they linked it with the under development of the bond market.

Ghazouani (2013) tested the static trade-off theory and the existence of dynamical adjustment model using a sample of Tunisian firms. The static model results indicate that profitability and tangibility are the main determinants of capital structure in Tunisian firms. Nevertheless, the results of the dynamical model show that the adjustment cost are high and the speed is slow.

3.10 Methods used in capital structure research

Capital structure empirical evidence has been following the development in statistical methods in an attempt to answer the question of what the important factors are in the decision of capital structure. Early empirical studies used the Ordinary Least Squares (OLS) and Tobit model. Then the panel data models became popular and since then they were used by most studies. However, for a long time there was an attempt to find better methodologies to address the questions of the capital structure theories.

3.10.1 Ordinary Least Squares (OLS)

The first approach used in the capital structure research was the OLS used with either time series data or with cross-sectional data. The first one focuses on studying the effects of issuing new debt or equity on the stock prices of firms. On the other hand, the second approach is used to regress the dependent variable on the determinants of capital structure.

The use of the OLS in early research of capital structure has been criticised heavily recently. First, Friend and Lang (1988) used the ordinary least squares but faced a problem of heteroscedastic probability which they solve by transforming the dependent variable logarithmically. Second, Lemmon et al. (2008) criticised heavily the use of the static OLS stating that it is poor for dealing with the unobserved heterogeneity in the capital structure research. They also recommend the use of the fixed effect estimates, instrumental variables and structural estimations to overcome this issue.

3.10.2 Tobit Model (TBM)

Tobit estimate was first introduced by Tobin (1958) as a limited dependent variable. However, it was first used in the study of Rajan and Zingales (1995) who argued that using this methods was because the adjustments they made to the dependent

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Table 3.6: OLS Studies

Model or Approach	Papers	Form of model
OLS	Akhtar and Oliver (2009) Al-Sakran (2001) Demirguc-Kunt and Maksimovic (1996) Drobetz and Fix (2005) Mac an Bhaird and Lucey (2007) Jandik and Makhija (2001) Fakher et al. (2009) De Jong et al. (2008) Shyam-Sunder and C. Myers (1999) Kakani and Reddy (1998)	Run by model: Single Factor Multi Regression By Sector

variable resulted in negative leverage values which were truncated using a Tobit model at -1. Furthermore, a study by Wald (1999) used a heteroskedastic Tobit estimator instead of the OLS because the dependent variable is a ratio of debt/assets and therefore censored at zero. However, several empirical studies did not find a difference between the results they obtain from the OLS and the Tobit such as Huang and Song (2006).

Table 3.7: Tobit Model Studies

Model or Approach	Papers	Form of model
Tobit	Akhtar (2005) Barakat and Rao (2003) Matjaz and Dusan (2009) Drobetz and Fix (2005) Kayhan and Titman (2007) Rajan and Zingales (1995) Al-Najjar and Hussainey (2011)	-Due to truncated leverage variable. -More Efficient than OLS

3.10.3 Panel Data models (PDM)

In previous methods which are the OLS and the Tobit model, the cross-sectional data might cause endogeneity issues as argued by Borsch-Supan and Kake (2002). The results of these issues are that the OLS is biased in this context and therefore could not be used in this fashion. It is worth mentioning that this does not discard all the previous studies using the OLS model as stated by Baker and Martin (2011)

who suggested that using past years factors as done by Rajan and Zingales (1995) does elevate this problem.

However, researchers either in capital structure literature such as Baker and Martin (2011), Borsch-Supan and Kake (2002) or in statistics such as Baltagi (2005), Gujarati and Porter (2009) and Hsiao (2003) state that Panel Data Models are more efficient in dealing with heterogeneity and endogeneity issues. The main advantages of the panel data models are presented in Chapter 5. However, several estimates can be used as substitute for the OLS and the Tobit models we discussed earlier. These are the pooled regression ordinary least squares and the random effects Tobit models. Furthermore,

Table 3.8: Panel Data Models Studies

Model or Approach	Papers	Form of model
Fixed , Random	Al-Ajmi et al. (2009)	Powerful research instruments which take into account effects of cross-sectional data.
	Booth et al. (2001)	
	Buettner et al. (2009)	
	Chen (2004)	
	Chen et al. (1999)	
	Nikolaos and Maria (2007)	
	Drobetz and Fix (2005)	
	Nikolaos and Maria (2007)	
	Sbeti (2010)	
	Zeitun and Tian (2007)	
	Sheikh and Wang (2011)	
	Song (2005)	
	Omet and Mashharawe (2002)	
	Suhaila and Wan Mahmood (2008)	
	Gaud et al. (2005)	
	Goyal et al. (2002)	
	Hijazi and Tariq (2006)	
	Frank and Goyal (2009)	
	Frank and Goyal (2003)	
	Sogorb-Mira (2005)	
	Al-Najjar and Hussainey (2011)	
	Ba-Abbad and Ahmad-Zaluki (2012)	

3.10.4 Dynamical Panel Model (DPD)

The dynamical panel data models arise based on the modelling of one of the important questions of capital structure. This question is based on the optimal capital structure theory or the target capital structure. A study by Graham and Harvey (2001) surveying a sample of 3982 CFOs finds that 19% answered that there is no target ratio range. Whereas 10% have a very strict target, 37% a flexible target and 34% a somewhat tight target. This results in strong support for the trade-off theory of capital structure where firms balance between the benefits of the tax shield and the costs of the probability of financial bankruptcy. Therefore, firms would deviate from their target for a while but then would start to adjust back to it when they can.

Furthermore, a leading study of the pecking order theory was done by Shyam-Sunder and C. Myers (1999) states that changes occurring in the debt ratios are a result of the need for external funds and it is not an attempt to adjust the capital structure as suggested by the dynamic trade-off theory. In addition, an interesting finding of Shyam-Sunder and C. Myers (1999) shows that even under the pecking order theory the time patterns of capital expenditure and operating income could produce a mean-reverting debt. Drobetz and Fix (2005) argued that this result could be explained by the fact that there is a serial correlation between debt and capital investment or that the internal funds do vary over different business cycles. In addition, Fama and French (2002) find that the estimate of the partial adjustment model supports the trade-off theory and that leverage is mean-reverting.

3.10.5 Structural Equation Modeling(SEM)

The first attempt to use the Structural equation modelling methodology in the capital structure context was done by Titman and Wessels (1988) and they state that the main advantage of using such an approach is that it can measure precisely the relation between the dependent unobservable factors and the independent observable

Table 3.9: Dynamical Panel Model Studies

Model or Approach	Papers	Form of model
Dynamical	de Miguel and Pindado (2001) Drobetz and Fix (2005) Eldomiaty (2007) Sbeti (2010) Qian et al. (2007) Nagano (2003) Gaud et al. (2005) Ozkan (2001) Shyam-Sunder and C. Myers (1999)	2 step GMM . Arrelano-Bond GMM.

one. Furthermore, Titman and Wessels (1988) criticize the basic approach used in the capital structure research which is selecting proxies to estimate the unobservable attributes. They showed that the problems with such an approach are:

- There is no single variable that represents a proxy and therefore researchers might use the one which improves their results.

- It is hard to find a variable that represents a proxy which is not associated with other proxies and therefore a researcher might choose a variable to measure a proxy but this variable will have an effect on many other proxies of interest.

- Because the variables are inadequate measures of the proxies they should measure, using them would create an error-in-variable problem.

- The correlation between the measurement errors of the dependent variable and the independent variables might create spurious correlations even when the independent is unrelated to the dependent variable.

Based on these problems Titman and Wessels (1988) recommended the use of the Structural Equation Modelling (SEM) to overcome these issues.

Table 3.10: SEM Based Studies

Model or Approach	Papers	Form of model
SEM	Titman and Wessels (1988) Jairo (2009) Chen and Jiang (2001) Chang et al. (2009) Chiarella et al. (1991)	Covariance based Structural Equation Modeling.

3.10.6 Artificial Neural Networks

Recently a new approach to handle the questions of capital structure is the use of Artificial Neural Networks (ANN). Although the models of ANN are not new in science and engineering it has started to be widely used in finance literature. They were used for example in corporate finance for the following applications as suggested by Hawley et al. (1990):

- Financial Simulation. A network could be created for managing cash flow, risk management and in capital investment decisions.

- Prediction. Forecasting of financial data is a very complicated task. Therefore the use of ANN could increase the efficiency in comparison to the traditional forecasting software. Another area that the ANN could be used in is predicting investors' reaction to firm announcements or change in financial policy.

- Evaluation. A neural network system could be designed for example to screen undervalued firms for mergers or acquisitions purposes.

- Credit Approval. Several studies used the ANN for several credit approval applications. These included for example the credit cards applicant decisions or the approval of loans for both individuals and firms.

The use of this approach was applied in the capital structure studies by a limited number of researchers such as Pao (2008) and Abdou et al. (2012). In Pao (2008)

the study focused on a comparison between the multiple regression analysis and the (ANN). He concluded that the (ANN) models accomplish a better fit in comparison to the multiple regression analysis and that they are capable of detecting and handling complex non-linear relations between debt and the independent variables. Furthermore,Abdou et al. (2012) also used the Generalized Regression Neural Network (GRNN), which is a special neural network, to compare the capital structure of UK retail firms with the multiple regression models. They also confirm the results of Pao (2008) and conclude that judging by both the root-mean-square errors and the mean absolute errors the (GRNN) network performs better.

3.10.7 Survey Evidence

Due to the complexity of measuring the hypotheses of capital structure and the intersection between different measures it is important to use the survey evidence approach to investigate this in more detail. Several key studies have been conducted since the early development of the capital structure literature such as Donaldson (1961), Graham and Harvey (2001) and Bancel and Mittoo (2004). This study will not investigate this approach but future plans to use it are in place.

First, Donaldson (1961) did a survey of 25 firms from 5 different industries and his results motivated later work of Myers (1977) and Myers (1984) to model a theory of the pecking order in determining the capital structure of firms. Second, Graham and Harvey (2001) did a survey of 392 Chief Financial Officers (CFOs) about the choice of capital structure and other things. Their findings state that the most important factor in the corporate debt decisions is that the manager wishes for financial flexibility. Third, Bancel and Mittoo (2004) did a similar study to Graham and Harvey (2001) but their focus was on the cross-country comparison. Their findings are important because they find that firms financing policies in their sample are subjective by institutional characteristics and international operations. They also find that firms

decide their optimal capital structure by trading off the costs and benefits which is in line with the trade-off theory.

3.11 Variables used in the Capital Structure Research

In this section we need first to summarize the tables and try to eliminate all the duplicated variables. We then convert the big table into small ones each with the subsection we chose below. This section could also include a discussion about the fact that comparing studies is hard because we cannot compare studies which use different measures of leverage.

We can also discuss the problem of different accounting standards and measure across the different countries and extend this to what different studies did to overcome this problem.

3.11.1 Measure of Leverage

A key question in the empirical capital structure research is the use of market leverage or book leverage as the independent variables. Several studies including Myers (1977) suggest that since the firm is unable to control the market leverage and that debt is supported by the assets the firm holds, the use of book leverage is more appropriate. Furthermore, Graham and Harvey (2001) and Fama and French (2002) also support this idea that the use of book value leverage is a better reflection of managers' decisions in choosing the capital structure.

On the other hand, the use of book value leverage is heavily criticised by Welch (2007) stating that this ratio is flawed and that it can only explain the capital structure partially. Finally, Fama and French (2002) suggest that because of the uncertainty of the ideal definition of leverage it is better to present both market and book leverage.

Market Leverage

Table 3.11 presents a summary of the measures that were used by the previous studies in the literature. Overall the majority of the studies follow a similar selection

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of the leverage ratio. However, as the table shows some studies suggest a deferent definition either based on theoretical or empirical grounds. The three main market leverage ratios are:

- Long term debt to market value of equity LT/MVE

- Short term debt to market value of equity ST/MVE

- Total debt to market value of equity TD/MVE

Other studies use a different measure either for theoretical or empirical reasons. For example, Titman and Wessels (1988) suggested the use separate measures of debt which are the long-term , short term and the convertible debt to market value of equity ratio in exchange for using the aggregate measure of total debt. The reason behind this approach is that different theories are related to different types of debt instrument. But, this is based on the availability of data and therefore it is not applicable in economies of the developing world where there is a shortage of data.

Furthermore, Akhtar and Oliver (2009) use a different measure to the ones mainly used in the literature as shown in Table3.11, where they instead of using the market value of equity used the market value of equity plus the long term debt in the denominator of this ratio. The argument they made for their choice is that short-term debt does have a high variability and thus would bloat the debt ratio. Although they used this measure they report that there was no difference in the results between their measure and the main stream measures and that the correlation between the measures is 90%.

Book Leverage

In the same fashion book leverage is defined by many measures as both Table 3.12 and Table 3.13 show. The main three measures as discussed before in the market

leverage are also mainly used in the book leverage:

- Long term debt to book value of assets LT/BTA

- Short term debt to book value of assets ST/BTA

- Total debt to book value of assets TD/BTA

However, several other measures are also suggested and used such as the Earnings Before Interest, Taxes, Depreciation and Amortization (EBITDA) to interest charge which is suggested by Jairo (2009). In this study Jairo (2009) used 8 different measures to represent leverage.

Furthermore, Drobetz and Fix (2005) used a different measure which is the debt to net assets instead of using total assets. Their rationale for using this ratio is that it is not changed by non- interest-bearing-debt which is a category of debt that is entered in the balance sheet but it does not require interest payments. These include for example pension money which is influenced by factors that are not related to finance decisions.

In addition, Leary and Roberts (2010) used a different approach to study the capital structure. In order to test the pecking order theory. For that reason they modeled their study by using three different measures representing the order of the theory which are the internal funds, debt and equity issuance. They used different dummy variables to represent these factors as Table 3.13 shows. However, in order to replicate their study a data base of issuance of equity and debt must be available.

As discussed in the previous section on the dynamical system, different studies using this model did have to use different treatment of the ratios for their purpose. For example, instead of using the long term debt to total assets they use the difference in the long term debt. In this environment there is no need to scale the variables by total assets and instead the use of the ratio in its original values is

recommended. This can be seen for example, in the study of Eldomiaty (2007) and Kayhan and Titman (2007). However, some studies recommend using the difference but also scaling the ratio as suggested by Leary and Roberts (2010).

Table 3.11: Measures of Market Leverage in Previous Studies

Papers	Variable Ratio	Definition
Chang et al. (2009) Titman and Wessels (1988) Chen and Jiang (2001) Al-Sakran (2001) de Miguel and Pindado (2001) Jandik and Makhija (2001) De Jong et al. (2008) Huang and Song (2006)	LT/MVE	Long term debt to market value of equity.
Chang et al. (2009) Titman and Wessels (1988) Chen and Jiang (2001) Al-Sakran (2001) Barakat and Rao (2003)	ST/MVE	Short term debt to market value of equity.
Chang et al. (2009) Titman and Wessels (1988)	C/MVE	Convertible debt to market value of equity.
Akhtar and Oliver (2009) Akhtar (2005) Bradley et al. (1984)	LTD/LTD+MVE	Long term debt to long term debt plus market value of equity.
Barakat and Rao (2003) Chen et al. (1999) Sbeti (2010) Gaud et al. (2005) Goyal et al. (2002) Jandik and Makhija (2001) Huang and Song (2006)	TD/MVE	Total debt to market value of equity.
Booth et al. (2001)	TDR	Total liabilities divided by total liabilities plus net worth.
Booth et al. (2001)	LTBD	Total liabilities minus current liabilities divided by total liabilities minus current liabilities plus net worth.
Booth et al. (2001) Nagano (2003)	LTMD	Total liabilities minus current liabilities divided by total liabilities minus current liabilities plus equity market value.

Table 3.12: Measures of Book Leverage in Previous Studies A

Papers	Variable Ratio	Definition
Chen and Jiang (2001)	LTD/BTA	Long term debt to book value of assets.
Jairo (2009)		
Al-Ajmi et al. (2009)		
Barakat and Rao (2003)		
Chen (2004)		
Demirguc-Kunt and Maksimovic (1996)		
Zeitun and Tian (2007)		
Omet and Mashharawe (2002)		
Jandik and Makhija (2001)		
Fakher et al. (2009)		
Huang and Song (2006)		
Kakani and Reddy (1998)		
Sogorb-Mira (2005)		
Ba-Abbad and Ahmad-Zaluki (2012)		
Chen and Jiang (2001)	STD/BTA	Short term debt to book value of assets.
Jairo (2009)		
Al-Ajmi et al. (2009)		
Demirguc-Kunt and Maksimovic (1996)		
Barakat and Rao (2003)		
Zeitun and Tian (2007)		
Fakher et al. (2009)		
Kakani and Reddy (1998)		
Sogorb-Mira (2005)		
Ba-Abbad and Ahmad-Zaluki (2012)		
Jairo (2009)	TL/TA	Total liabilities to total assets.
Al-Ajmi et al. (2009)		
Nikolaos and Maria (2007)		
Demirguc-Kunt and Maksimovic (1996)		
Drobetz and Fix (2005)		
Omet and Mashharawe (2002)		
Jairo (2009)	TD/EQ	Total debt to total equity.
Barakat and Rao (2003)		
Chen et al. (1999)		
Zeitun and Tian (2007)		
Jairo (2009)	TD/CAP	Total debt to capital, CAP is defined as total debt plus the market value of equity.
Al-Sakran (2001)		
Drobetz and Fix (2005)		
Zeitun and Tian (2007)		
Fattouh et al. (2008)		
Jairo (2009)	CL/TA	Current liabilities to total assets.
Jairo (2009)	EBITDA/I	EBITDA to interest charge.

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Table 3.13: Measures of Book Leverage in Previous Studies B

Papers	Variable Ratio	Definition
Chen (2004)	TD/TA	Total debt to book value of total assets.
Drobetz and Fix (2005)		
Nikolaos and Maria (2007)		
Sbeti (2010)		
Zeitun and Tian (2007)		
Sheikh and Wang (2011)		
Suhaila and Wan Mahmood (2008)		
Gaud et al. (2005)		
Goyal et al. (2002)		
Jandik and Makhija (2001)		
Fakher et al. (2009)		
Huang and Song (2006)		
Ozkan (2001)		
Sbeti and Moosa (2011)		
Kakani and Reddy (1998)		
Sogorb-Mira (2005)		
Ba-Abbad and Ahmad-Zaluki (2012)		
Drobetz and Fix (2005)	D/NA	Debt to net assets. Where Net assets is total assets minus accounts payable and other current liabilities.
Leary and Roberts (2010)		
Eldomiaty (2007)	D(TD)	Difference in total debt.
Kayhan and Titman (2007)		
Eldomiaty (2007)	D(LTD)	Difference in long term debt.
Eldomiaty (2007)	D(STD)	Difference in short term debt.
Leary and Roberts (2010)	D(TD/TA)	Debt Issuance is Change in total debt divided by total assets
Leary and Roberts (2010)	EQUISSU	Equity Issuance is the Sale of common stock.
Leary and Roberts (2010)	INT	Internal financing is assumed if no issuance is made.

3.11.2 Profitability

In this section we are going to discuss the different measures of profitability as different measures have been used in previous research. There are several reasons for measures to be used based on availability of data and other measures have been used for their linkage with the theory.

The main indicators used heavily in the literature are:

- EBIT/TA is the Earnings Before Interest and Tax (EBIT) to total assets. Which is also called the Return on Total Assets (ROTA).

- ROA Return on Assets (ROA)

- OI/TA Operating Income to Total Assets (OI/TA)

Using the EBIT/TA which is also called the Return on Total Assets (ROA) in the majority of the studies on capital structure is for theoretical reasons. The reason is that this ratio is not subjected to the choice of the firm capital structure. Both the EBIT/Ta and the ROA are similar with the only difference being that we use the net income as the numerator while the latter use EBIT. Despite the use of EBIT and Operating Income being used interchangeably, the difference between the two of them is that the operating income is considered to be Generally Accepted Accounting Principles (GAAP) while the EBIT is a non-GAAP measure.

The main reason for using the OI/TA is studies using the Structural Equation Modelling (SEM) such as Chiarella et al. (1991) and Titman and Wessels (1988) need to use more than one variable to represent the attribute or the proxy for profitability. Also for the same reason they use the variable Operating income to Sales OI/SALES which is also called Return on Sales (ROS). Also, the use of the Return on Equity (ROE) as seen in Table 3.14 is limited because in contrast to the (ROA) it is affected by the firm choice of capital structure.

Table 3.14: Measures of Profitability in Previous Studies

Papers	Variable Ratio	Definition
Chiarella et al. (1991), Chang et al. (2009) Titman and Wessels (1988) Chen et al. (1999) Eldomiaty (2007) Fattouh et al. (2008) Jandik and Makhija (2001) De Jong et al. (2008)	OI/TA	Operating income to Total assets.
Chiarella et al. (1991) Jairo (2009) Drobetz and Fix (2005) Eldomiaty (2007)	OI/SALES	Operating income to Sales.
Chiarella et al. (1991) Chen and Jiang (2001) Zeitun and Tian (2007)	ROE	Return on Owners Equity.
Chen and Jiang (2001)	EBIT/SAL	Ratio of EBIT over sales.
Jairo (2009)	RE/TA	Retained earnings to book value of assets.
Jairo (2009) Barakat and Rao (2003) Chen (2004) Qian et al. (2007) Song (2005) Sheikh and Wang (2011) Nikolaos and Maria (2007) Demirguc-Kunt and Maksimovic (1996) Eldomiaty (2007) Zeitun and Tian (2007) Omet and Mashharawe (2002) Nagano (2003) Fattouh et al. (2008) Gaud et al. (2005) Hijazi and Tariq (2006) Kayhan and Titman (2007) Ozkan (2001) Rajan and Zingales (1995) Wald (1999)	EBIT/TA	Ratio of EBIT to total assets.
Friend and Lang (1988)	NetIncome/SAL	Ratio of average net income to total sales for last 4 years.
Al-Ajmi et al. (2009) Al-Sakran (2001) Sbeti (2010) Booth et al. (2001) Matjaz and Dusan (2009) Drobetz and Fix (2005) Zeitun and Tian (2007) Huang and Song (2006) Rajan and Zingales (1995) Kakani and Reddy (1998) Sogorb-Mira (2005) Ba-Abbad and Ahmad-Zaluki (2012)	ROA	Return to total assets.
Al-Sakran (2001) Eldomiaty (2007)	PM	Profitability margin.
Eldomiaty (2007)	ROI	Return on Investment.
Zeitun and Tian (2007)	TobinQ	Equity Market Value+ Liabilities Book Value divided by Equity Book value + Liabilities book value.
Al-Najjar and Hussainey (2011)	ROCE	Return on Capital Employed.

3.11.3 Firm Size

Firm size is a determinant of capital structure and is widely used in both financial and accounting research. As Table 3.15 shows there is a limited number of variables that are used to represent this attribute. We also see that several studies especially the ones using the SEM approach would use more than one measure.

The most widely used measures are the log of sales Ln(Sales) and the log total assets Ln(TA) obviously for availability of data. On the other hand, a few studies such as Eldomiaty (2007) suggest instead of using the logarithmic treatment of the assets or the revenues to use a dummy variable. An example of such treatment is to classify firms into 3 or 4 dummy variables based on the size of the firm.

On the other hand, Chen and Jiang (2001) use the SEM approach and thus need more than one measure of the firm size determinants and so used the following:

- Ln(Sales) Logarithmic transformation of sales

- Ln(Worker) Logarithmic transformation of number of workers

- Ln(MV) Logarithmic transformation of market value

Furthermore, Titman and Wessels (1988) attempt to use the SEM forced them to find alternative measures of firm size. Therefore, they suggested the use of the quit ratio. The reason for using this measure is that it reflects the idea that large firms would have lower quit rates due to the broader carrier opportunities.

Several issues might be the reason behind trying to use different measures. For example, Jairo (2009) stated that they attempted to use both the Ln(TA) and Ln(Sales) but due to the high correlation between these two measures it was not possible.

Table 3.15: Measures of Firms Size

Papers	Variable Ratio	Definition
Chiarella et al. (1991)	Ln(Sales)	Natural Log of Sales.
Sheikh and Wang (2011)		
Chen and Jiang (2001)		
Jairo (2009)		
Barakat and Rao (2003)		
Drobetz and Fix (2005)		
Booth et al. (2001)		
Buettner et al. (2009)		
Chen et al. (1999)		
Matjaz and Dusan (2009)		
Nikolaos and Maria (2007)		
Nikolaos and Maria (2007)		
Song (2005)		
Qian et al. (2007)		
Omet and Mashharawe (2002)		
Nagano (2003)		
Suhaila and Wan Mahmood (2008)		
Mac an Bhaird and Lucey (2007)		
Fattouh et al. (2008)		
Gaud et al. (2005)		
Hijazi and Tariq (2006)		
Jandik and Makhija (2001)		
Huang and Song (2006)		
Kayhan and Titman (2007)		
Ozkan (2001)		
Rajan and Zingales (1995)		
Chen and Jiang (2001)	Ln(Workers)	Natural log of number of workers.
Song (2005)		
Chen and Jiang (2001)	Ln(MV)	Natural log of the market value.
Jairo (2009)	Ln(TA)	Natural log of total assets.
Friend and Lang (1988)		
Akhtar (2005)		
Al-Ajmi et al. (2009)		
Al-Sakran (2001)		
Chen (2004)		
Eldomiaty (2007)		
Sbeti (2010)		
Fattouh et al. (2008)		
Goyal et al. (2002)		
Fakher et al. (2009)		
De Jong et al. (2008)		
Frank and Goyal (2009)		
Leary and Roberts (2010)		
Sbeti and Moosa (2011)		
Wald (1999)		
Kakani and Reddy (1998)		
Sogorb-Mira (2005)		
Al-Najjar and Hussainey (2011)		
Titman and Wessels (1988)	QR	Quit Ratio
Eldomiaty (2007)	Dum(SIZE)	Dummy Variable

3.11.4   Growth Opportunities

Growth opportunities are the growth potential the firms have in the future based on the past growth that the firm experienced. Jensen and Meckling (1976) suggest that managers or owners of firms with 100% debt financial structure would have an incentive to engage in investments which promise extremely high returns to pay-out if the investment is successful even if there is a low probability of success. In this case if the investment is successful then the owner or manager will take all the gains and in the case of failure the debt holders will be responsible for all the losses.

As Table 3.16 shows there are many variables of growth opportunities used in the capital structure literature especially and in the corporate finance literature in general. The three ratios which were used are the following:

- GTA is the growth in total assets as a percentage.

- MTB is the market value to book value ratio.

- MBA is the market to book values of assets ratio.

Furthermore, the percentage of change in total assets (GTA) and percentage of change in sales (GSA) are the growth of the firms as a percentage. Also, another treatment of the (GSA) is using the average of the (GSA) as employed by Chen and Jiang (2001) and Chen et al. (1999). In addition, Chen (2004) suggested the use of a combination of the two measures by using the GSA to GTA (GSA/GTA).

However,Goyal et al. (2002) and Wald (1999) suggested the used of the Research and Development (R&D) either to total assets or sales.Titman and Wessels (1988) argue that normally firms would fund the (R&D) to create future investments.

Table 3.16: Measures of Growth Opportunities

Papers	Variable Ratio	Definition
Chang et al. (2009)	GTA	Percentage of change in total assets.
Jairo (2009)		
Al-Sakran (2001)		
Eldomiaty (2007)		
Song (2005)		
Fakher et al. (2009)		
Chen and Jiang (2001)		
Eldomiaty (2007)		
Fattouh et al. (2008)		
Wald (1999)		
Kakani and Reddy (1998)		
Chiarella et al. (1991)	AVGTA	Average growth rate of total assets.
Hijazi and Tariq (2006)		
Chen and Jiang (2001)	GSA	Percentage of change in Sales.
Chen et al. (1999)		
Eldomiaty (2007)		
Fattouh et al. (2008)		
Chang et al. (2009)	MBE or MTB	Market to book equity.
Friend and Lang (1988)		
Barakat and Rao (2003)		
Booth et al. (2001)		
Chen et al. (1999)		
Drobetz and Fix (2005)		
Eldomiaty (2007)		
Goyal et al. (2002)		
Jandik and Makhija (2001)		
Frank and Goyal (2009)		
Chang et al. (2009)	MBA	Market to book assets.
Jairo (2009)		
Nagano (2003)		
Gaud et al. (2005)		
Goyal et al. (2002)		
De Jong et al. (2008)		
Leary and Roberts (2010)		
Ozkan (2001)		
Rajan and Zingales (1995)		
Sheikh and Wang (2011)	GSA/GTA	Growth of sales by growth of total assets.
Chen (2004)		
Titman and Wessels (1988)	CE/TA	Capital Expenditure to Total assets.
Chang et al. (2009)		
Jairo (2009)		
Eldomiaty (2007)		
Goyal et al. (2002)		
Frank and Goyal (2009)		
Shyam-Sunder and C. Myers (1999)		
Titman and Wessels (1988)	R&D/TA	Research and Development to total assets.
Goyal et al. (2002)		
Chang et al. (2009)	R&D/Sales	Research and Development to sales.
Jairo (2009)		
Bradley et al. (1984)		
Mac an Bhaird and Lucey (2007)		
Kayhan and Titman (2007)		
Chen and Jiang (2001)	Ln(MTB)	Natural log of market to book ratio.
Jairo (2009)	TobinQ	TobinQ ratio
de Miguel and Pindado (2001)		
Qian et al. (2007)		
Huang and Song (2006)		
Sbeti and Moosa (2011)		
Nikolaos and Maria (2007)	AVGEARN	Annual percentage change on Earnings.
Suhaila and Wan Mahmood (2008)		
Eldomiaty (2007)	ASTURN	Assets turnover = Sales/Total Assets
Goyal et al. (2002)	EPR	Earning to price ratio.

3.11.5 Tangibility of Assets

Also called the collateral value of assets; it is about the type of assets the firm holds and its relation to the firm capital structure. In the trade-off theory as explained by Myers (1977) and Jensen and Meckling (1976), firms can use their assets as collateral to secure debt at a lower cost in comparison to the issuance of equity. Therefore, firms with high value assets are expected to issue more debt to utilize this chance. As Table3.17, the following are the main indicators used in the empirical literature:

- FA/TA Fixed assets to total assets.

- TangA/TA which is the tangible assets to total assets book value. The difference with the previous measure is that in this measure it includes inventories.

- INVP/TA is the inventory and gross plant and equipment value to total assets.

Furthermore, one of the measures suggested and used by Titman and Wessels (1988) and Jairo (2009) is the use of intangible assets to total assets. The intangible assets are assets which are not physical in nature such as trademarks, copyrights and brand recognition. In addition, a measure suggested by Booth et al. (2001) is to use the fixed assets to total assets.

One of the issues of using tangibility is that there is a difference between industries in terms of their fixed assets. For example, a firm in the utilities industry is expected to have more fixed assets in comparison with a software company. According to Booth et al. (2001) it is expected that the influence of tangibility will differ between the long-term debt and the total debt ratios. They also find that the tangibility of assets is similar across countries with about 40% in a sample of 10 developing countries.

Table 3.17: Measures of Assets Tangibility

Papers	Variable Ratio	Definition
Chiarella et al. (1991)	INVP/TA	Inventory and gross plant and equipment to total assets.
Chang et al. (2009)		
Jairo (2009)		
Al-Ajmi et al. (2009)		
Jandik and Makhija (2001)		
Wald (1999)		
Titman and Wessels (1988)	IA/TA	Intangible assets to Total assets.
Jairo (2009)		Sogorba used it as a growth measure.
Sogorb-Mira (2005)		
Chen and Jiang (2001)	FA/TA	Fixed assets to total assets.
Jairo (2009)		
Akhtar (2005)		
Matjaz and Dusan (2009)		
Demirguc-Kunt and Maksimovic (1996)		
Eldomiaty (2007)		
Drobetz and Fix (2005)		
Zeitun and Tian (2007)		
Sheikh and Wang (2011)		
Song (2005)		
Qian et al. (2007)		
Omet and Mashharawe (2002)		
Nagano (2003)		
Fattouh et al. (2008)		
Hijazi and Tariq (2006)		
Fakher et al. (2009)		
De Jong et al. (2008)		
Huang and Song (2006)		
Kayhan and Titman (2007)		
Rajan and Zingales (1995)		
Sbeti and Moosa (2011)		
Kakani and Reddy (1998)		
Al-Najjar and Hussainey (2011)		
Ba-Abbad and Ahmad-Zaluki (2012)		
Akhtar and Oliver (2009)	TangA/TA	Tangible assets to total assets in book value.
		The tangible assets include sum of fixed assets and inventories.
Friend and Lang (1988)		
Barakat and Rao (2003)		
Chen (2004)		
Chen et al. (1999)		
Nikolaos and Maria (2007)		
Sbeti (2010)		
Frank and Goyal (2009)		
Sogorb-Mira (2005)		
Booth et al. (2001)	TA-CA/TA	Total assets-current assets divided by total assets.
Leary and Roberts (2010)	Tang	net property plant and equipment.

3.11.6 Liquidity

Another key determinant of capital structure is the firm liquidity, which is represented by different measures as presented in Table3.18. The main ratios used in the empirical literature are:

- CR which is the current ratio calculated as current liabilities divided by current assets.

- QR which is the quick ratio calculated by subtracting inventories from current assets and dividing them by current liabilities.

Table 3.18: Measures of Liquidity

Papers	Variable Ratio	Definition
Al-Ajmi et al. (2009)	CL/CA	Current ratio current liabilities to current assets.
Sbeti (2010)		
Sheikh and Wang (2011)		
Omet and Mashharawe (2002)		
De Jong et al. (2008)		
Eldomiaty (2007)	QR	Quick ratio.
Nikolaos and Maria (2007)		
Suhaila and Wan Mahmood (2008)		
Eldomiaty (2007)	WCR	Working capital ratio
Eldomiaty (2007)	CR	Current ratio.
Ozkan (2001)		
Sbeti and Moosa (2011)		
Eldomiaty (2007)	CashR	Cash ratio.

Furthermore, Ozkan (2001) stated that the liquidity ratios relations with the leverage have mixed results; the study stated that it is expected that firms with high liquidity ratios would be encouraged to have higher debt ratio since they are able to pay their short-term obligations when they occur. From that we could conclude that the relation is positive but firms with high liquidity ratios might use their cash to finance their investments and thus would not issue more debt and therefore the relation would be inverse.

Furthermore, Myers and Rajan (1998) argued that it is established in the literature discussed in the previous paragraph that firms have an easier task trying to raise external debt against their liquid assets. However, their findings show that liquidity could have a negative effect and can reduce the amount of external debt a firm can raise. In addition, firms with high liquid assets have a higher probability of investing in illiquid projects.

3.11.7 Volatility or Risk

This is a measure of the financial distress and the agency costs are higher with increased volatility of the stock returns. The trade-off theory for that reason suggests a negative relation between the volatility and leverage. Also the pecking-order theory proposes the same relation. As suggested by DeAngelo and Masulis (1980), the investors cannot predict the future returns and therefore the view is that firms with high earnings volatility are bought with caution and the holders of these firms would require a higher return.

The recommended measure used by Jandik and Makhija (2001) and De Jong et al. (2008) is the standard deviation of the percentage change in operating income (STDGOI). However, this measure is not always possible to construct as data of operating income are not always available per quarter especially in the developing markets. For that researchers use several alternatives for this measure which include the standard deviation of the share price as used by Frank and Goyal (2009) and Jairo (2009). Another measure which is suggested by Al-Najjar and Hussainey (2011) and that is mainly used in accounting research is the Beta coefficient and in some cases the Alpha coefficient.

Chen and Jiang (2001) did a SEM study and therefore used two measures as proxies for earning volatility which were logarithmically transformed and these are:

- Ln(STDNI) which is the log of the standard deviation of net income.

Table 3.19: Measures of Risk

Papers	Variable Ratio	Definition
Chang et al. (2009)	(STDGOI)	Standard deviation of the percentage change in operating income.
Jairo (2009)		
Bradley et al. (1984)		
Helwege and Liang (1996)		
Jandik and Makhija (2001)		
De Jong et al. (2008)		
Sbeti and Moosa (2011)		
Chang et al. (2009)	(CV(ROA))	the coefficient of variation of ROA
Qian et al. (2007)		
Kakani and Reddy (1998)		
Chang et al. (2009)	(CV(ROE))	the coefficient of variation of ROE
Chang et al. (2009)	(CV(OITA))	coefficient of variation of operating income to total assets
Jairo (2009)	(CV(EBITDA))	Coefficient variation of EBITDA.
Chen and Jiang (2001)	Ln(STDNI)	Log of standard deviation of net income.
Chen and Jiang (2001)	Ln(STDEBIT)	Log of standard deviation of EBIT.
Al-Ajmi et al. (2009)		
Qian et al. (2007)		
Huang and Song (2006)		
Leary and Roberts (2010)		
Jairo (2009)	STDSP	Standard deviation of share price.
Frank and Goyal (2009)		
Barakat and Rao (2003)	SDOE/TA	Standard deviation of earning scaled by total assets.
Drobetz and Fix (2005)		
Sheikh and Wang (2011)		
Song (2005)		
Gaud et al. (2005)		
Wald (1999)		
Matjaz and Dusan (2009)	STDROA	Standard deviation of Return on Assets.
Al-Najjar and Hussainey (2011)	BETA	Beta of the Firm.

- Ln(STDEBIT) which is the log of standard deviation EBIT.

On the other hand, Chang et al. (2009) also used a SEM approach and used four measures of volatility and these in addition to the (STDGOI) are:

- CV(ROA) which is the coefficient of variation of ROA.

- CV(ROE) which is the coefficient of variation of ROE.

- CV(OITA) which is the coefficient of variation of OI to TA.

3.11.8   Tax Considerations

Tax considerations are the motivation and the cornerstone of both the Irrelevance theory of Modigliani and Miller (1958) and the starting point of the trade-off theory. As stated by the trade-off theory, firms will use the deductibility of the interest payments to reduce their tax payments. MacKie-Mason (1990) states that they clarified the relation between the debt policy and the tax shields. This study states that the motivation of using debt for firms is linked positively with the effective marginal tax.

Furthermore, DeAngelo and Masulis (1980) linked the non-debt tax shields with variation in the debt policy. They argued that each firm has its own internal optimal capital structure based on the tax shield substitutes such as depreciation and investments credit in the presence of tax. Furthermore, Baker and Wurgler (2002) state that Ross (1985) argues that if a firm issues debt excessively they would be tax drained which means that they could not utilize their maximum tax shield. Then debt would be kicked out and the motivation to use debt vanishes as the non-debt tax shield increase.

On the other hand, Scott (1977) debates that a significant non-debt tax shield would have large tangible assets that could be used as collateral to secure debt. As Table3.20 shows, different measures were used in the literature but the main one is the depreciation to total assets ratio. The trade-off theory suggests a negative relation between the leverage and the non-debt tax shield. This relation is proved empirically by Ozkan (2001), Sogorb-Mira (2005) and Titman and Wessels (1988).

Table 3.20: Measures of Tax

Papers	Variable Ratio	Definition
Chiarella et al. (1991)	DEP/TA	Ratio of depreciation to Total assets.
Chang et al. (2009)		
Jairo (2009)		
Friend and Lang (1988)		
Akhtar (2005)		
Bradley et al. (1984)		
Chen (2004)		
Demirguc-Kunt and Maksimovic (1996)		
Drobetz and Fix (2005)		
Eldomiaty (2007)		
Sheikh and Wang (2011)		
Song (2005)		
Qian et al. (2007)		
Fattouh et al. (2008)		
Jandik and Makhija (2001)		
Frank and Goyal (2009)		
Huang and Song (2006)		
Ozkan (2001)		
Wald (1999)		
Sogorb-Mira (2005)		
Drobetz and Fix (2005)	DEP/OP	Ratio of depreciation to operating profit.
Titman and Wessels (1988)	OI-i-T/0.42	Income tax payment (T) Operating income (OI) . Interest payments (i) and the corporate tax rate during the sample (%42)
Jairo (2009)		
Eldomiaty (2007)		
Chang et al. (2009)	NDT/TA	Ratio of non-debt tax shield to total assets.
Jandik and Makhija (2001)		
Kakani and Reddy (1998)		
Chang et al. (2009)	ITC/TA	Ratio of investment tax credit to total assets.
Jandik and Makhija (2001)		
Frank and Goyal (2009)		
Barakat and Rao (2003)	DTAX	Dummy variable for presence of corporate tax.
Barakat and Rao (2003)	MTR	Marginal tax rate.
Booth et al. (2001)	AVGTAX	The average tax rate is estimated from before- and after-tax income.
Huang and Song (2006)		
de Miguel and Pindado (2001)	EBIT-TaxP/TaxR	Earnings before interest and tax .
Eldomiaty (2007)	ECTR	The effective corporate tax rate. Which is (estimated taxable profits x corporate tax rate)/(pre-tax profits).
Zeitun and Tian (2007)	TAX	Total tax to earnings before interest and tax.
De Jong et al. (2008)		
Sogorb-Mira (2005)	ETR	Effective tax rate which is the taxes to EAIBT.

3.11.9   Uniqueness

The first study to suggest the uniqueness as a determinant of capital structure was by Titman and Wessels (1988). The main argument is that firms who produce specialized products in the case of their liquidation would cause their customers, workers and suppliers to suffer greatly. Also the fact that their workers and supplier have a special set of skills and their customers would suffer in finding another company to offer this service. Therefore, they suggested that firms would have a negative relationship between debt and uniqueness.

Table 3.21: Measures of Uniqueness

Papers	Variable Ratio	Definition
Chang et al. (2009)	R&D/S	Research and Development to sales.
Song (2005)		
Kayhan and Titman (2007)		
Al-Najjar and Hussainey (2011)		
Drobetz and Fix (2005)	R&D DUM	Dummy variable if firms report R&D expenditure.
Eldomiaty (2007)	SES	Selling expenses over sales.
Kayhan and Titman (2007)		
Kakani and Reddy (1998)	UNIQDUM	Dummy 1 unique and 0 not unique.

As 3.21 shows there are a few studies which use the uniqueness as a determinant of capital structure. The main measure of the uniqueness is the Research and Development (R&D) expenses as argued by Titman and Wessels (1988). The reason for choosing R&D is that firms with substitute replacement for their product will not invest heavily on creating a new product because their products could be duplicated without difficulty. In addition, as argued by Titman and Wessels (1988) and empirically tested by Eldomiaty (2007) the use of selling expenses to sales is a measure of uniqueness because it is expected that firms with new products would spend more on advertising and promoting their unique products. It is expected that the relation between debt and uniqueness will be negative.

3.11.10 Dividends

The dividends factor is a very important determinant of capital structure especially for the pecking-order theory. Since the pecking-order theory as explained by Myers (1984) states that firms would issue internal funds then debt then equity it is expected that the relationship between the debt and the dividends is positive because firms who pay high dividends would not have enough internal generated cash and thus would require to take debt to finance investments as presented by the study of Baskin (1989).

On the other hand, Frank and Goyal (2009) divide the sample of their study into different sub samples in order to test the theory that firms who are constrained by either size, dividends paying status and market-to-book ratio have different determinants of capital structure. Their findings conclude that these factors are not significantly important and that financing constraints measured by these measures have no effect.

Table 3.22: Measures of Dividends

Papers	Variable Ratio	Definition
Al-Ajmi et al. (2009)	DPR	Dividend pay-out ratio
Barakat and Rao (2003)		
Eldomiaty (2007)		
Sbeti and Moosa (2011)		
Demirguc-Kunt and Maksimovic (1996)	DIV/TA	Dividends to total assets.
Shyam-Sunder and C. Myers (1999)	DIV	Dividends payments

Furthermore, empirical evidence by Al-Ajmi et al. (2009) and Ben Naceur et al. (2006) find that there is a negative relationship between leverage and dividends payments. On the other hand, Al-Najjar (2008) finds that there is no significant relation between the dividends policy (dividend pay-out ratio) and the leverage of the firm in Jordanian firms.

As Table 3.22 shows, there is a limited number of measures that are used to

represent the dividends proxy. There is the dividend pay-out ratio which is defined as the dividends to net income. A few studies use the dividends amount as a percentage of total assets such as Demirguc-Kunt and Maksimovic (1996). Also as discussed before a few firms would use a dummy variable to distinguish dividend paying firms from non-paying firms.

3.11.11   Industry Classification

The industry the firm is in has an impact on the leverage of the firm simply based on the business needs of the business. Studies in capital structure have empirically tested these effects and mainly find that they do have an impact on the firm leverage level and on the decision of the capital structure choice. As argued by Frank and Goyal (2009) and stated by Baker and Wurgler (2002) there are two reasons for this impact which are:

- managers or owners use the median leverage of the industry as a benchmark for their own firm capital structure decisions.

- the existence of a set of attributes which are correlated but omitted and therefore cause this relation with leverage.

Furthermore, Frank and Goyal (2009) also add that the idea of using the average as a benchmark for firms contributed in adding the industry mean as a proxy for target capital structure studies. They also added that the reason of such an effect might be that firms face the same forces and shocks and therefore would make correlated financial structure decisions and therefore industry factors do not have a straight relation to leverage. They also added that under the trade-off theory the relation is positive between the median leverage and the firm debt. On the other hand, the pecking order theory has no direct link and the industry should only matter if it does serve as a proxy for the firm finance deficit.

In addition, Harris and Raviv (1991) review the literature based on the industry studies and documented that leverage ratios are high in industries and low in others. The overall picture is that the drugs, cosmetics, instruments, electronics, metal mining, food and machinery would have a low leverage. On the other hand, industries such as construction, metal working, chemicals and petroleum have a medium or high leverage. Moreover, Lemmon et al. (2008) test the effect of the industry mean leverage and find that it is significant and has a high impact on the decision of capital structure.

3.11.12 Ownership Structure

As argued by Jensen and Meckling (1976) and Jensen (1986) the agency theory states that manager ownership and the use of debt would reduce the agency costs facing firms. Lee and Kuo (2014) empirical results are in line with the agency theory and find that manager's ownership and debt are tools to reduce the agency costs. Furthermore, Chaganti and Damanpour (1991) find that firms owned heavily by an institution would have low debt to capital ratios which would suggest a negative relationship. Lee and Kuo (2014) also find that the presence of an ultimate ownership could serve as a discipliner to the managers decisions. In addition, Al-Najjar (2008) finds that there is a negative relation between institutional ownership and leverage which supports the results of Lee and Kuo (2014). On the other hand, King and Santor (2008) study the link between family ownership and leverage and find that family owned firms with a single share class have higher leverage than other firms. These findings were also verified by both Michaely and Vincent (2012) and Al-Ajmi et al. (2009).

In addition, government ownership is considered an important ownership structure variable. A study by Qian et al. (2007) finds that there is a negative relationship between leverage and state ownership. There are two ways of measuring the own-

ership structure relation with leverage. The first one is the use of a dummy variable for the ultimate owner based on the percentage of shares they own. The second one is the use of the share in percentage. Both measures and other measures are presented in Table 3.23.

Table 3.23: Measures of Ownership Structure

Papers	Variable Ratio	Definition
Al-Ajmi et al. (2009)	Government_Dum	A dummy variable if the largest shareholder own 10%.
Al-Ajmi et al. (2009)	Families_Dum	A dummy variable if the largest shareholder own 10%
Mac an Bhaird and Lucey (2007)	Institution_Dum	
Huang and Song (2006)		
Al-Sakran (2001)	Government	The share of the government ownership in the firm.
Huang and Song (2006)	MANAG	Managerial ownership is the shareholding of directors, supervisors and management.
Al-Najjar and Hussainey (2011)	CHS	Closely Held Shares.
Al-Najjar and Hussainey (2011)	NEXDR	Percentage of non-executive directors on the board.
Al-Najjar and Hussainey (2011)	DRCTR	Number of executive and non-executive directors on the board.

3.11.13   Credit Rating

Credit rating is an evaluation tool to choose stocks and bonds issued by corporation and firms. Firm managers' main goal should be to maximize the firms value regardless of other factors. However, a study by Kisgen (2006) shows that firms managers care about their credit rating. The findings of the study state that firms near an upgrade in their rating or a downgrade would prefer not to issue debt in comparison with firms which are not near a change in their credit rating.

On the other hand, Lemmon and Zender (2010) suggest that firms would finance their activities through equity and hence issue less debt if their access to the debt market is restricted. The pecking order theory would suggest that firms with a credit rating will use less debt and more equity due to the fact that these firms experience a lower degree of information asymmetry as discussed by Baker and Wurgler (2002).

Generally, there are two measures of credit rating (debt rating in some cases)

and these are:

- Coding the credit rating into a number.

- Create dummy variables for firms near an upgrade or downgrade.

3.12 Summary

This chapter started with an overview of the main capital structure theories theoretically. Then discussed the classification of the MENA countries. From the review of the capital structure around the world some observations are made. Cross country comparison studies are not unified in terms of the leverage definition they use. Also, these studies are done only using the Panel data models and rare have applied other approaches. Furthermore, these studies focused on the classic determinants of capital structure and only few did try for example to investigate the relation between leverage and credit rating in cross country comparison studies.

Moreover, studies that were done in the developed countries test one theory in place of another one, which might lead to confusing results as these studies are not comparable. Also, studies in the developed countries ignore firms which are regulated and in some cases small firms. However, studies in the developing countries have a different story. Size is an important in the majority of the studies and the use of the market leverage as a dependent variable is rare. In addition, as the case of the cross country comparison studies few attempted to use different approaches such as the (SEM) and (ANN).

Additionally, studies in the MENA countries focus on one country analysis with a few exception. None of the studies in the MENA country used the credit rating as a determinants of capital structure. Also, no study used the other approaches.

This study will fill in the gaps in the literature in several ways. First, by using three approaches this study will be deep enough to judge which of them is most

appropriate to use in the study of MENA countries capital structure. Also, this study will use both market and book leverage to test the relation with the determinants. In addition, this study use both the non-financial and financial firms. To sum up in this chapter we explore studies around the world. Then, the widely used methods to study capital structure were presented with the major features and their weaknesses. Finally, a detailed examination of the measures and variables used in the empirical studies in the literature was made.

Part II

Methodology

Chapter 4

Methodology and Data Description

4.1 Introduction

In the previous chapters we discussed the background, theoretical and empirical literature for capital structure in the MENA region. Taking into consideration the previous chapters we study the data of interest and the methodology approach to use. This chapter is structured as follows: section 5.2 present the data description, section two, three and four discuss the different approaches used in this study. After that section six would show the descriptive statistics and section seven will show the correlation matrix. Section eight will include the factors loading and finally section nine will provide a summary of the theoretical predictions for the theories used in this study.

4.2 Data Description

The sample of this study will be based on the MENA Countries. The data is obtained from Blomberg and Bankscope for the majority of the proxies we used. However, several proxies data were not available and therefore we acquired them from the financial statements. This study use data from different sources. First, we use the Bloomberg data base for the majority of the data for the Non-Financial firms in the countries in the MENA countries. Second, we use the Bankscope for

the data about the credit rating for the Financial firms (banks) and for the ownership structure data. This study will use both the non-financial firms and banks listed in the MENA countries. The period of this study is for the years 2006, 2007, 2008, 2009,2010,2011,2012 and 2013. On the other hand, Lebanon, Palestine and Turkey are used partially, only the financial banks are used. This is due to the fact that there is only 12 non-financial firms in Palestine and 4 firms In Lebanon. Due to unavailability of data the following countries were excluded totally from the study:

1. **Algeria**: The reason for excluding Algeria is that it does only have 4 listed firms in the stock market.

2. **Iran**: No data is available in any data base for the firms in Iran.

3. **Iraq** The collapse of the Iraqi regime caused the stock market to closed and then start a new one.

4. **Libyia**: Several reasons did force the exclusion of Libyan firms from the study. First, for the years 2011 until now the country is in conflict as the results of the Arab uprising. Second, the number of firms listed in the Libyan stock market is only 10 firms in which 6 are banks and 4 are insurance firms.

5. **Syria**: Although there is stock exchange in Syria, the current conflict and the civil war makes it unreasonable to study. The Syrian regime is hit by economic sanctions by almost all the countries in the world.

6. **Yemen**: There is public stock exchange in Yemen. The financial sector is underdeveloped and it is not possible to get data about the firms.

Table 4.1: Banks Sample by country

Country of Origin	Total Assets	Loans	Islamic Banks	Conventional Banks	Total
Bahrain	96298	37.07	6	8	14
Egypt	175237	60.3	3	8	11
Jordan	118152	53.31	1	10	11
Kuwait	194671	112.12	4	6	10
Lebanon	159973	46.65	0	6	6
Morocco	45162	60.16	0	6	6
Oman	54347	37.8	0	6	6
Palestine	468	0.19	1	6	7
Qatar	180805	114.55	3	5	8
Saudi Arabia	435121	253.97	4	7	11
Tunisia	3489	1.9	0	11	11
Turkey	730278	432,572	2	15	17
UAE	421446	266.57	6	14	20
Total	2615454	433616.6	30	108	138

4.3 Variables used in the thesis

The following table shows the variables selected for this study. Choice of these variables is based on the previous studies. However, several challenges did occur when selecting the variables to present each determinants of capital structure. The main challenge is the availability of data and therefore few variables were dropped. For example, an important factor is the uniqueness as suggested by Titman. Furthermore, the tax variable which represent the non-debt tax shield is only presented by one variable in the SEM approach due to unavailability of other measures. Also, credit rating data is not available for the non-financial firms and therefore was dropped from the analysis.

Moreover, it is notable that firms in the MENA countries don't report their Research and Development expense and therefore this measure is dropped from the growth variables. Also, TobinQ is only available for the past year and therefore was also dropped. The table show the variables used and their formulas which were extracted from the literature review chapter.

Table 4.2: Variables Used in the Thesis

Variable	Name	Formula
Profitability		
1	Return on Assets.	Net Income / Total assets.
2	Return on Equity	Net Income/ Common Equity.
3	Return on Sales or Profit Margin	Net Income/Net Sales
4	Operating Income to Total Assets	Operating Income/Total assets
5	Operating Income to Total Sales.	Operating Income/Total Sales
6	EBIT to Sales	EBIT/SALES
7	EBIT To Total assets	EBIT/TA
8	Tobinq	
Size		
1	Log of Sales	Ln(Sales)
2	Log of Total assets.	Ln(TA)
3	Log of Number of Workers	Ln(Workers)
4	Log of Market Value	Ln(MV)
5	Quit Rate	QR
Growth		
1	Growth of Total assets	GTA
2	Growth of Total Sales	GTS
3	Market to Book ratio	MTB
4	Capital Expenditures to Total assets.	CE/TA
5	Research and Development to Total assets.	R&D/TA
6	Research and Development to Sales	R&D/SAL
7	TobinQ	
Tangibility		
1	Inventory and gross plant and equipment to total assets.	INVP/TA
2	Intangible assets to Total assets.	IA/TA
3	Fixed Assets to Total Assets	FA/TA
4	Tangible assets to Total Assets.	Tang/TA
5	Net Property and plant and Equipment.	NPP&E
Tax		
1	Depreciation to Total assets.	DEP/TA
2	Depreciation to Operating income.	DEP/OP
3	Investment Tax Credit to Total Assets.	ITC/TA
4	Non Debt tax shield to Total Assets.	NDTS/TA
Risk or Volatility		
1	Standard Deviation of Share Price	STDV(PE)
2	Beta	BETA
3	Standard Deviation of ROA	
4	Standard Deviation of ROE	
Dividends		
1	Dividends amount to Total assets	DIV/TA
2	Dividends payout ratio.	DPR
3	Dividends payment amount	DIV
Cash Flow		
1	Cash and Bank deposits and marketable securities to Long Term debt.	CA/CD
2	Cash and Bank deposits and marketable securities to Total assets.	CA/TA
3	Cash and Bank deposits and marketable securities to current debt.	CA/CD
4	EBIT plus depreciation and amortization to Total assets.	EBIT+DEP+AMOR/TA
Uniqueness		
1	Research and Development to Sales	R&D/Sales
2	Research and Development Dummy	R&D DUM
3	Selling expenses to Sales.	SE/SAL
Liquidity		
1	Current Ratio	Current Liabilities/Current Assets
2	Quick Ratio	(Current Assets−Inventories)/Current Liabilities
3	Cash Ratio	Cash and Cash Equivalent/Current Liabilities.
4	Working Capital Ratio	Current Assets / Current Liabilities

4.4 Panel Data Analysis

The panel data is also called longitudinal data - is a multi-dimension data which contains observation on several phenomenas which are observed over multiple periods of time. In our study we observe the financial ratios representing different companies over a period of time which is measured on yearly bases. The advantages if using the panel data instead of using other types of data such as cross-section and time series data as listed by Baltagi (1995) are:

1. Panel data enable controlling for individual heterogeneity,

2. Panel data combine time series and cross-section observations, so it will include more informative data, more variability, less collinearity among variables , more degrees of freedom and more efficiency.

3. Panel data are better suited to study the dynamic of change.

4. Panel data is better in detecting and measuring effects that cannot be observed normally in cross section or time sires data.

5. Panel data models allow us to construct and test more complicated behavioral model than purely cross-section or time series data.

6. Panel data are usually gathered at micro units, which could result in more accurate variables.

The panel data model take the following format as suggested by Gujarati and Porter (2009) :

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + u_{it} \ \ i = 1, ..., N; t = 1, ..., T \qquad (4.1)$$

where i denotes the cross-sectional unit and t denotes the time-periods. In our model the i denotes the company and t denotes the year. If each i have the same number of time observations then the panel data is called balanced data. On the other hand, if the number is less or more then it is called unbalanced data. The

data in our sample is balanced data unless we mention otherwise.

4.4.1 Fixed Effects Models:

Before using the we should chose the assumption we make about the intercept, the slope coefficients, and the error term $u_i t$. In this study we use two variations of the fixed effects. Which are namely:

1. **Pooled Model**: It is also called the population averaged model. The assumption is that all the coefficients are constant across time and firms. In this approach we disregard the time and the space dimensions which are the main features of panel data and simply pool the data to estimate a regular OLS. The formula for the OLS regression model is :

$$Y_{it} = \alpha + X'_{it}\beta + u_{it} \ \ i = 1, ..., N; t = 1, ..., T \tag{4.2}$$

Where, In the pooled model the u_{it} which is the disturbance model can be explained as :

$$u_{it} = \mu_i + v_{it} \tag{4.3}$$

Where μ represents the cross-section disturbance and the v_{it} are the rest of the effects.

2. **Fixed effect Model** : Also called the Least-Square Dummy Variable (LSDV), If we assume the slope coefficients are constant but the intercept is varies across firms. This model takes into account the individuality of the each firm by letting the intercept vary for each firm but in the same time the slope coefficients are constant across all the firms.

$$Y_{it} = \alpha_i + \beta'X_{it} + \epsilon_{it} \tag{4.4}$$

As the equation show the intercept term α does have a subscript i which would mean that the intercept for each firms can be different. This model is a special case of the Ordinary Least Square (OLS) but it includes dummy variables for each firm. These dummy variables are differential intercept dummies, where each dummy would take a value of 0 or 1 based on the group. As the following equation:

$$Y_{it} = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \alpha_4 D_{4i} + \beta_2 X_{2it} + \beta_3 X_{3it} \ \mu_{it} \qquad (4.5)$$

Where D_{2i} = 1 if this observation belongs to group A and 0 other wise, D_{3i} =1 if the observation belongs to Group B and 0 otherwise.

.

4.4.2 Random Effects Models

The second approach to test panel data is using the Random Effects models. Although it is undemanding to apply the fixed effect, it comes with a large cost which is the loss of degrees if freedom. The main advantage of the (REM) is that it could be used with time invariant variables such as gender or dummy variables.In this model the α_i is considered to be a random variable instead of fixed and the mean value is α. The intercept for the individual firm in this model is expressed as:

$$\alpha_i = \alpha + \epsilon_i, \ \ i = 1, ..., N \qquad (4.6)$$

Thus, the Random Effects Model (REM) would be expressed by substituting

equation 4.6 into equation 4.1 and the model would be as follow:

$$
\begin{aligned}
Y_{it} &= \alpha_i + \beta' X_{it} + \epsilon_t + \mu_{it} \\
&= \alpha_i + \beta' X_{it} + \nu_{it}
\end{aligned}
$$

(4.7)

where,

$$
\nu_{it} = \epsilon_t + \mu_{it}
$$

(4.8)

Gujarati and Porter (2009) suggest that ν_{it} is the composite error term. It contains two error components which are:

1. ϵ_t is the firm specific error component. This error term cannot be detected directly and it is known to be latent variable or (unobservable).

2. μ_{it} is the combined firm specific error and the time series error.

As the previous sections show that both the (FEM) and (REM) could be used in the case of this study. One way to decide which model is more suitable and appropriate is to use the Hausman test. The null hypothesis of the test is that the FEM and REM do not differ significantly. If the null hypothesis is accepted then we could conclude that using the REM is more appropriate. On the other hand, of the hypothesis is rejected then we can't use the REM and the results of the FEM are more appropriate. The Hausman statistics test formula is as follow:

$$
H = (\beta_c - \beta_e)'(V_c - Ve)^{-1}(\beta_c - \beta_e)
$$

(4.9)

where,

β_c is the coefficient vector from the fixed effect estimator

β_e is the coefficient vector from the random effect estimator

V_c is the covariance matrix of the fixed effect estimator

V_e is the covariance matrix of the random effect estimator

It is also worth mentioning that the Hausman statistics test is distributed as χ^2.

4.4.3 Dynamical Models

In addition, a new direction in the research of capital structure argues that firms depart from their optimal capital structure temporarily as Drobetz and Fix (2005) findings show. Both Ozkan (2001) and de Miguel and Pindado (2001) developed a target adjustments model which will identify the optimal capital structure as well as adding a lagged variable to test the speed of adjustments.

Therefore we intend in this thesis to use the dynamic capital model which take the following form:

$$Lev_it - Lev_{it-1} = \alpha_i t(Lev_{it}^* - Lev_{it-1})$$ (4.10)

where,

$\alpha_i t$ is the coefficient of the adjustments speed.

$Lev_i t$ is the Leverage of firm i at time t.

$Lev_i^* t$ is the lagged leverage of firm i at time t.

After inserting firm id i and time t we get the following model:

$$Lev_{it} = \alpha\beta_1 + (1-\alpha)Lev_{it-1} + \alpha\sum\beta_j X_{ijt} + d_t + \eta_i + \nu_i t$$ (4.11)

where,

d_t is the time specific effect.

η_i is the firm specific effect.

$\nu_i t$ is the white disturbance.

4.4.4 Tobit Model

The tobit model is developed by Tobin (1958). When the sample have only information about some of the observations and not all of them it is called a censored sample. For that reason the tobit model is also called the censored or the limited dependent regression mode. The tobit model which is also a linear panel-level random effects could be expressed as the following equation:

$$Y_i^* = X_{it}\beta + \epsilon_i \ \ i = 1, ..., N \tag{4.12}$$

The intuition for using this model as argued Wald (1999) is that the dependent variable which is the leverage ratio is censored at zero. The values of the Short term debt and Long term debt and Total debt proxies are all between 0 and 1. Furthermore, many companies have a zero debt policy thus it is expected that a percentage of the companies in our sample will have it. Using the Tobit instead of the OLS is because the using it will lead to a downwards-biased estimate of the slope coefficient and an upward biased estimate of the intercept. The tobit model is a random effects model and there is not fixed effect model. The observed variable Y_{it}^* is the censored version of Y_{it}. The model could be censored from the left or the right or uncensored. The observation role for the mode is as follow:

$$Y_{it} = \begin{cases} Y_i^* & \text{if} \quad y_i^* > L \\ L & \text{if} \quad y_i^* \leq L \end{cases}$$

4.5 Partial Least Square Structural Equation Modeling (SEM)

Structural Equation Modelling (SEM) was first used by Titman and Wessels (1988) in modelling the determinants of capital structure choice. Several papers have fol-

lowed after that and these include Chen and Jiang (2001), Jairo (2009) Chang et al. (2009) Chiarella et al. (1991). The major advantages of using the SEM rather than other models is as presented by Chang et al. (2009) is that it explicitly models measurement errors and can estimate parameters with full information maximum likelihood (FIML), which provides consistent and asymptotically efficient estimatesİ. Furthermore ,Titman and Wessels (1988) suggest that the major advantage of using SEM is that it allows the researcher to investigate the relation between the unobservable and observable variables. Furthermore, Chiarella et al. (1991) Stated that capital structure theories propose a hypothesised determinants which can not be directly measured. Therefore the whole idea of using SEM is to construct latent variables which can not be represented and therefore it should be used in the research of capital structure.

As mentioned before SEM environment allows us to construct a latent variable which can not be measure directly. (See Hair et al. (2010). SEM is superior to multiple regression analysis and Factor analysis for because they can not handle latent variables. Furthermore, Factor analysis can not state any information about the relationships between the different latent variables. SEM consists of two models, which are the measurement model and the path model. The measurement model asses the relationship between the construct (Latent variable) and the variables measuring it. On the other hand, the path model deals with relationships between the different constructs. In the measurement model we get the loading of each variable. This important because it shows us if this variable is important and if it does have a relationship with other variables we might use. SEM models parameters can be estimate using two approaches. These are:

1. Covariance based approach

2. Variance based approach.
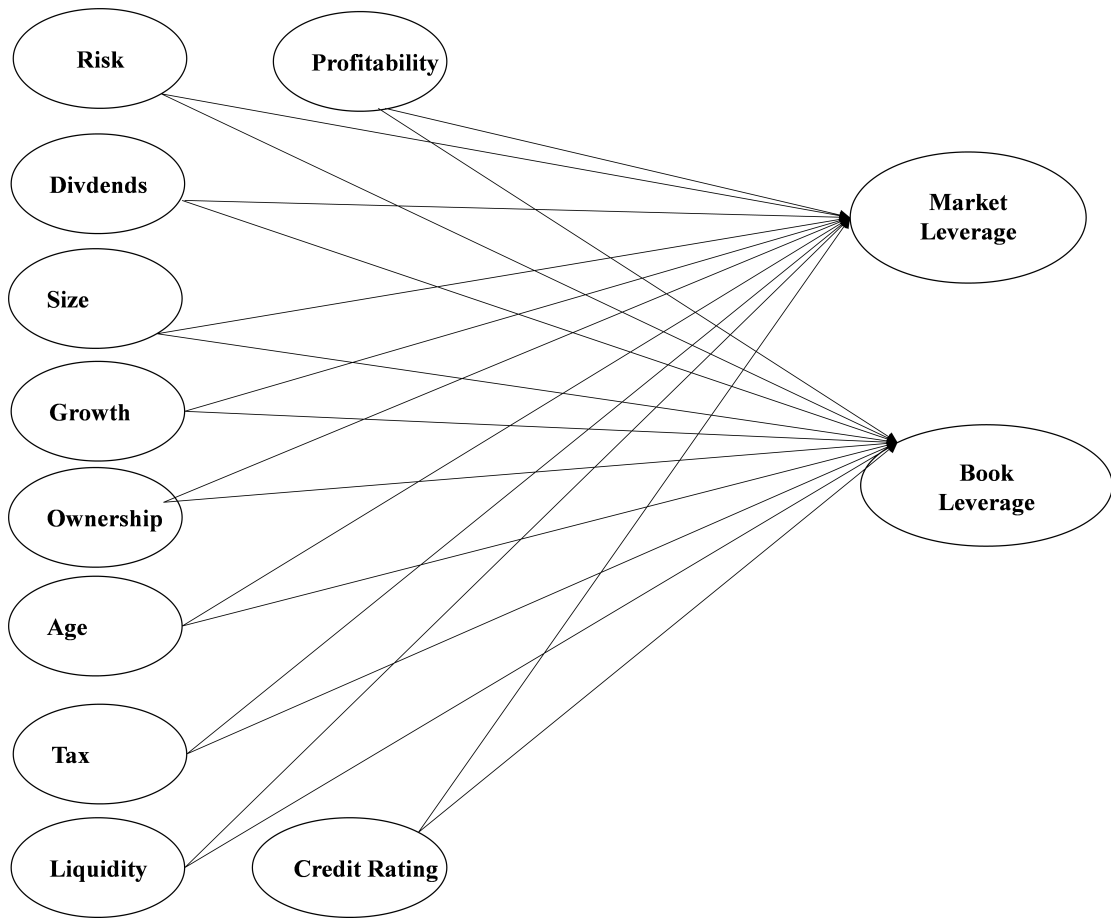
Figure 4.1: Path Diagram of the Model

Table 4.3: Summary of SEM-PLS Model Fit Measures

Model Fit Measure	Notes
Average path coefficient (APC)	Ideally P<0.001
Average R-squared	Ideally P<0.001
Average adjusted R-squared	Ideally P<0.001
Average block VIF	Ideally <= 3.3
Average full collinearity VIF	Ideally <= 3.3
Tenenhaus GoF	Small >= 0.1, medium >= 0.25, large >= 0.36
Sympson's paradox ratio	Acceptable if >= 0.7, ideally = 1
R-squared contribution ratio	Acceptable if >= 0.9,
Statistical suppression ratio	Acceptable if >= 0.7
Nonlinear bivariate causality direction ratio	Acceptable if >= 0.7

In this thesis we intend to use the Variance based approach called Partial Least Squares (PLS) for the following reasons as discussed by Hair et al. (2012):

(a) The ability of analysing non-normal data.

(b) The ability to deal with small sample sizes.

(c) Formative measurement of latent variables.

In this study our main goal is to compare the capital structure of Islamic banks and conventional banks. Since the number of Islamic banks in the area of our interest is considered small, it is important to use PLS as it is able to deal with small sample size.

4.6 Generalized Regression Neural Networks (GRNN)

Non-linear models have become popular in the literature recently. Several techniques and kinds are available but we use the Generalized Regression Neural Networks available from (Palisade Cooperation). Abdou et al. (2012) have used this method in their study of the retail industry In the UK. They concluded that these models add insights which can not be done using the conventional regression mod-

els. Pao (2008) compared the results of ANN and multiple regression analysis in the context of Capital structure in Taiwan. He highlights the advantages of using ANN which are that they don't require any assumptions about the distribution, correlation or missing data. These are in general terms the most problematic issues face researchers using the multiple regression analysis. Furthermore, Several theoretical advantages are important for the use of the ANN. The main one is that the researcher does not have to set any assumptions or relationships before using the method. As the ANN will start the relationships through training and learning processes that is very similar to the way the human brain works. In addition, an important feature of the ANNs is that is does not require any assumptions about the underlying population distributions. In this study we use the GRNN which is the General Regression Neural Networks (GRNN). The output we expect from using this method is what is called the analysis of variables impact. This results show us the most important variables that have an impact on the dependent variable regardless of the problems that might exist in the data set. These could include the small data bases and the data bases with variables that have missing data.
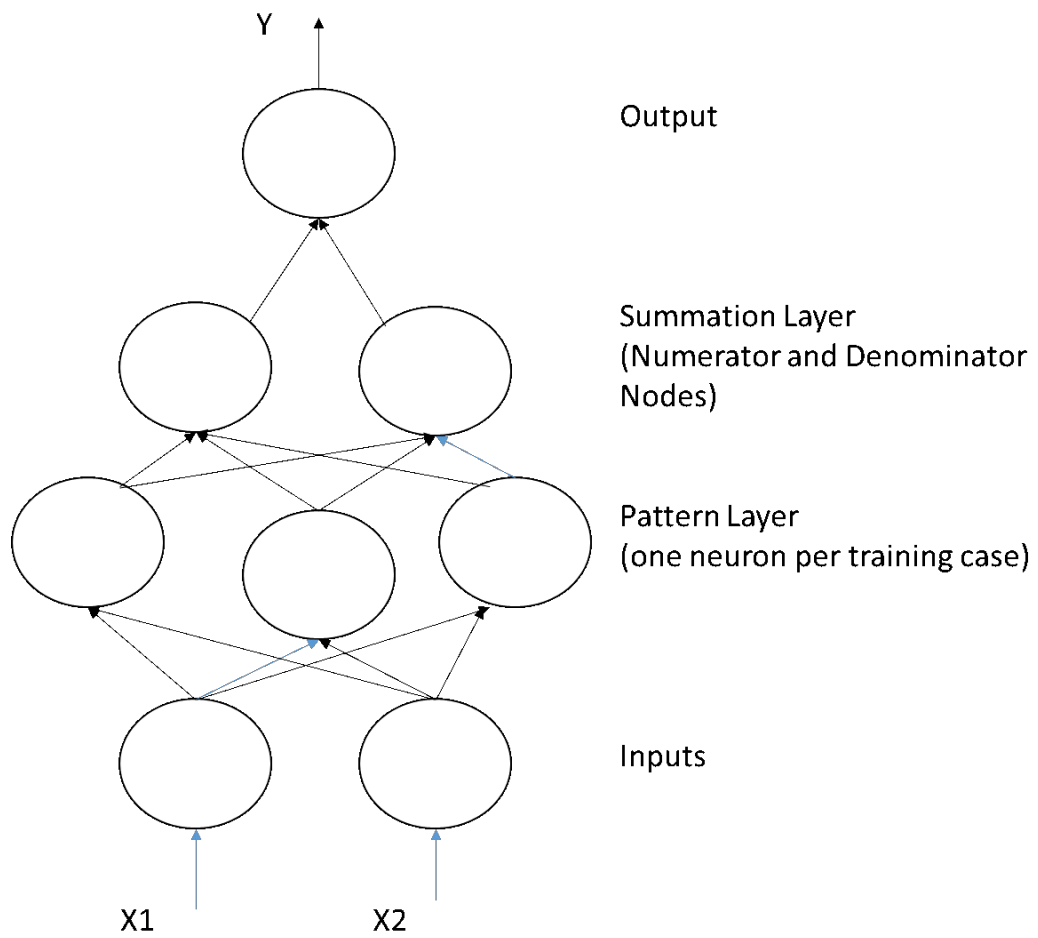
Figure 4.2: GRNN Architecture for two independent numeric variables

4.7 Descriptive Statistics

The descriptive statistics tables are provided in the appendix and the first one is for the banks data and the rest of the tables are for the non-financial firms data. First, the banks table shows that the book leverage ratios in the banks of the MENA countries are considered to be lower in comparison to the sample of Gropp and Heider (2010). However, the market leverage is higher for the developed banks sample. Profitability is higher in the MENA sample.

In this section the mean of total debt in book value and market value is analysed. As these two measures include the short term and long term debt. First, As Table A.14 show the descriptive statistics for all the countries in this study sample. The mean for the book value total debt is 18% and for the market value total debt is 20%. It is notable that the countries leverage ratio means are in the range from 14% to 27% in book values and between 16% and 31% in market value with the exception of Bahrain where leverage means are low. The countries which are less that the MENA average are Bahrain, Egypt, Jordan, Kuwait, Palestine, Qatar and UAE. The rest of the countries are above the average with Tunisia and Oman have the highest leverage ratios in this sample. It worth mentioning that the leverage ratios in the MENA countries are very low in comparison to other developed countries. For example, Booth et al. (2001) present a descriptive table showing the ratios in developed and developing countries and it shows that debt is above 30% in developed countries and above 50% for developing countries.

This thesis use six profitability ratios but for comparison reasons this section will compare using one ratio which is the operating income to total assets. First, as stated in the tables in Appendix A.1 the mean of the profitability ratio for the MENA countries is 6.2%. This average is considered to be low as well in comparison to the developed world as shown by Wald (1999) study where countries such as the US

have a mean profitability of 7.1%. The countries in the MENA countries could be classified to countries with low profitability mean such as Bahrain, Jordan, Kuwait and Qatar, and countries with high profitability in comparison to the mean such as Egypt 8.9%, Morocco 11% and Saudi Arabia 8.2%.

The liquidity measure this study use is the current ratio which is the current assets to current liabilities. As the tables in Appendix A.1 show countries in the MENA countries are in good condition in terms of liquidity. The mean for the MENA countries is 2.6 which indicate that firms have two times and half the current liabilities in current assets. Overall the countries in the sample are within the same range with the exception of Morocco where the liquidity ratio is low with 1.89. De Jong et al. (2008) study present a descriptive statistics and comparing to that we could see that countries in the MENA region are in same range with developed economies if not better in some cases.

The ratio used to present volatility is the standard deviation of the share price. Other studies used the standard deviation of the operating income which is not possible in this study due to lack of quarterly data. The mean of the MENA countries risk measures is %49. Countries with a volatile market in the sample where Kuwait and UAE which an average percentage of 69% and 59%. Size is defined as the logarithmic of sales. The countries in the sample are in the range between 16 and 19. Two widely used ratios to represent the size are the logarithmic of total assets where the range is between 5 and 10 and the logarithmic of sales where the range is between 16 and 19. This study used the logarithmic of sales because of high correlations for the log of total assets. Tangibility is defined as the net fixed assets to total assets and it is a measure of how much of the firms assets are fixed assets. The mean of the MENA countries is 26%. Which is considered to be high in comparison to the US and the UK in De Jong et al. (2008) study where the mean is 14% and 8% respectively. Furthermore, we notice that Bahrain, Jordan Oman and UAE have a

higher mean than the other countries in the sample where the mean is higher than 30%.

The non-debt tax shield is a measure of the tax benefit a firm can take advantage of when using debt. It is defined as the depreciation and amortization expense to the total assets. The MENA countries average is 2.6% which is considered low when compared to the developed countries such as Wald (1999). The countries in the sample are in the rate of 2% to 3%. Except Bahrain, Morocco and Palestine which are lower than that. On the other hand, Qatar and Oman have a high percentage with 4.7% and 5.6% respectively.

Dividends is defined as the dividends payment amount to the total assets. On average, the MENA firms pay 2.9% out of the total assets in dividends. As the tables in Appendix A.1 show Tunisia and Jordan are the lowest in the sample with an average of 1.8% and 1.5% respectively. On the other hand, Bahrain, Qatar and Saudi Arabia are the highest in the MENA countries with 4.1% and 4.5% and 4.1% respectively. Growth opportunities variable is defined as the average percentage of yearly growth for the last eight years. As the tables in Appendix A.1 show the growth rate for the MENA countries which is 0.4%. All the countries in the sample are within the same range with the exception for Qatar in which it is 0.8%.

4.8 The Correlation Matrix

The following twelve tables show the correlation tables for the countries in the sample. It does include the leverage measures as well as the determinants of capital structure. As the Panel data analysis require that the dependent variable should not have a high correlation with the independent variable these tables were used to decide which determinants ratios should be included in order to eliminate the endogeneity problem. As for the other approaches such as the SEM-PLS and the GRNN it is not required as these sophisticated approaches can handle such issues.

Table 4.4: Bahrain Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

	Bahrain	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	LTDBVA	1.00														
B	STDBVA	0.41	1.00													
C	TDBVA	0.79	0.78	1.00												
D	LTDMVE	0.76	0.35	0.69	1.00											
E	STDMVE	0.30	0.84	0.75	0.33	1.00										
F	TDMVE	0.57	0.79	0.88	0.71	0.90	1.00									
G	Profita	0.07	-0.30	-0.17	0.01	-0.47	-0.35	1.00								
H	Liquidi	-0.31	-0.40	-0.40	-0.32	-0.36	-0.41	-0.11	1.00							
I	Volat	-0.16	-0.13	-0.19	-0.15	-0.15	-0.18	-0.06	0.29	1.00						
J	Size	0.46	0.23	0.47	0.41	0.23	0.36	0.40	-0.44	-0.30	1.00					
K	Tangibi	0.45	0.16	0.34	0.36	0.13	0.26	0.04	-0.44	-0.15	0.30	1.00				
L	Tax	0.11	-0.09	0.06	0.00	-0.09	-0.07	0.11	-0.21	-0.06	0.14	0.29	1.00			
M	Dividen	-0.18	-0.18	-0.18	-0.13	-0.18	-0.19	0.26	0.02	-0.01	0.12	-0.25	0.12	1.00		
N	Growth	0.09	-0.03	-0.02	0.08	-0.08	-0.02	0.07	-0.09	-0.06	-0.03	0.09	0.01	0.05	1.00	
O	Fcash	-0.28	-0.44	-0.40	-0.25	-0.40	-0.41	0.27	0.41	0.15	-0.12	-0.36	-0.02	0.28	0.01	1.00

Table 4.5: Egypt Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

	Egypt	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	LTDBVA	1.00														
B	STDBVA	0.22	1.00													
C	TDBVA	-0.13	0.00	1.00												
D	LTDMVE	0.64	0.23	-0.13	1.00											
E	STDMVE	0.31	0.68	-0.01	0.40	1.00										
F	TDMVE	-0.06	-0.03	0.71	-0.03	0.02	1.00									
G	Profita	0.13	-0.08	-0.16	-0.02	-0.01	-0.16	1.00								
H	Liquidi	0.03	-0.04	-0.22	0.05	-0.03	-0.19	0.00	1.00							
I	Volat	-0.01	-0.01	0.04	0.00	-0.03	0.01	-0.01	0.00	1.00						
J	Size	-0.16	-0.17	0.17	-0.12	-0.12	0.19	0.26	-0.26	0.02	1.00					
K	Tangibi	0.08	0.19	0.03	0.15	0.23	0.07	-0.03	0.03	-0.07	-0.12	1.00				
L	Tax	0.30	0.07	-0.05	0.17	0.17	-0.07	-0.10	0.06	-0.04	-0.16	0.07	1.00			
M	Dividen	0.14	-0.07	-0.17	-0.03	-0.05	-0.18	0.60	0.04	0.00	0.18	-0.11	-0.07	1.00		
N	Growth	-0.12	-0.04	-0.01	-0.03	-0.02	-0.01	-0.08	0.27	0.06	-0.06	0.07	0.09	-0.14	1.00	
O	Fcash	-0.06	-0.06	0.09	-0.07	-0.06	0.10	-0.01	-0.03	0.03	0.18	-0.09	-0.06	0.00	0.02	1.00

Table 4.6: Jordan Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

	Jordan	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	LTDBVA	1.00														
B	STDBVA	0.08	1.00													
C	TDBVA	0.34	0.69	1.00												
D	LTDMVE	0.80	0.00	0.29	1.00											
E	STDMVE	0.02	0.79	0.71	0.05	1.00										
F	TDMVE	0.28	0.58	0.84	0.36	0.76	1.00									
G	Profita	-0.15	-0.11	-0.18	-0.19	-0.20	-0.23	1.00								
H	Liquidi	-0.11	-0.08	-0.31	-0.06	-0.18	-0.28	0.06	1.00							
I	Volat	0.11	0.00	-0.01	0.01	-0.02	-0.02	-0.09	0.05	1.00						
J	Size	-0.06	0.07	0.07	-0.07	0.06	0.10	0.47	-0.14	-0.19	1.00					
K	Tangibi	0.08	-0.15	-0.10	0.05	-0.13	-0.12	-0.06	-0.16	-0.04	0.09	1.00				
L	Tax	0.26	0.12	-0.10	0.17	-0.04	-0.12	-0.14	0.16	0.02	-0.16	0.00	1.00			
M	Dividen	-0.13	-0.20	-0.28	-0.14	-0.25	-0.30	0.56	0.12	-0.08	0.30	-0.04	-0.02	1.00		
N	Growth	-0.02	-0.06	-0.09	0.00	-0.08	-0.09	0.21	0.05	-0.01	0.08	0.02	-0.05	0.02	1.00	
O	Fcash	-0.06	-0.25	-0.21	-0.10	-0.24	-0.13	0.25	0.29	0.07	0.06	-0.22	-0.06	0.25	0.09	1.00

Table 4.7: Kuwait Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

	Kuwait	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	LTDBVA	1.00														
B	STDBVA	0.17	1.00													
C	TDBVA	0.60	0.69	1.00												
D	LTDMVE	0.74	0.14	0.63	1.00											
E	STDMVE	0.24	0.78	0.62	0.20	1.00										
F	TDMVE	0.42	0.63	0.84	0.65	0.74	1.00									
G	Profita	0.03	-0.16	-0.07	-0.03	-0.24	-0.20	1.00								
H	Liquidi	-0.23	-0.34	-0.44	-0.27	-0.29	-0.40	0.12	1.00							
I	Volat	-0.04	-0.03	0.00	-0.06	-0.01	-0.02	-0.05	-0.03	1.00						
J	Size	0.10	0.16	0.29	0.18	0.06	0.24	0.27	-0.31	-0.24	1.00					
K	Tangibi	0.27	0.06	0.20	0.29	-0.13	0.07	0.08	-0.20	0.23	0.02	1.00				
L	Tax	0.05	-0.06	0.04	0.02	-0.11	-0.04	0.10	-0.06	0.08	0.06	0.19	1.00			
M	Dividen	-0.15	-0.24	-0.26	-0.20	-0.27	-0.31	0.45	0.37	-0.09	0.06	-0.09	0.10	1.00		
N	Growth	0.02	0.02	0.05	-0.02	-0.06	-0.03	0.11	-0.06	-0.04	0.09	0.02	-0.05	-0.03	1.00	
O	Fcash	-0.26	-0.25	-0.34	-0.23	-0.25	-0.32	0.14	0.38	-0.06	-0.02	-0.17	0.06	0.29	-0.03	1.00

Table 4.8: Morocco Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

	Morroco	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	LTDBVA	1.00														
B	STDBVA	0.06	1.00													
C	TDBVA	0.77	0.65	1.00												
D	LTDMVE	0.87	0.09	0.70	1.00											
E	STDMVE	0.04	0.79	0.53	0.16	1.00										
F	TDMVE	0.57	0.60	0.80	0.73	0.79	1.00									
G	Profita	-0.35	-0.38	-0.50	-0.48	-0.48	-0.63	1.00								
H	Liquidi	-0.08	-0.35	-0.27	-0.14	-0.32	-0.31	0.38	1.00							
I	Volat	0.12	0.06	0.12	0.16	0.09	0.16	-0.17	-0.02	1.00						
J	Size	0.10	0.09	0.12	0.04	-0.01	0.02	0.17	-0.25	-0.18	1.00					
K	Tangibi	0.40	-0.04	0.28	0.26	-0.18	0.04	0.06	-0.31	-0.09	0.56	1.00				
L	Tax	0.01	-0.03	0.00	-0.05	-0.11	-0.10	0.11	-0.01	0.11	0.19	0.24	1.00			
M	Dividen	-0.16	-0.16	-0.22	-0.26	-0.26	-0.34	0.59	0.36	-0.07	0.21	0.09	0.21	1.00		
N	Growth	0.04	-0.05	-0.01	0.03	-0.03	0.00	0.03	-0.03	0.02	0.02	-0.09	-0.03	-0.06	1.00	
O	Fcash	-0.19	-0.18	-0.26	-0.20	-0.13	-0.21	0.16	0.17	-0.13	-0.06	-0.12	-0.06	0.09	0.09	1.00

Table 4.9: Oman Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

	Oman	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	LTDBVA	1.00														
B	STDBVA	0.25	1.00													
C	TDBVA	0.08	-0.02	1.00												
D	LTDMVE	0.81	0.21	0.11	1.00											
E	STDMVE	0.17	0.76	-0.02	0.34	1.00										
F	TDMVE	0.02	0.23	0.76	0.02	0.16	1.00									
G	Profita	0.04	-0.16	-0.42	-0.05	-0.25	-0.46	1.00								
H	Liquidi	0.06	-0.11	-0.33	0.13	-0.11	-0.39	0.18	1.00							
I	Volat	-0.03	0.10	-0.03	-0.03	0.08	0.09	-0.01	-0.03	1.00						
J	Size	-0.07	-0.30	-0.15	-0.16	-0.37	-0.27	0.50	-0.02	-0.09	1.00					
K	Tangibi	0.42	0.34	0.11	0.43	0.34	0.17	-0.28	0.03	0.00	-0.45	1.00				
L	Tax	0.17	0.05	0.06	0.36	0.35	-0.04	-0.13	0.04	-0.03	-0.27	0.37	1.00			
M	Dividen	0.02	-0.10	-0.35	-0.04	-0.18	-0.41	0.43	0.21	-0.05	0.29	-0.18	-0.07	1.00		
N	Growth	0.07	-0.07	-0.06	0.02	-0.12	-0.07	0.18	0.03	0.02	0.05	-0.08	-0.06	0.07	1.00	
O	Fcash	-0.08	-0.08	-0.06	-0.06	-0.03	-0.13	0.11	0.01	-0.03	0.14	-0.16	-0.07	0.07	0.06	1.00

Table 4.10: Palestine Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

	Pals	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	LTDBVA	1.00														
B	STDBVA	0.66	1.00													
C	TDBVA	0.66	0.68	1.00												
D	LTDMVE	0.11	0.42	0.00	1.00											
E	STDMVE	-0.18	-0.04	-0.38	0.87	1.00										
F	TDMVE	-0.13	0.04	-0.30	0.63	0.67	1.00									
G	Profita	-0.10	-0.19	-0.11	-0.24	-0.11	-0.45	1.00								
H	Liquidi	-0.14	-0.34	0.05	-0.52	-0.35	-0.58	0.35	1.00							
I	Volat	0.02	0.04	-0.12	0.31	0.35	0.25	-0.07	-0.13	1.00						
J	Size	-0.19	-0.24	-0.25	-0.16	-0.01	0.16	0.40	-0.20	-0.03	1.00					
K	Tangibi	0.46	0.72	0.28	0.78	0.52	0.27	-0.14	-0.28	0.23	-0.33	1.00				
L	Tax	0.30	0.29	0.01	0.62	0.54	0.19	0.02	-0.12	0.20	-0.45	0.62	1.00			
M	Dividen	0.03	-0.18	0.04	-0.39	-0.30	-0.59	0.77	0.38	-0.09	0.21	-0.26	0.00	1.00		
N	Growth	-0.37	-0.63	-0.41	-0.42	-0.09	-0.20	0.38	0.49	0.00	-0.01	-0.46	-0.02	0.45	1.00	
O	Fcash	0.30	-0.08	-0.06	-0.31	-0.23	-0.42	0.34	0.42	0.00	-0.36	0.05	0.34	0.51	0.49	1.00

Table 4.11: Qatar Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

	Qatar	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	LTDBVA	1.00														
B	STDBVA	0.42	1.00													
C	TDBVA	0.37	0.03	1.00												
D	LTDMVE	-0.02	0.07	0.04	1.00											
E	STDMVE	-0.06	-0.03	0.01	0.25	1.00										
F	TDMVE	-0.05	-0.16	0.01	0.07	-0.17	1.00									
G	Profita	0.02	0.05	0.13	-0.01	0.10	-0.04	1.00								
H	Liquidi	-0.08	0.07	0.01	-0.01	-0.05	-0.12	-0.02	1.00							
I	Volat	-0.15	-0.03	-0.03	-0.17	0.04	0.23	-0.03	-0.05	1.00						
J	Size	-0.14	-0.17	0.28	-0.14	0.02	0.09	0.40	-0.28	0.08	1.00					
K	Tangibi	0.03	0.04	-0.14	0.23	0.12	-0.36	0.11	-0.05	-0.04	-0.15	1.00				
L	Tax	-0.05	-0.04	-0.32	-0.14	-0.07	-0.15	-0.09	-0.08	-0.14	-0.33	0.09	1.00			
M	Dividen	-0.05	0.15	0.06	0.08	0.17	-0.45	0.18	0.00	-0.14	0.37	0.22	0.03	1.00		
N	Growth	-0.11	-0.03	-0.14	-0.03	0.02	0.15	0.02	0.00	0.05	-0.03	-0.10	-0.02	-0.04	1.00	
O	Fcash	-0.18	-0.11	0.02	0.00	0.27	-0.20	0.31	-0.02	0.00	0.30	0.01	-0.01	0.12	0.05	1.00

Table 4.12: Saudi Arabia Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

	Saudi	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	LTDBVA	1.00														
B	STDBVA	0.35	1.00													
C	TDBVA	-0.09	-0.14	1.00												
D	LTDMVE	-0.07	0.03	0.08	1.00											
E	STDMVE	-0.06	0.02	-0.05	0.58	1.00										
F	TDMVE	0.05	0.04	0.20	0.05	-0.02	1.00									
G	Profita	-0.11	0.03	-0.02	-0.05	-0.12	-0.34	1.00								
H	Liquidi	-0.06	-0.04	0.08	-0.08	-0.06	0.01	0.05	1.00							
I	Volat	0.05	0.00	0.00	-0.09	-0.08	0.11	-0.12	0.02	1.00						
J	Size	-0.06	0.01	0.11	-0.09	-0.16	0.37	0.33	-0.05	-0.11	1.00					
K	Tangibi	-0.05	0.05	-0.02	0.17	0.17	-0.12	0.03	-0.11	-0.07	-0.16	1.00				
L	Tax	-0.10	-0.07	0.10	0.31	0.33	-0.05	0.06	0.06	-0.05	-0.02	0.04	1.00			
M	Dividen	-0.07	0.04	0.07	-0.02	-0.14	-0.31	0.62	0.05	-0.16	0.22	-0.04	-0.05	1.00		
N	Growth	0.00	0.08	0.03	-0.01	-0.05	0.10	0.18	0.19	0.09	0.09	0.02	0.02	-0.05	1.00	
O	Fcash	0.06	0.05	-0.06	-0.07	-0.07	0.07	0.04	0.01	0.03	0.32	-0.13	-0.02	0.01	-0.01	1.00

Table 4.13: Tunisia Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

Tunisia	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
LTDBVA	1.00														
STDBVA	0.16	1.00													
TDBVA	0.55	0.73	1.00												
LTDMVE	0.18	0.10	0.23	1.00											
STDMVE	0.19	0.06	0.19	0.34	1.00										
TDMVE	0.23	0.10	0.26	0.79	0.84	1.00									
Profita	0.23	0.02	0.17	0.12	0.24	0.22	1.00								
Liquidi	-0.07	-0.05	-0.17	-0.22	-0.29	-0.31	-0.08	1.00							
Volat	0.35	-0.12	0.15	0.15	0.37	0.33	0.13	-0.07	1.00						
Size	-0.04	0.32	0.13	0.19	0.03	0.12	0.07	0.06	-0.08	1.00					
Tangibi	-0.25	0.05	-0.04	0.21	-0.01	0.12	0.03	-0.22	-0.04	-0.21	1.00				
Tax	0.04	-0.05	-0.02	0.05	0.25	0.19	0.08	-0.07	0.20	-0.15	0.28	1.00			
Dividen	-0.12	-0.08	-0.16	-0.28	-0.29	-0.35	-0.19	0.24	-0.17	-0.06	-0.01	0.01	1.00		
Growth	-0.15	0.19	0.03	0.02	-0.05	-0.02	0.13	0.34	-0.16	0.26	-0.09	-0.19	-0.08	1.00	
Fcash	-0.11	-0.05	-0.04	0.08	-0.07	-0.01	0.10	0.42	0.00	0.30	-0.19	-0.07	-0.05	0.22	1.00

Table 4.14: UAE Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

UAE	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
LTDBVA	1.00														
STDBVA	0.41	1.00													
TDBVA	0.33	0.05	1.00												
LTDMVE	-0.11	-0.03	-0.04	1.00											
STDMVE	-0.14	-0.08	0.07	0.29	1.00										
TDMVE	-0.06	-0.03	-0.14	0.14	-0.16	1.00									
Profita	0.20	0.06	0.26	-0.01	-0.06	-0.27	1.00								
Liquidi	0.04	-0.01	-0.02	-0.06	-0.02	-0.17	-0.06	1.00							
Volat	-0.05	-0.06	-0.05	-0.02	-0.05	0.05	-0.08	0.03	1.00						
Size	0.01	0.05	0.01	-0.05	-0.29	0.04	0.32	-0.10	-0.07	1.00					
Tangibi	0.03	0.10	0.04	0.43	0.26	0.01	0.03	-0.14	0.01	-0.19	1.00				
Tax	0.00	0.02	0.04	0.16	0.22	-0.13	0.02	-0.05	-0.02	-0.15	0.42	1.00			
Dividen	0.00	0.04	-0.02	-0.10	-0.08	-0.20	0.25	0.02	-0.04	0.04	-0.12	-0.08	1.00		
Growth	0.06	0.13	-0.05	0.09	-0.05	-0.08	0.23	0.01	-0.08	0.17	0.00	-0.01	0.00	1.00	
Fcash	-0.06	-0.07	0.15	-0.13	-0.16	-0.11	0.11	-0.05	0.03	0.38	-0.21	-0.09	0.14	0.04	1.00

Table 4.15: MENA Correlation for Panel Data

This table shows the correlation between the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

MENA	Variable	A	B	C	D	E	F	G	H	I	J	K	L	M	N
A	LTD/BVA	1.00													
B	STD/BVA	0.23	1.00												
C	TDBVA	0.18	0.28	1.00											
D	LTD/MVA	0.47	0.13	0.19	1.00										
E	STD/MVA	0.12	0.52	0.23	0.33	1.00									
F	TD/MVA	0.12	0.27	0.61	0.25	0.35	1.00								
G	Profitability	0.04	-0.10	-0.14	-0.06	-0.14	-0.25	1.00							
H	Liquidity	-0.04	-0.09	-0.19	-0.05	-0.11	-0.22	0.02	1.00						
I	Risk	-0.01	0.00	-0.03	-0.03	0.02	0.03	-0.05	0.02	1.00					
J	Size	-0.02	-0.03	0.07	-0.03	-0.10	0.06	0.33	-0.14	-0.10	1.00				
K	Tangibility	0.13	0.13	0.09	0.26	0.15	0.08	-0.09	-0.09	0.00	-0.11	1.00			
L	Debt Tax	0.12	0.02	0.03	0.23	0.18	-0.03	-0.05	0.03	-0.03	-0.12	0.16	1.00		
M	Dividends	0.01	-0.10	-0.16	-0.08	-0.17	-0.29	0.49	0.10	-0.06	0.21	-0.08	-0.03	1.00	
N	Growth	-0.02	0.00	-0.01	0.01	-0.05	-0.02	0.08	0.11	-0.01	0.07	0.00	0.01	-0.04	1.00

4.9 Factors Loading

The major advantage of using WarPls SEM software is that it can deal with missing data and small data bases efficiently. As we could see in the following tables the measurement model factor loading. These tables indicate the loading of each variable with the main construct (factor) and if it is significant or not. As a researcher we should set up a cut off point for the loading of the variables. Variables with very low loading should be dropped from the model or it might cause the construct to be under estimated. According to Hair et al. (2010) and Hulland (1999) no loading should be below 0.40 and in extreme cases nothing should be below 0.20.

The first Table 4.16 is the banks sample loading factor table. As it shows the factor loadings chosen for the banks study are above the required rule of 0.2. One more important point is that it should have the same sign as the other variables under the same factor which is also met.

The tables after that are the factor loading for the MENA countries non- financial firms. First, is the table which include all MENA countries sample and as it shows that all the loading are above the 0.20 mark. The exception is for the MTB, EFFTAX, DVDPO, CATA, and CALTD which all have the inverse sign to the other variables and therefore were dropped.

Then, Table 4.18 shows the table for Bahrain, the variables which are dropped are EFFTAX, BETA, and DVDPO because of an inverse sign. EBITDEPTA is dropped due to low loading value. Table 4.19 shows the loading for Egypt and the following are dropped which are EFFTAX, DVDPO, CALTD, and CASTD for inverse sign. Moreover, Table 4.20 for Jordan and the dropped variables are MTB, NFATA, EFFTAX, and DVDPO. Then Table 4.21 shows Kuwait loading and the dropped variables are PM for low loading. Also, VOLA for the inverse sign.

Furthermore, Morocco table shows that EFFTAX, STDROA and DVDPO for having

an inverse sign. Table 4.25 shows Qatar SEM factor loading and the dropped variables are CETA, DEP/OI and DVDPO for having and inverse relation. In Saudi Arabia factors loading Table 4.26 TAGR, GTS, EFFTAX, DVDPO, CALTD and CASTD for having a negative sign.

In the same fashion, the table showing the Tunisia which is Table 4.27 shows that many variables are dropped. These are MTB, NFATA, EFFTAX, STDROA, VOLA, DPS and EBITDEPTA. Finally, the UAE Table 4.28 show that PM, CETA, DEP/OI, BETA, DIVTA, CALTD and CASTD are dropped.

Table 4.16: Banks SEM Factor Loding

Variables	Prof	Size	Growth	Age	Tax	Risk	Dividend	Liquid	CR	Ownership
PM	-0.86									
OPM	-0.86									
ROE	-0.82									
ROA	-0.8									
MCAP		-0.84								
TASSETS		-0.96								
REVENUE		-0.92								
GR_EPS			-0.379							
GR_ASSETS			-0.872							
GR_REV			-0.873							
AGE				-1						
DEP_TAX					-1					
VOLAT						-0.72				
BETA						-0.37				
ALPHA						-0.71				
DIVDP							-0.359			
DIVPS							-0.87			
DVDPO							-0.869			
INTERB								(-0.325)		
NTL_TA								-0.905		
NTL_STF								-0.644		
NTL_TDE								-0.75		
LIQ_DEP								(-0.689)		
LIQ_TDE								(-0.359)		
CR_SP									-0.7	
CR_FITCH									-0.82	
CR_MODY									-0.41	
CR_CI									-0.32	
OWN_IND										-0.361
OWN_HOL										-0.082
OW_COO										-0.388
OW_INSU										-0.26
OW_BANK										-0.53
OW_GOV										-0.375
OW_ADV										-0.725

Table 4.17: MENA SEM Loding

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liqud
OITA	0.987								
ROA	0.992								
ROE	0.974								
PM	0.802								
OI/SAL	0.795								
EBIT/SAL	0.826								
EBIT/TA	0.994								
LNSAL		0.993							
LNMV		0.996							
LNTA		0.994							
TAGR			0.961						
GTS			0.964						
MTB			(-0.487)						
CE/TA			0.023						
NFA/TA				0.12					
INA/TA				0.992					
TANG/TA				0.999					
INVP/TA				0.998					
DEP/TA					0.985				
EFFTAX					(-0.911)				
DEP/OI					0.986				
STDROE						1			
STDROA						1			
VOLA						0.104			
BETA						0			
DIV/TA							0.949		
DVDPO							(-0.869)		
DPS							0.971		
CA/TA								(-0.075)	
CA/LTD								(-0.100)	
CA/STD								0.983	
EBITDEP/TA								0.983	
CURRAT									0.819
QUIRAT									1
CASRAT									0.999
WCRAT									0.999

Table 4.18: Bahrain SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liqud
OITA	0.844								
ROA	0.804								
ROE	0.77								
PM	0.675								
OI/SAL	0.919								
EBIT/SAL	0.916								
EBIT/TA	0.858								
LNSAL		0.75							
LNMV		0.762							
LNTA		0.76							
TAGR			0.881						
GTS			0.731						
MTB			0.815						
CE/TA			0.593						
NFA/TA				0.629					
INA/TA				0.659					
TANG/TA				0.7					
INVP/TA				0.705					
DEP/TA					0.903				
EFFTAX					(-0.767)				
DEP/OI					0.851				
STDROE						0.98			
STDROA						0.98			
VOLA						0.78			
BETA						(-0.096)			
DIV/TA							(-0.129)		
DVDPO							0.719		
DPS							0.895		
CA/TA								0.851	
CA/LTD								0.844	
CA/STD								0.767	
EBITDEP/TA								0.221	
CURRAT									0.547
QUIRAT									0.897
CASRAT									0.902
WCRAT									0.884

Table 4.19: Egypt SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liquid
OITA	0.787								
ROA	0.844								
ROE	0.82								
PM	0.957								
OI/SAL	0.96								
EBIT/SAL	0.962								
EBIT/TA	0.832								
LNSAL		0.817							
LNMV		0.869							
LNTA		0.884							
TAGR			0.795						
GTS			0.993						
MTB			0.531						
CE/TA			0.531						
NFA/TA				0.085					
TANG/TA				0.963					
INA/TA				0.941					
INVP/TA				0.902					
DEP/TA					0.957				
EFFTAX					(-0.173)				
DEP/OI					0.999				
STDROE						1			
STDROA						1			
VOLA						0.225			
BETA						0.473			
DIV/TA							0.852		
DVDPO							(-0.802)		
DPS							0.935		
CA/LTD								(-0.258)	
CA/STD								(-0.153)	
CA/TA								0.947	
EBITDEP/TA								0.948	
CURRAT									0.918
QUIRAT									0.974
CASRAT									0.97
WCRAT									0.981

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Table 4.20: Jordan SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash	Liqud
OITA	0.739								
ROA	0.776								
ROE	0.799								
PM	0.936								
OI/SAL	0.625								
EBIT/SAL	0.85								
EBIT/TA	0.713								
LNSAL		0.837							
LNMV		0.741							
LNTA		0.854							
TAGR			0.915						
GTS			0.94						
MTB			(-0.668)						
CE/TA			0.647						
NFA/TA				(-0.401)					
TANG/TA				0.841					
INA/TA				0.89					
INVP/TA				0.826					
DEP/TA					0.606				
EFFTAX					(-0.944)				
DEP/OI					0.995				
STDROE						1			
STDROA						1			
VOLA						0.238			
BETA						0.462			
DIV/TA							0.818		
DVDPO							(-0.366)		
DPS							0.815		
CA/LTD								0.796	
CA/STD								0.847	
CA/TA								0.866	
EBITDEP/TA								0.662	
CURRAT									0.507
QUIRAT									0.983
CASRAT									0.986
WCRAT									0.982

Table 4.21: Kuwait SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash	Liqud
OITA	0.853								
ROA	0.807								
ROE	0.833								
PM	0.158								
OI/SAL	0.926								
EBIT/SAL	0.928								
EBIT/TA	0.847								
LNSAL		0.868							
LNMV		0.886							
LNTA		0.89							
TAGR			0.95						
GTS			0.992						
MTB			0.911						
CE/TA			0.314						
NFA/TA				0.1					
TANG/TA				0.945					
INA/TA				0.932					
INVP/TA				0.91					
DEP/TA					0.98				
EFFTAX					0.843				
DEP/OI					0.979				
STDROE						1			
STDROA						1			
VOLA						(-0.061)			
BETA						0.155			
DIV/TA							0.799		
DVDPO							0.981		
DPS							0.868		
CA/LTD								0.721	
CA/STD								0.8	
CA/TA								0.864	
EBITDEP/TA								0.788	
CURRAT									0.86
QUIRAT									0.871
CASRAT									0.882
WCRAT									0.894

Table 4.22: Morocco SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liqud
OITA	0.694								
ROA	0.696								
ROE	0.912								
PM	0.823								
OI/SAL	0.593								
EBIT/SAL	0.798								
EBIT/TA	0.688								
LNSAL		0.906							
LNMV		0.796							
LNTA		0.891							
TAGR			0.986						
GTS			0.955						
MTB			0.253						
CE/TA			0.568						
NFA/TA				0.229					
TANG/TA				0.854					
INA/TA				0.865					
INVP/TA				0.83					
DEP/TA					0.94				
EFFTAX					(-0.416)				
DEP/OI					0.951				
STDROE						0.026			
STDROA						(-0.026)			
VOLA						0.905			
BETA						0.826			
DIV/TA							0.738		
DVDPO							(-0.603)		
DPS							0.859		
CA/LTD								0.909	
CA/STD								0.943	
CA/TA								0.726	
EBITDEP/TA								0.478	
CURRAT									0.839
QUIRAT									0.852
CASRAT									0.837
WCRAT									0.831

Table 4.23: Oman SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liqud
OITA	0.776								
ROA	0.784								
ROE	0.783								
PM	0.819								
OI/SAL	0.995								
EBIT/SAL	0.995								
EBIT/TA	0.782								
LNSAL		0.778							
LNMV		0.827							
LNTA		0.862							
TAGR			(-0.889)						
GTS			(-0.977)						
MTB			0.986						
CE/TA			0.515						
NFA/TA				0.588					
TANG/TA				0.862					
INA/TA				0.859					
INVP/TA				0.817					
DEP/TA					(-0.872)				
EFFTAX					0.918				
DEP/OI					0.987				
STDROE						1			
STDROA						1			
VOLA						0.082			
BETA						(-0.103)			
DIV/TA							0.826		
DVDPO							(-0.678)		
DPS							0.908		
CA/LTD								0.924	
CA/STD								0.846	
CA/TA								(-0.912)	
EBITDEP/TA								(-0.798)	
CURRAT									0.944
QUIRAT									0.999
CASRAT									0.942
WCRAT									0.931

Table 4.24: Palestine SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liqud
OITA	0.686								
ROA	0.758								
ROE	0.799								
PM	0.917								
OI/SAL	0.926								
EBIT/SAL	0.914								
EBIT/TA	0.761								
LNSAL		0.744							
LNMV		0.848							
LNTA		0.871							
TAGR			(-0.666)						
GTS			0.919						
MTB			0.641						
CE/TA			0.326						
NFA/TA				(-0.113)					
TANG/TA				0.999					
INA/TA				0.999					
INVP/TA				0.638					
DEP/TA					0.833				
EFFTAX					(-0.163)				
DEP/OI					0.482				
STDROE						0.819			
STDROA						0.819			
VOLA						0.495			
BETA						0.089			
DIV/TA							0.775		
DVDPO							(-0.032)		
DPS							0.84		
CA/LTD								0.437	
CA/STD								0.462	
CA/TA								0.748	
EBITDEP/TA								0.73	
CURRAT									0.725
QUIRAT									0.825
CASRAT									0.606
WCRAT									0.723

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Table 4.25: Qatar SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liqud
OITA	0.764								
ROA	0.616								
ROE	0.626								
PM	0.242								
OI/SAL	0.862								
EBIT/SAL	0.865								
EBIT/TA	0.779								
LNSAL		0.66							
LNMV		0.729							
LNTA		0.772							
TAGR			0.993						
GTS			0.905						
MTB			0.73						
CE/TA			(-0.087)						
NFA/TA				0.37					
TANG/TA				0.788					
INA/TA				0.667					
INVP/TA				0.657					
DEP/TA					0.672				
EFFTAX					0.445				
DEP/OI					(-0.736)				
STDROE						0.927			
STDROA						0.926			
VOLA						0.805			
BETA						0.495			
DIV/TA							0.79		
DVDPO							(-0.852)		
DPS							0.728		
CA/LTD								0.812	
CA/STD								0.877	
CA/TA								0.815	
EBITDEP/TA								0.684	
CURRAT									0.979
QUIRAT									0.974
CASRAT									0.975
WCRAT									0.977

Table 4.26: Saudi Arabia SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liqud
OITA	0.786								
ROA	0.812								
ROE	0.849								
PM	0.863								
OI/SAL	0.815								
EBIT/SAL	0.801								
EBIT/TA	0.794								
LNSAL		0.811							
LNMV		0.818							
LNTA		0.862							
TAGR			(-0.265)						
GTS			(-0.968)						
MTB			0.98						
CE/TA			0.641						
NFA/TA				0.324					
TANG/TA				0.822					
INA/TA				0.866					
INVP/TA				0.869					
DEP/TA					0.959				
EFFTAX					(-0.879)				
DEP/OI					0.992				
STDROE						0.997			
STDROA						0.997			
VOLA						0.704			
BETA						0.426			
DIV/TA							0.815		
DVDPO							(-0.639)		
DPS							0.79		
CA/LTD								(-0.749)	
CA/STD								(-0.582)	
CA/TA								0.932	
EBITDEP/TA								0.919	
CURRAT									0.995
QUIRAT									0.999
CASRAT									0.996
WCRAT									0.993

Table 4.27: Tunisia SEM Factor Loading

Variables	Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liqud
OITA	0.94								
ROA	0.972								
ROE	0.975								
PM	0.953								
OI/SAL	0.768								
EBIT/SAL	0.875								
EBIT/TA	0.978								
LNSAL		0.95							
LNMV		0.763							
LNTA		0.898							
TAGR			0.584						
GTS			0.592						
MTB			(-0.083)						
CE/TA			0.603						
NFA/TA				(-0.518)					
TANG/TA				0.597					
INA/TA				0.594					
INVP/TA				0.595					
DEP/TA					0.918				
EFFTAX					(-0.850)				
DEP/OI					0.922				
STDROE						0.314			
STDROA						(-0.314)			
VOLA						(-0.931)			
BETA						0.875			
DIV/TA							0.886		
DVDPO							(-0.582)		
DPS							0.955		
CA/LTD								0.758	
CA/STD								0.622	
CA/TA								0.539	
EBITDEP/TA								(-0.056)	
CURRAT									0.955
QUIRAT									0.875
CASRAT									0.855
WCRAT									0.753

Table 4.28: UAE SEM Factor Loading

Prof	Size	Growth	Tang	Tax	Risk	Divdend	Cash Flow	Liqud
OITA	0.924							
ROA	0.936							
ROE	0.916							
PM	(-0.918)							
OI/SAL	0.927							
EBIT/SAL	0.934							
EBIT/TA	0.959							
LNSAL		0.836						
LNMV		0.805						
LNTA		0.822						
TAGR			0.863					
GTS			0.957					
MTB			0.973					
CE/TA			(-0.101)					
NFA/TA				0.64				
TANG/TA				0.849				
INA/TA				0.874				
INVP/TA				0.884				
DEP/TA					0.468			
EFFTAX					0.879			
DEP/OI					(-0.853)			
STDROE						0.999		
STDROA						0.999		
VOLA						0.387		
BETA						(-0.488)		
DIV/TA							(-0.651)	
DVDPO							0.924	
DPS							0.972	
CA/LTD							(-0.604)	
CA/STD							(-0.309)	
CA/TA							0.867	
EBITDEP/TA							0.869	
CURRAT								0.968
QUIRAT								0.99
CASRAT								0.999
WCRAT								0.573

Part III

Results and Discussion

Chapter 5

Capital Structure In Non-Financial firms

5.1 Introduction

T he original work of Modigliani and Miller (1958) sets the starting point for research in capital structure.They argued that under several assumptions the capital structure have no effect on the value of the company. For the last half of the century since their propositions and the debate continue . The importance of the problem is what fuels more researcher to study what determine a company capital structure. The reason behind such a substantial interest is the importance of the problem to both academics,financial analysts and managers. As initiated before the propose of this chapter is to present the results and findings of the MENA countries using the different models.

Furthermore, despite the importance of the MENA region countries which include countries like Saudi Arabia the largest oil producers in the world limited number of studies compared the capital structure of MENA countries.Al-Sakran (2001) investigated the Saudi Arabian listed companies but he used a data range from 1993 to 1997. Sbeti and Moosa (2011) covered only four countries out of the GCC countries. As well as their role they also represent a very unique characteristic where there are neither corporate taxes nor personal taxes, only Zakat. As argued by Barakat and Rao (2003) this uniqueness may result in different determinants of capital structure. Furthermore, financial institutions are excluded in the literature

due to the fact that they are under the government regulations and therefore they don't have a choice to make in regards to their capital structure.However,despite existence of regulations which control the banks leverage behavior bankers still have some flexibility within a specific range were they could determine their capital structure. This chapter will include only the non-financial firms.

The objective of this chapter is to investigate empirically the capital structure theories which are the trade off-theory and the pecking order theory in MENA countries by three different methods namely the Ordinary Least Square (OLS), Panel data models and Tobit model, Dynamical models, Structural equation modelling and GRNN. This chapter will also compare these models and their results for the different capital structure theories. This chapter is structured as follows. Section (5.2) provides a brief literature review of the determinants of capital structure. Section (5.3) provides the model. In section (5.4) the empirical results are presented. Finally, section (6.5) concludes this chapter with a discussion of the findings and main results.

5.2 Literature Review and Hypothesis Development

Since the starting point set by the Modigliani and Miller (1958) work where they show that under specific assumption the capital structure relation to firms value is irrelevant. This assumption opened the door for further investigation towards what factors are relevant in the capital structure choice. In a later paper Modigliani and Miller (1963) they proposed a second idea, which is adding taxes to their model and as a result they argued that from a tax point firms should use as much as debt as they can to take advantage of the net debt tax shield. After their work several theories tried to relax the assumptions which are the trade-off theory, pecking order theory.

A group of empirical studies focus on cross-country comparison of the capital

structure determinants. For instance, Wald (1999) used a sample from five developed countries namely France, UK, Germany, Japan and USA. He concluded that although similarities of the leverage mean and factors, substantial differences exist. Furthermore, Rajan and Zingales (1995) used a sample from the G-7 countries and advised that after deeper analysis the theoretical foundation for the correlations are still unanswered. In contrast De Jong et al. (2008)used a sample of 42 countries around the world and they found that firm specific factors are not the same. They also added that the country factors have a significant influence on how companies chose their capital structure. The MENA region countries include the largest oil producers and their emerging markets are growing rapidly, they also make a very interesting area of research as the absence of taxes might have a large impact on the other determinants of capital structure. Few research papers have addressed and focused on the comparison between the countries in this region.

Sbeti (2010) study addressed a comparison of the GCC countries but the sample included only 4 out of the 6 countries forming the GCC which all have Zakat only system. This study covered the period from 1998 to 2005 and employed an adjustments model which would show speed and costs. They concluded that since there is a not tax in these countries the effect of the tax is less vital. It is also worth mentioning that industrial effects and government ownership were not investigated.Another study by Barakat and Rao (2003) addressed a comparison between taxed and Zakat Arab countries. However, there study did not differentiate the sample and results base on countries, instead they pooled the data based on the tax system.

A couple of studies were conducted on a specific country only such as Al-Sakran (2001) and Al-Ajmi et al. (2009) which is Saudi Arabia. The first did focus on the differences between sectors and suggested that the low benefits of debt tax shield

contributed to the low level of leverage. On the other hand the later tested the determinants of capital structure in Saudi Arabia and argued that companies try to minimize their debt below 33% to be included in Sahria compliance portfolios. He also concluded that the Saudi companies rely heavily on banks as they do not have any other source of debt and therfore tend to borrow less and short term rather than long term. They also suggest that future research should use other methodologies and specifically use the surveys approach.

Different methodologies are used in the research of capital structure. The majority used the OLS regression, some use the ordinary regression such as De Jong et al. (2008), others used panel data models like Zeitun and Tian (2007), Al-Ajmi et al. (2009), Sbeti and Moosa (2011), Sheikh and Wang (2011) . In contrast studies recommend the use of Tobit proposed by James Tobin (1958) model which is a censored regression model like Wald (1999) and Rajan and Zingales (1995). When researchers try to answer how firms decide on their capital structure they tend to hypotheses several determinants and then test them empirically to reject or accept their assumptions.The theories we are interested in testing propose a specific sign for each proxy which might be the same in some proxies and could differ in others.

5.2.1 Leverage

The dependent variables are defined using either by using market or book leverage. Although there is no strong evidence about the short or long term of debt it is accepted to test for the different measure in the capital structure literature. Therefore, this study would use the following measures of leverage:

1. Short-Term debt in market values

2. Long-Term debt in market values

3. Total debt in market values

4. Short-Term debt in book values

5. Long-Term debt book values

6. Total debt book values

5.2.2 Profitability

In basic business terms the existence of firms is to generate profits and increase the firm value. The relation between the profitability and the leverage is positive as suggested by the trade-off theory, bankruptcy costs, taxes and agency theory. When the firms generate more profits its bankruptcy expectation costs drop and therefore they have more incentive to utilize the non-debt tax shield thus using more debt.

Furthermore, as suggested by the agency theory in Jensen and Meckling (1976) and Jensen (1986) using leverage excessively will work as a control factor forcing managers to pay more of the surplus cash towards the firms debt. On the other hand, the pecking order theory argue that higher earnings or more profitable firms will have enough to finance their need as they prefer to use their internal funds before issuing debt thus the relation according to Myers and Majluf (1984) is negative . For this reason an inverse relation between the leverage and profitability would suggest a strong evidence of the pecking order theory since it is the only theory with this relation.

In general terms, the mainstream empirical studies of capital structure find a strong negative relation between leverage and profitability as the findings of Titman and Wessels (1988), Rajan and Zingales (1995), Booth et al. (2001) and Frank and Goyal (2009) suggest. Rajan and Zingales (1995) conclude that the relation is also linked with a third factor which is size, as they find that large firms will tend to issue less equity in comparison with the small firms and hence they conclude that the

relation gets stronger with the increase of the firms size. Furthermore, Booth et al. (2001) finds a strong negative relationship with both total debt and long term debt in both market and book values in the developing countries.

On the contrast, a few studies did find a support of the pecking order relation which is that highly profitable firms would use less debt such as Fama and French (2002). Fama and French (2002) concluded that when controlling for investment opportunities their findings support the pecking order theory in both book and market leverage and that the trade-off theory model fail as their results show.

As discussed In chapter 4 because this thesis use the SEM measure we would need to use more than one measure for profitability. Therefore, we use the ratio of operating income to total assets (OI/TA) for the panel data models as suggested by De Jong et al. (2008), Titman and Wessels (1988) and Jandik and Makhija (2001). We also use the following measures:

1. Return on Assets (ROA) as suggested by Ozkan (2001), Rajan and Zingales (1995) and Wald (1999).

2. Return on Equity (ROE) as suggested by Chiarella et al. (1991) and Chen and Jiang (2001).

3. Profit Margin (PM) as suggested by Eldomiaty (2007) and Al-Sakran (2001).

4. Operating Income to Sales (OI/SAL) as suggested by Jairo (2009) and Drobetz and Fix (2005).

5. EBIT to Total assets (EBIT/TA) as suggested by Qian et al. (2007), Song (2005) and Chen (2004).

Therefore and based on both the theoretical and empirical literature we suggest the following hypothesis following the trade-off theory:

H1: There is a significant negative relation between the profitability of the firm and its financial leverage

5.2.3 Tangibility

Assets tangibility or collateral is the measure of how much of the firm assets could be offered to debtors as collateral to secure debt. Although the differences in business industries need for fixed assets it is accepted that the higher the amount of valuables assets the firm own the less risky is the company in the eye of the debtor and the easier for it to issue debt. From a debtors point of view the firm assets could be liquidated in the case of financial distress such as bankruptcy and therefore they have a secure repayment on their loans.

According to the agency costs as explained byJensen and Meckling (1976) that if the existing collateral could be used as a guarantee for creditors against the issuance of debt then they will have higher chances of repayments. Therefore, the trade-off theory suggests a positive relation between tangibility and leverage based on the lower expected distress costs and less agency problems between debt holders and managers.

On the other hand, Grossman and Hart (1982) suggest that issuance of bonds (debt) could be used as a monitoring tools for managers. They state that there is a positive relation between the firm size and the bonds issuance and thus argue that large firms would use more debt since they own more collateral in relation to small firms. Therefore, managers of firms with high value of collateral would have less to spend on themselves while in firms with low collateral would have less debt thus suggest that managers would use the cash excessive as perquisites. As explained by Baker and Martin (2011) the notion of this debate is that the pecking order theory suggests a negative relation.

Different results were reported in the previous studies but the majority confirms

the trade-off theory positive relation such as Kayhan and Titman (2007), Fan et al. (2011) and Titman and Wessels (1988). On the other hand, Goyal et al. (2002) found a support for the pecking order theory in the fact that there is a negative relation between the leverage and tangibility.

We use several measures to represent the tangibility as we need more than one for using the PLS-SEM method. The first one we use for panel data is the net fixed assets to total assets as suggested in the previous studies by Matjaz and Dusan (2009),Huang and Song (2006) and Kakani and Reddy (1998). Furthermore, this study will use the following measures:

1. Inventory and gross Plant and equipment to total assets (INVP/TA) as suggested by Chang et al. (2009), Wald (1999) and Al-Ajmi et al. (2009). This measure would have an inverse relationship as explained by Titman and Wessels (1988).

2. Intangible Assets to Total Assets (IN/TA) as argued by Jairo (2009) and Sogorb-Mira (2005).

3. Tangible Assets to Total assets Tang/TA) as used by Friend and Lang (1988), Nikolaos and Maria (2007) and Barakat and Rao (2003).

Based on the previous literature we propose to test the following hypothesis:

H2: There is a significant negative relationship between the tangibility of the firm assets and its financial leverage

5.2.4   Risk

It is expected that firms with volatile returns would face higher costs of financial distress and the debt agency problems are also stronger when the volatility of the firms increase. Theoretically, both the pecking order theory and the trade-off theory predict a negative relationship between the risk and leverage. Jandik and Makhija

(2001) argue that the volatility factor is ignored in the early research such as Rajan and Zingales (1995) due to unavailability of data. Higher risk means that the probability of paying their debt is less and hence lenders will ask for higher return. Bradley et al. (1984) debate that companies with higher volatility are expected to have less leverage.

Furthermore, DeAngelo and Masulis (1980) argue that companies with high variability of earnings are expected to have higher cost of debt and lenders might not lend these companies.Several studies such as Bradley et al. (1984) finds a negative relation between volatility and leverage. We follow Bradley et al. (1984) and measure risk by the standard deviation of earning divided by total assets. We suggest the following hypothesis:

H3: There is a significant positive relationship between the risk of the firm and its financial leverage

5.2.5   Non-debt tax shield

The first factor to be used as a determinants of capital structure is non-deb tax shield. The static trade-off theory state that the main hypothesis are the taxes and the bankruptcy costs. Therefore, under the trade-off theory it is expected that a negative relation exist between leverage and non-debt tax shield. Furthermore, DeAngelo and Masulis (1980) argue that firms with low leverage ratio would have a low utilization of the non-debt tax shields and therefore would suggest a negative relationship between the tax and leverage.

On the other hand, as discussed previously in Chapter 4, firms who have a substantial non debt tax shield would have a high collateral assets. Therefore, this collateral could be used to secure debt which is less risk and therefore it could be expected that a positive relation exist between leverage and non-debt tax shield.

For the panel data this study will use the ratio of total depreciation to total assets

(DEP/TA) as used by Drobetz and Fix (2005) ,Titman and Wessels (1988) and Bradley et al. (1984). This study also intend to use the following measures:

- Depreciation to Operating Income (DEP/OP) as suggested by Drobetz and Fix (2005).

- Effective Tax Rate (ETR) as suggested by Eldomiaty (2007) and Sogorb-Mira (2005) .

Therefore, this study would suggest the following hypothesis:

H4: There is a significant negative relationship between the tax shield of the firm and its financial leverage

5.2.6 Growth

Growth opportunities Growth opportunities also called growth rate are a discerption used in the capital structure literature to describe a firm which is in the growth stage. It is thought that these firms would need more investment and therefore would use debt heavily to grow fast. Several agency problems could arise from these situations. Myers (1977) argue that the existence of debt in the firm's capital structure change the firms action where it creates a state where managers would make suboptimal decisions to better serve the shareholder interest. Thus leverage would create a problem of underinvestment or asset substation and therefore firms with higher growth rates would experience high costs. Therefore, the trade-off theory would argue that firms would avoid the stock-bond holders conflict because they have an incentive to not participate in under investments and asset substitution. Furthermore, Jensen (1986) free cash theory state that firms with high investments opportunities don't need the monitoring and the disciplinary of using debt. Therefore the expected relation between leverage and growth in the context of the trade-off theory is negative. On the other hand, the pecking order theory would suggest a

positive relation between leverage and growth. The theory suggest that firms with more investment opportunities would use more debt over time when the profitability is fixed as suggested by Frank and Goyal (2005).

Empirical results in the literature which find a negative relation with leverage and therefore support the trade-off theory include Frank and Goyal (2009), Rajan and Zingales (1995), Ozkan (2001) and Huang and Song (2006). In contrast Booth et al. (2001) found a positive for the majority of the countries in his sample when using the total debt. However, when using the long-term debt almost all of the results were negative which they claim could be the results of having the market value in the market to book ratio and in the market leverage which might be due to superior correlation. This study will use different ratios to represent growth opportunities, first for the panel data regression the percentage growth of the total assets (GTA) as suggested by Chang et al. (2009), Wald (1999), Fakher et al. (2009) and Kakani and Reddy (1998).Then for the PLS-SEM the study will use the following:

Growth of Total Sales (GTS) used by Wald (1999) and Kakani and Reddy (1998).

Market to book ratio (MTB) such as Gaud et al. (2005), Ozkan (2001), Rajan and Zingales (1995), Booth et al. (2001) and Goyal et al. (2002).

Capital Expenditure to Total assets (CE/TA) such as Titman and Wessels (1988) and Chang et al. (2009). Several previous studies suggest the use of the research and development (R&D) either to total assets or total sales as a proxy of growth opportunities. However, due to firms in the MENA countries not obliged to report such figures it is not possible to use them. For all the previous reasons this study hypothesis for the growth opportunities is as follow:

H5: : There is a significant negative relationship between the growth opportunities of the firm and financial leverage

5.2.7 Dividends

In the light of the pecking-order theory it is suggested that companies finance their project in an order where internal funds are their first choice. Therefore they tend to retain earnings and not pay them as dividends to shareholders. The relation between the dividends paid and the leverage is negative as Frank and Goyal (2007) found in their analysis. They argued that more investigation need to be done in this area as results are ambiguous.They found a negative relationship between the amount of dividends paid and the leverage. We define dividends as follow:

- cash dividends paid divided to net income.

- dividends payout ratio

- dividends per share

The hypothesis is: .

H6: : There is a significant negative relationship between the dividends paid by the firm and financial leverage

5.2.8 Free Cash flow

Jensen (1986) agency theory claims that the debt reduces the free cash flow. However, the pecking order theory assumes that if the free cash flow is a measure of the firm capacity to produce internal funds then a negative relationship is predictable. Free Cash Flow is negatively correlated with total debt ratio, and positively correlated with the long-term debt ratio.

This study define the free cash flow as follow:

- Cash and bank deposits and marketable securities to long term debt

- Cash and bank deposits and marketable securities to short term debt

- Cash and bank deposits and marketable securities to total assets

- EBIT plus depreciation and amortization to total assets

H7: There is a significant negative relationship between the free cash flow by the firm and financial leverage

5.2.9 Size

Although several empirical findings state that the firm size relation to the capital structure is important this relation is still unclear.Ozkan (2001) argue that it is believed that there is a positive relation between the firm size and the leverage by a number of studies. For example, Chen and Jiang (2001), De Jong et al. (2008) and Wald (1999). There is main facts behind this belief as listed by Ozkan (2001) which are:

- The ratio of direct bankruptcy costs to the firms value decrease as the firms value increase which shows that the costs of borrowing are very low as the evidence of Warner (1977) and Ang et al. (1982) prove.

- Large firms are in general more diversified and have more firm cash flows which would results in lower probability of bankruptcy as Titman and Wessels (1988) suggest.

- Large firms have easier access to capital markets and borrow at lower interest rates in comparison to small firms as argued by Ferri and Jones (1979).

Based on the previous facts we could argue that the trade-off theory suggest a positive relation between the firm size and leverage. On the other hand, Baker and Martin (2011) argue that size could be used as a proxy for information asymmetry between the managers and the capital markets. Therefore, the pecking order theory suggest a negative relation between leverage and size. There is a number of ratios

used to represent the size attribute in the literature and we use the logarithmic transformation of the Sales (LnSAL) as suggested by Gaud et al. (2005), Kayhan and Titman (2007) and Drobetz and Fix (2005).

However, several measures were also suggested and this study intend to use which are:

1. Logarithmic transformation of Total Assets Ln(TA) as suggested by Goyal et al. (2002), Frank and Goyal (2009) and Wald (1999).

2. Logarithmic transformation of Market Value Ln(MV) as suggested by Chen and Jiang (2001)

Furthermore, two additional measures suggested in the literature are logarithmic transformation of number of workers Ln(Workers) as used by Song (2005) and the quit ratio used by Titman and Wessels (1988) which this study couldn't use due to lack of data for both variables. Based on the previous discussion we hypothesize the following relation between size and leverage:

H8: There is a significant positive relation between firm size and leverage

5.2.10   Liquidity

Liquidity ratios are used to measure the firm ability to pay its short-term debt obligations. The impact on capital structure is mixed to some extent as argued by Ozkan (2001). According to Deesomsak et al. (2004) the agency theory both the cost of debt and the free cash flow theory would suggest a negative relation with leverage. In addition, the pecking order theory would also suggest a negative relation as the firm would use the internal funds then debt and therefore would also suggest a negative relation. Empirical findings from previous study overall finds a negative relation such as Ozkan (2001). In addition, De Jong et al. (2008) also find a negative relation between leverage and liquidity but it is only significant in the advanced

economies. Furthermore, Nikolaos and Maria (2007) also finds a negative relation in his study about Greece.

In this study we use the current ratio which is the current assets to current liabilities (CA/CL) for the panel data regression as suggested by De Jong et al. (2008) and Ozkan (2001) as the measure of liquidity. We also use the following ratios:

1. Quick Ratio (QR) as suggested by Nikolaos and Maria (2007) and Suhaila and Wan Mahmood (2008).

2. Working Capital Ratio as suggested by Eldomiaty (2007).

3. Cash Ratio as used by Eldomiaty (2007).

Based on the previous discussion we hypothesize the following relation between liquidity ratios and leverage:

H8: There is a significant negative relation between liquidity and leverage

5.2.11   Ownership Structure

5.2.12   Industry Classification

5.3   The Model

This chapter will examine the determinants of capital structure as discussed in the previous section and the main variable of this study is the leverage ratio, which is the dependent variable. The model can be presented as the following:

$$
\begin{aligned}
Leverage = \beta_0 &+ \beta_1 Prof + \beta_2 Liq + \beta_3 Risk + \beta_4 Size + \beta_5 Tang + \beta_6 Tax \\
&+ \beta_7 Dividends + \beta_8 Growth + \beta_9 cash + \beta_{10} Ownership + \beta 11 Industry.
\end{aligned}
\tag{5.1}
$$

Where, **Leverage** is defined using 6 ratios based on both book value and market value, the ratios this study use for book value leverage are:

1.

$$STDBVA = \frac{\text{Short term debt}}{\text{Total Assets}} \tag{5.2}$$

2.

$$LTDBVA = \frac{\text{Long term debt}}{\text{Total Assets}} \tag{5.3}$$

3.

$$TDBVA = \frac{\text{Total debt}}{\text{Total Assets}} \tag{5.4}$$

On the other hand, the following measures are used to represent the market value

leverage:

$$STDMVA = \frac{\text{Short term debt}}{\text{Market Value}} \tag{5.5}$$

$$LTDMVA = \frac{\text{Long term debt}}{\text{Market Value}} \tag{5.6}$$

$$TDMVA = \frac{\text{Total debt}}{\text{Market Value}} \tag{5.7}$$

and the independent variables are as follow:

Prof is the profitability proxy which is defined with the following ratios which are

used int this study are :

$$ROA = \frac{\text{Net Income}}{\text{Total Assets}} \tag{5.8}$$

$$ROE = \frac{\text{Net Income}}{\text{Common Equity}} \tag{5.9}$$

$$PM = \frac{\text{Net Income}}{\text{Net Sales}} \tag{5.10}$$

$$OP/TS = \frac{\text{Operating Income}}{\text{Total Sales}} \tag{5.11}$$

$$OP/TA = \frac{\text{Operating Income}}{\text{Total Assets}} \tag{5.12}$$

$$EBIT/TA = \frac{\text{EBIT}}{\text{Total Assets}} \tag{5.13}$$

$$EBIT/TS = \frac{\text{EBIT}}{\text{Total SALES}} \tag{5.14}$$

Furthermore, Liq which is the liquidity attribute is defined as follow:

$$Currat = \frac{\text{Current liabilities}}{\text{Current Assets}} \tag{5.15}$$

$$Quirat = \frac{\text{Current assets - inventories}}{\text{Current liabilities}} \tag{5.16}$$

$$Casrat = \frac{\text{Cash+Cash equivalent+ invested funds}}{\text{Current liabilities}} \tag{5.17}$$

$$Wcrat = \frac{\text{Current Assets}}{\text{Current liabilities}} \tag{5.18}$$

In addition the risk attribute is defined as :

$$Vola = \text{Standard Deviation of the share price} \tag{5.19}$$

$$STDROE = \text{Standard Deviation of the ROE} \tag{5.20}$$

$$STDROA = \text{Standard Deviation of the ROA} \tag{5.21}$$

$$Beta = \text{Beta coefficient calculated using the CAPM} \tag{5.22}$$

The size attribute is defined as :

$$Ln(SAL) = \text{logarithmic transformation of the Total Sales} \tag{5.23}$$

$$Ln(TA) = \text{logarithmic transformation of the Total Assets} \tag{5.24}$$

$$Ln(MV) = \text{logarithmic transformation of the Market Value} \tag{5.25}$$

The Tangibility attribute is represented using the following variables:

$$INVP/TA = \frac{\text{Inventory and gross plant and equipment}}{\text{Total assets}} \tag{5.26}$$

$$INA/TA = \frac{\text{Intangible Assets}}{\text{Total Assets}} \tag{5.27}$$

$$NFA/TA = \frac{\text{Net fixed assets}}{\text{Total Assets}} \tag{5.28}$$

$$Tang/TA = \frac{\text{Tangible Assets}}{\text{Total Assets}} \tag{5.29}$$

Furthermore, the Non debt Tax shield is defined using the following:

$$DEP/TA = \frac{\text{Depreciation expense}}{\text{Total Assets}} \tag{5.30}$$

$$DEP/OP = \frac{\text{Depreciation expense}}{\text{Operating income}} \tag{5.31}$$

$$EFFTAX = \frac{\text{Total tax expenses}}{\text{Taxable income}} \tag{5.32}$$

In addition, Dividends is defined using the following :

$$DEP/TA = \frac{\text{Depreciation expense}}{\text{Total Assets}} \tag{5.33}$$

$$DEP/OP = \frac{\text{Depreciation expense}}{\text{Operating income}} \tag{5.34}$$

$$EFFTAX = \frac{\text{Total tax expenses}}{\text{Taxable income}} \tag{5.35}$$

Moreover, Growth attribute is defined using :

$$TAGR = \text{percentage change in total assets value in comparison to last year} \tag{5.36}$$

$$GTS = \text{percentage change in total sales value in comparison to last year} \tag{5.37}$$

$$MTB = \frac{\text{Market value of firm}}{\text{Book value of firm}} \tag{5.38}$$

$$CE/TA = \frac{\text{Capital expenditure}}{\text{Total assets}} \tag{5.39}$$

In addition, Cash flow is defined as the following :

$$CA/LTD = \frac{\text{Cash and bank deposits and marketable securities}}{\text{Long term debt}} \quad (5.40)$$

$$CA/STD = \frac{\text{Cash and bank deposits and marketable securities}}{\text{Short term debt}} \quad (5.41)$$

$$CA/TA = \frac{\text{Cash and bank deposits and marketable securities}}{\text{Total assets}} \quad (5.42)$$

$$EBITDEP/TA = \frac{\text{EBIT+ Depreciation and Amortization}}{\text{Total assets}} \quad (5.43)$$

The Ownership attributes is defined in two ways. First as a dummy were the ultimate owner (Largest share holder) takes a 1 and 0 other wise. On the other hand the percentage of the ownership is used as a measure only in the SEM results.

The Industry dummies are added to the model to see if there is a difference in the capital structure in different industries. To test this the dummy variables are used to see if there is a significant relation with leverage.

5.4 Main Results

This section will present the results for the MENA countries using the the three models as explained in the methodology chapter. The results are presented in six tables for each country. The four tables in the begining are for the results of the panel data models. The fifth table will present the results using the SEM results. The sixth table will present the ANN results.It is worth mentioning that the industry dummy variables in the majority of the results were problematic causing several issues were it did cause the model to be unstable. Therefore this study provide the results with dummies and without dummies. Furthermore, several countries with small samples did suffer from collinearity if this is the case it will be mentioned in the discussion of the results.

The following tables answer the research question:

What is the determinants of capital structure in Bahrain using Panel Data, SEM, ANN ?

The first country presented is Bahrain which is one of the GCC countries. The first table present the short term debt panel data results. The R^2 is high above 60% across the models. The Wald test is not significant and therefore it can be concluded that there is no heteroskedasticiy. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model.

From the Table 5.1 the following conclusions could be drawn:

- Liquidity is negatively significant to the short term leverage for book and market values across all the models.

- Cash flow is negatively related to the short term debt in book term leverage across the models.

- Tangibility is positively significant with the short term debt in market value positively. But it is only negatively significant using the book value of the short term debt.

- The tax is significant with the short term debt in market value except for the tobit model.

- The ownership institutional variables is positively related to the market short term debt and significant. The ownership government variable is significant in the tobit model and positive to the book short term debt.

- The industrial classification shows that firms in the consumer goods are positively significant with the short term debt in booth market and book values. The basic materials variables is positively significant with the short term debt

in book value and the Industrials variable is positively significant with the short term debt in market value.

The second Table 5.2 show the long term debt using panel data. The Wald test is significant for the fixed effect and therefore the robust results are used. The R^2 is higher than 40% indicating and shows that the fixed effect model have the highest R^2. The following could be concluded:

- The size variable is significant and positive for both the long term debt in market and book value except for the tobit model.

- Tangibility is significant and negative only under the tobit for the long term debt in book values terms.

- the dividends variable is significant under the fixed effect model only for the book value of the long term debt.

- the ownership government variable is significant and positive for both the long term debt in market and book value except for the tobit model.

- the basic materials variables is positively significant with the short term debt in book value except for the tobit model.

The third tables which is Table 5.3 shows the results for the total debt for both book value and market value in Bahrain. The Wald test for the total debt for book value is not significant and significant for the book values at the .05 only. The Lagrange test shows that the OLS could also be used. The Hausman test is not significant and therefore would indicate that it is possible to use the Random effect. The R^2 is higher than 63% for both the book and market value. From the Table 5.3 the following conclusions could be drawn:

- Liquidity is negatively significant for both the market and book total debt.

- Size is positively significant for the total debt book value across the models and only significant for the market value using the tobit model.

- Tangibility is significant positively with the total debt using market and book total debt except when using tobit model for the book value.

- Non debt tax shield is significant and negative for the total debt in market value except for the fixed effects model.

- Dividends is also negative and significant with both the book and market value when the tobit model is applied.

- Cash flow is significant negatively with the total debt in book values.

- The ownership variables of government is significant and positive with the total market value of debt and institutional variable is positively significant with both the market and book value except for the tobit model. The individual variable is positively significant with the tobit model only.

- Industry classification variables of the basic materials and consumer goods both significant and positive. Also, the consumer goods variable is significant positively with the market value by the tobit model.

The only interest from Table 5.4 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is significant for the short term debt of book value and for both the total debt either in book values or market values. Which, indicate that firms in this country do adjust their capital structure for both the total debt and the short term debt.

Table 5.5 show the SEM results for Bahrain using the PLS approach. The model fits at the bottom of the model shows that the model fit is good without the dummy

variables and acceptable with the dummy variables. The R^2 is overall higher that 44% for all the models. From this table the following could be concluded:

- Profitability attribute is significantly negative in relation to all the measures of leverage.

- Size attribute is significantly positive in relation to all the measures of leverage.

- Growth is negatively significant to the short term and total debt in market values.

- Liquidity is negatively significant to the short term and total debt in market value and the short term debt in book value.

- Cash flow is only negatively significant in relation to the short term debt in book value.

- Ownership variable government is positively significant to all the market values measures. Additionally, the individual variable is significantly positive to the short and total debt in market value.

- In the industry classification the results show that only industrial firms have a positive relation with the short term debt in book values. Moreover, consumer goods variable is positively significant to the short term and total debt in market values.

Table 5.6 show the ANN results for Bahrain. The model fit is provided at the end of the table and the models are good. The good prediction is high with values more 40% for both measures without the dummies variables. When the dummies are added the value is lower than before but is still within accepted range. It is

worth mentioning that the only result the ANN give is a percentage of importance. It doesn't provide a sign of coefficient or a significant value. From this table the following could be concluded:

- Profitability is an important determinants for the market leverage measures.

- Size is an important determinants for both the book value measures in addition to the total debt in market values.

- Tangibility is an important determinants for both the long term and total debt in book values.

- Both liquidity and cash flow are important for the short term debt in book value.

- the only ownership important variable is the government variable in relation to the long term debt in market value.

- The industry classification is only slightly important when the firm is in the basic materials industry and it will affect the long term debt in book value. On the other hand, the telecommunication variable is slightly important for the short term debt in book values and the same for the long term value of debt in market value.

Table 5.1: Bahrain Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

BAHRAIN	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	0.1175	.1461442*	0.1175	0.0637	0.0171	0.0478	0.0171	-.4278126**
S.E.	1.6781	2.0201	1.6781	0.5600	0.2015	0.5453	0.2015	-3.2510
Profitability	0.0315	0.0479	0.0315	-0.1126	-0.0660	-0.0560	-0.0660	-0.1118
S.E	0.6764	0.9853	0.6764	-1.5425	-1.1673	-0.9515	-1.1673	-1.2718
Liquidty	-.0075305***	-.0075207***	-.0075305***	-.0710751***	-.0087733***	-.0087266***	-.0087733***	-.0416071***
S.E	-6.6118	-6.5246	-6.6118	-4.3696	-6.3396	-6.2532	-6.3396	-4.6968
Risk	0.0048	0.0021	0.0048	0.0126	0.0005	-0.0035	0.0005	-0.0196
S.E	0.4064	0.1678	0.4064	0.5504	0.0378	-0.2314	0.0378	-0.6971
Size	-0.0049	-0.0067	-0.0049	0.0081	-0.0010	-0.0028	-0.0010	0.0101
S.E	-1.2417	-1.6300	-1.2417	1.2121	-0.2070	-0.5668	-0.2070	1.2369
Tangibilty	0.0333	0.0351	0.0333	-.2113108**	.0995438**	.104555**	.0995438**	-0.0625
S.E	1.2641	1.3107	1.2641	-3.2644	3.1082	3.2284	3.1082	-0.8791
Tax	-0.2524	-0.1502	-0.2524	-0.0722	-.6528895*	-.5734711*	-.6528895*	-0.7124
S.E	-1.1643	-0.6608	-1.1643	-0.2201	-2.4789	-2.0838	-2.4789	-1.7783
Dividends	-0.0201	-0.0033	-0.0201	-0.1611	-0.0291	-0.0027	-0.0291	-0.4229
S.E	-0.2698	-0.0432	-0.2698	-0.6258	-0.3225	-0.0286	-0.3225	-1.4079
Growth	0.0251	0.3013	0.0251	-0.5347	-0.3925	-0.3153	-0.3925	-0.6669
S.E	0.0432	0.4600	0.0432	-0.6998	-0.5560	-0.3975	-0.5560	-0.6957
Cash Flow	-.0996854*	-.1122592**	-.0996854**	-.3606356*	-0.0615	-0.0756	-0.0615	-0.2228
S.E	-2.5827	-2.7180	-2.5827	-2.2424	-1.4280	-1.6568	-1.4280	-1.4510
Government	-0.0157	-0.0154	-0.0157	.144827**	-0.0104	-0.0118	-0.0104	-0.0166
S.E	-0.7579	-0.7379	-0.7579	2.6556	-0.4134	-0.4681	-0.4134	-0.6245
Instituional	0.0182	0.0198	0.0182	-0.0089	.0594162***	.0604751***	.0594162***	.0606872***
S.E	1.6494	1.7637	1.6494	-0.4007	4.4266	4.4579	4.4266	3.9992
Indivdual	0.0067	0.0108	0.0067	0.0684	0.0200	0.0232	0.0200	0.0336
S.E	0.4751	0.7469	0.4751	1.6103	1.1568	1.3209	1.1568	1.6587
Oil	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
B Materials	.0834121***	.083908***	.0834121***	.1432427***	0.0329	0.0323	0.0329	-0.0032
S.E	5.5544	5.5450	5.5544	7.6732	1.8011	1.7654	1.8011	-0.1121
Industrials	0.0154	0.0140	0.0154	-0.0601	.0784174***	.0774202***	.0784174***	.062133*
S.E	0.8714	0.7865	0.8714	-1.3265	3.6503	3.5911	3.6503	2.3416
C Goods	.1035976***	.106237***	.1035976***	.1269293***	.1488259***	.1499476***	.1488259***	.1540388***
S.E	5.9811	6.0547	5.9811	5.7884	7.0715	7.0587	7.0715	6.5404
Health	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
C Servicses	-0.0193	-0.0238	-0.0193	-.0860956*	-0.0127	-0.0171	-0.0127	-0.0228
S.E	-1.2371	-1.4977	-1.2371	-2.4903	-0.6691	-0.8895	-0.6691	-1.0378
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
R2	67%	68%			70%	70%		
N	144	144	144	144	144	144	144	128
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	12.39	Prob2	0.1347	chi2 (8)	8.55	Prob2	0.3814
Hausman	chi2(15)	4.06	Prob2	0.9975	chi2(15)	5.01	Prob2	0.992

Table 5.2: Bahrain Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care, industrials, technology and telecommunications.

BAHRAIN	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-.2022818**	-.2006235**	-.2022818**	-0.7311	-.2011154**	-.1790255*	-.2011154**	-0.7980
S.E.	-2.8501	-2.7588	-2.8501	.	-2.7669	-2.3773	-2.7669	.
Profitability	-0.0242	-0.0260	-0.0242	-0.1126	-0.0448	-0.0316	-0.0448	-0.3204
S.E	-0.5122	-0.5326	-0.5122	-1.5425	-0.9274	-0.6247	-0.9274	.
Liquidity	0.0007	0.0009	0.0007	-.0710751***	-0.0007	-0.0007	-0.0007	-0.0256
S.E	0.6039	0.7581	0.6039	-4.3696	-0.6232	-0.6011	-0.6232	.
Risk	0.0072	0.0018	0.0072	0.0126	0.0102	0.0056	0.0102	0.0396
S.E	0.5985	0.1412	0.5985	0.5504	0.8222	0.4266	0.8222	.
Size	.0120176**	.0121868**	.0120176**	0.0081	.0127479**	.0115842**	.0127479**	0.0534
S.E	2.9995	2.9652	2.9995	1.2121	3.1068	2.7219	3.1068	.
Tangibility	0.0154	0.0152	0.0154	-.2113108**	-0.0039	-0.0073	-0.0039	-0.2822
S.E	0.5750	0.5669	0.5750	-3.2644	-0.1430	-0.2614	-0.1430	.
Tax	0.1539	0.1438	0.1539	-0.0722	-0.2841	-0.1703	-0.2841	-0.6947
S.E	0.7002	0.6294	0.7002	-0.2201	-1.2624	-0.7197	-1.2624	.
Dividends	-0.1445	-.1680979*	-0.1445	-0.1611	-0.1110	-0.1130	-0.1110	-0.4450
S.E	-1.9163	-2.1813	-1.9163	-0.6258	-1.4379	-1.4164	-1.4379	.
Growth	1.1319	0.6315	1.1319	-0.5347	0.8768	0.8794	0.8768	1.2698
S.E	1.9219	0.9590	1.9219	-0.6998	1.4537	1.2896	1.4537	.
Cash Flow	-0.0416	-0.0328	-0.0416	-0.1840	-0.0199	-0.0081	-0.0199	0.0335
S.E	-1.2234	-0.9159	-1.2234	-1.6305	-0.6137	-0.2339	-0.6137	0.2909
Government	.0479398*	.0475084*	.0479398*	0.4304	.0874485***	.0892727***	.0874485***	0.6463
S.E	2.2868	2.2666	2.2868	.	4.0730	4.1130	4.0730	.
Instituional	0.0086	0.0084	0.0086	-0.0562	0.0129	0.0135	0.0129	-0.0405
S.E	0.7709	0.7418	0.7709	.	1.1286	1.1555	1.1286	.
Indivdual	-0.0034	-0.0036	-0.0034	0.3440	-0.0073	-0.0034	-0.0073	0.3685
S.E	-0.2344	-0.2465	-0.2344	.	-0.4956	-0.2240	-0.4956	.
Oil	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.			.				
B Materials	.0759785***	.075656***	.0759785***	0.1179	0.0268	0.0283	0.0268	0.0897
S.E	4.9907	4.9738	4.9907	.	1.7211	1.7955	1.7211	.
Industrials	-0.0135	-0.0133	-0.0135	-0.3703	-0.0073	-0.0091	-0.0073	-0.4468
S.E	-0.7558	-0.7410	-0.7558	.	-0.3952	-0.4920	-0.3952	.
C Goods	-0.0022	-0.0035	-0.0022	0.0380	-0.0017	0.0000	-0.0017	-0.0243
S.E	-0.1251	-0.1992	-0.1251	.	-0.0964	-0.0023	-0.0964	.
Health	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.			.				
C Servicses	-0.0149	-0.0137	-0.0149	-0.3367	-0.0138	-0.0166	-0.0138	-0.3948
S.E	-0.9403	-0.8564	-0.9403	.	-0.8526	-1.0051	-0.8526	.
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.			.				
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.			.				
R2	55%	57%			42%	42%		
N	144	144	144	144	144	144	144	144
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	59.61	Prob2	0	chi2 (8)	116.57	Prob2	0
Hausman	chi2(15)	3.99	Prob2	0.9978	chi2(15)	2.9	Prob2	0.9997

Table 5.3: Bahrain Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

BAHRAIN	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-.2693971*	-.2561586*	-.2693971*	-.6453697***	-0.1840	-0.1313	-0.1840	-.5666432**
S.E.	-2.4618	-2.2445	-2.4618	-3.8533	-1.5346	-1.0668	-1.5346	-2.8392
Profitability	0.0107	0.0113	0.0107	-0.0069	-0.1108	-0.0876	-0.1108	-0.2338
S.E	0.1469	0.1479	0.1469	-0.0659	-1.3906	-1.0596	-1.3906	-1.8891
Liquidty	-.0052083**	-.0049881**	-.0052083**	-.0270741***	-.0095102***	-.0094477***	-.0095102***	-.0540679***
S.E	-2.9256	-2.7432	-2.9256	-5.9448	-4.8762	-4.8192	-4.8762	-4.2712
Risk	0.0072	0.0011	0.0072	-0.0531	0.0107	0.0021	0.0107	0.0032
S.E	0.3877	0.0572	0.3877	-1.5806	0.5253	0.0963	0.5253	0.0819
Size	.0148619*	.0142911*	.0148619*	.038829***	0.0118	0.0088	0.0118	.0436443***
S.E	2.4058	2.2157	2.4058	3.9706	1.7368	1.2624	1.7368	3.6530
Tangibilty	.0849356*	.0895473*	.0849356*	0.0125	.0956295*	.0972758*	.0956295*	-.2451439*
S.E	2.0616	2.1220	2.0616	0.1962	2.1187	2.1381	2.1187	-2.3635
Tax	-0.0855	-0.0911	-0.0855	0.7853	-.9369942*	-0.7438	-.9369942*	-1.281349*
S.E	-0.2524	-0.2540	-0.2524	1.6375	-2.5244	-1.9238	-2.5244	-2.3068
Dividends	-0.1903	-0.1970	-0.1903	-1.110435**	-0.1402	-0.1157	-0.1402	-1.053088*
S.E	-1.6370	-1.6286	-1.6370	-3.2536	-1.1006	-0.8872	-1.1006	-2.5719
Growth	0.3679	-0.1492	0.3679	1.8073	0.4843	0.5642	0.4843	0.7298
S.E	0.4052	-0.1443	0.4052	1.6076	0.4869	0.5063	0.4869	0.5496
Cash Flow	-.1059143*	-.1152619*	-.1059143*	-.3745039*	-0.0814	-0.0837	-0.0814	-0.1706
S.E	-1.9828	-2.0338	-1.9828	-2.4644	-1.3578	-1.4010	-1.3578	-0.9004
Government	0.0323	0.0305	0.0323	.1359372*	.0770624*	.0774543*	.0770624*	.4038859***
S.E	0.9988	0.9265	0.9988	2.5485	2.1762	2.1840	2.1762	4.8400
Instituional	.0476243**	.0479488**	.0476243**	0.0206	.0723601***	.0739527***	.0723601***	0.0680
S.E	2.7582	2.7126	2.7582	0.6092	3.8253	3.8806	3.8253	1.7646
Indivdual	0.0048	0.0054	0.0048	.1033953*	0.0127	0.0198	0.0127	.1298822*
S.E	0.2149	0.2339	0.2149	2.2083	0.5203	0.8032	0.5203	2.1313
Oil	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
B Materials	.0986826***	.0974487***	.0986826***	.1321158***	.0596995*	.0606257*	.0596995*	.1318513***
S.E	4.2041	4.0822	4.2041	5.0481	2.3215	2.3556	2.3215	4.2521
Industrials	0.0401	0.0404	0.0401	-0.0556	.0711636*	.0683003*	.0711636*	-0.0600
S.E	1.4523	1.4389	1.4523	-1.0577	2.3505	2.2552	2.3505	-0.8239
C Goods	.1341524***	.1330051***	.1341524***	.2281287***	.1470922***	.1499052***	.1470922***	.1939172***
S.E	4.9551	4.8051	4.9551	6.8988	4.9592	5.0233	4.9592	5.0921
Health	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
C Servicses	-0.0076	-0.0083	-0.0076	-0.0460	-0.0265	-0.0337	-0.0265	-.1439255**
S.E	-0.3127	-0.3300	-0.3127	-1.1305	-0.9917	-1.2484	-0.9917	-3.0086
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	63%	63%	0%		66%	67%	0%	
N	144	144	144	144	144	144	144	144
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	13.67	Prob2	0.0907	chi2 (8)	16.24	Prob2	0.0391
Hausman	chi2(15)	1.61	Prob2	1	chi2(15)	3.55	Prob2	0.9989

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Table 5.4: Bahrain Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

BAHRAIN

Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	.2915239**	0.0931151	0.0464074	11.86%	.3136564***	.3012022***
S.E.	2.936249	0.9716964	0.8030452	146.84%	4.486546	3.486985
Constant	0.0819905	0.122	0.067	-0.0036737	0.1088188	0.0272972
S.E.	0.8613451	1.012	0.878	-0.0366875	0.8893476	0.1647743
Profitability	0.058	-0.034	0.021	-0.0103742	0.0368727	-0.0816342
S.E	1.124	-0.516	0.501	-0.1872953	0.5398988	-0.8900287
Liquidty	-.0090984***	-.0103392***	-0.001	-0.002122	-.0116741***	-.0139133***
S.E	-6.921	-6.201	-1.252	-1.597	-6.742119	-6.267875
Risk	-0.008	-0.009	-0.006	0.0004737	-0.0155617	-0.0093084
S.E	-0.559	-0.481	-0.531	0.0314913	-0.854196	-0.3812187
Size	-0.004	-0.007	-0.001	0.003302	-0.0026803	0.0015867
S.E	-0.872	-1.000	-0.211	0.6135892	-0.4078182	0.177713
Tangibilty	0.022	.0960546*	-0.017	-0.0496603	0.0053315	0.0237102
S.E	0.700	2.509	-0.703	-1.588773	0.1367245	0.4526135
Tax	0.047	-0.628	-0.017	0.0312224	0.1429678	-0.3842625
S.E	0.171	-1.874	-0.086	0.1160057	0.4243945	-0.8528157
Dividends	0.000	0.018	-0.034	-0.060903	0.0114358	-0.0450792
S.E	-0.002	0.158	-0.501	-0.6403597	0.1021647	-0.2910988
Growth	0.431	-0.172	2.269617***	2.295235**	2.672261**	2.474829
S.E	0.570	-0.179	3.702	2.824052	2.705147	1.859176
Cash Flow	-.1171421**	-0.0833498	-0.023104	-0.0048356	-.3745039*	-0.0820031
S.E	-2.770173	-1.639937	-0.8007961	-0.1271639	-2.46438	-1.272986
Government	-0.0103574	-0.0166088	.0500106**	.0996831***	0.0398689	.0772622*
S.E	-0.4862499	-0.6244618	2.944101	4.452657	1.448195	2.131547
Instituional	.0305819*	.0606872***	-0.0030603	0.0027392	0.0204158	.0661837**
S.E	2.550824	3.999161	-0.3238179	0.2158809	1.313884	3.191095
Indivdual	.0333292*	0.0335796	0.0048481	0.0095816	.040193*	.0655008*
S.E	2.000461	1.658738	0.4075881	0.608051	2.012511	2.407232
Oil	0	0	0	0	0	0
S.E	0	0	0	0	0	0
B Materials	.0732309**	-0.0032445	-0.0002725	-0.0283521	-.0816254**	-0.060614
S.E	3.289926	-0.1120708	-0.0157644	-1.230608	-2.733784	-1.559653
Industrials	0.0186284	.062133*	-.0471676**	-0.0383987	-0.0293029	0.0016725
S.E	0.9633281	2.341645	-3.043661	-1.86593	-1.149716	0.0483674
C Goods	.1403855***	.1540388***	-0.020859	-0.0166923	.1130853***	.1420244***
S.E	6.956321	6.540414	-1.427458	-0.8581489	4.708173	4.47947
Health	0	0	0	0	0	0
S.E	0	0	0	0	0	0
C Servicses	-0.0050755	-0.0227673	-.0442546**	-.0404287*	-.0544792*	-.0587763*
S.E	-0.2827558	-1.037813	-3.225621	-2.22467	-2.440168	-1.980018
Telecom	0	0	0	0	0	0
S.E	0	0	0	0	0	0
Technology	0	0	0	0	0	0
S.E	0	0	0	0	0	0
N	128	128	128	128	128	128

Table 5.5: Bahrain SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Prof	-0.404	-0.216	-0.365	-0.233	-0.21	-0.298	-0.673	-0.189	-0.559	-0.247	0.104	-0.137
	<0.001	0.004	<0.001	0.001	0.133	<0.001	<0.001	0.01	<0.001	0.092	0.271	0.117
Size	0.131	0.459	0.297	0.176	0.418	0.392	-0.122	0.204	0.062	-0.135	-0.067	-0.019
	0.054	<0.001	<0.001	0.009	<0.001	<0.001	0.067	0.006	0.227	0.187	0.356	0.43
Growth	-0.272	0.044	-0.202	0.069	0.19	0.062	-0.014	0.164	0.049	-0.042	0.182	-0.032
	<0.001	0.297	0.006	0.302	0.06	0.268	0.432	0.021	0.276	0.294	0.037	0.362
Tang	0.032	-0.024	0.076	0.022	-0.031	-0.077	0.131	-0.119	0.019	0.15	0.012	0.01
	0.349	0.386	0.178	0.426	0.419	0.3	0.053	0.072	0.411	0.035	0.463	0.461
Tax	0.032	-0.082	-0.03	-0.09	0.126	0.072	0.009	-0.017	-0.032	0.015	0.047	-0.007
	0.351	0.158	0.361	0.165	0.226	0.281	0.456	0.421	0.35	0.43	0.333	0.47
Risk	0.012	0.019	-0.001	-0.021	-0.017	-0.015	-0.039	-0.035	-0.009	-0.054	-0.013	0.043
	0.444	0.41	0.495	0.411	0.434	0.397	0.32	0.338	0.455	0.217	0.43	0.284
Div	0.016	0.08	-0.05	-0.034	0.015	-0.054	-0.035	-0.058	-0.076	0.026	0.039	0.049
	0.424	0.165	0.273	0.335	0.42	0.23	0.338	0.24	0.178	0.37	0.311	0.282
Liqud	-0.347	-0.18	-0.372	-0.332	-0.022	-0.12	-0.441	-0.162	-0.469	0.183	-0.124	0.11
	<0.001	0.013	<0.001	<0.001	0.423	0.22	<0.001	0.023	<0.001	0.224	0.069	0.136
Cash Flow	-0.167	-0.026	-0.125	-0.314	-0.208	-0.278	-0.412	-0.03	-0.434	-0.36	-0.454	-0.545
	0.019	0.379	0.062	<0.001	0.042	0.008	<0.001	0.357	<0.001	0.007	<0.001	<0.001
Ownership												
Gov							0.496	0.255	0.357	-0.485	0.76	0.356
							<0.001	<0.001	<0.001	0.029	0.176	0.229
indv							0.252	-0.221	0.273	-0.1	-0.043	-0.071
							<0.001	0.003	<0.001	0.214	0.311	0.194
Inst							-0.236	0.126	-0.052	-0.142	-0.252	0.091
							0.002	0.061	0.264	0.201	0.137	0.239
Industry												
Oil							0	0	0	-0.211	0.023	-0.419
							0	0	0	0.005	0.412	0.005
Mater							-0.064	-0.141	-0.04	0.128	-0.088	-0.162
							0.218	0.041	0.313	0.031	0.093	0.167
Indust							0.11	-0.082	0.011	0.36	-0.042	0
							0.088	0.158	0.449	<0.001	0.305	0
Cgoods							0.487	0	0.386	0	0	-0.262
							<0.001	0	<0.001	0	0	0.163
Health							0	0	0	0.092	0.126	-0.042
							0	0	0	0.119	0.125	0.379
Cserv							0	-0.072	0	0	0	0
							0	0.19	0	0	0	0
Telec							0.016	-0.046	-0.014	0	0	0
							0.423	0.291	0.435	0	0	0
Techno							0	0	0	0	0	0
							0	0	0	0	0	0
N	144	144	144	144	144	144	144	144	144	144	144	144
R2	44	41	46	51	31	53	73	41	84	51	31	53
Model Fit												
(APC)	0.144	P<0.001		0.144	P<0.001		0.661, P<0.001			0.679, P=0.130		
(ARS)	0.437	P<0.001		0.437	P<0.001		0.618, P<0.001			0.638, P=0.633		
(AARS)	0.399	P<0.001		0.399	P<0.001							
(AVIF)	1.385			1.385			Inf			Inf		

Table 5.6: Bahrain ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Bahrain	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	7.76%	2.06%	0.00%	52.68%	11.24%	37.61%
Size	35.34%	31.93%	27.97%	5.97%	12.55%	28.24%
Growth	0.00%	17.28%	0.22%	0.00%	15.62%	0.00%
Tangibility	0.00%	35.12%	32.97%	19.52%	13.60%	1.28%
Non-Debt Tax shield	10.14%	4.21%	0.00%	3.79%	8.02%	13.01%
Volatility	3.08%	7.43%	5.32%	0.10%	11.79%	0.18%
Dividends	0.88%	0.18%	16.22%	5.43%	8.92%	14.34%
Liquidity	21.49%	0.04%	0.00%	5.12%	10.70%	4.64%
Cash Flow	21.31%	1.76%	17.29%	7.41%	7.57%	0.70%
Good prediction %	76.36%	84.55%	39.09%	50.91%	98.18%	60.00%
S.D of abs errors	0.04	0.03	0.0318	0.0259	0.0805	0.0735
RMSE	0.04	0.04	0.0396	0.0293	0.0884	0.0803
MAE	0.02	0.02	0.02362	0.01370	0.03646	0.0325
N	144	144	144	144	144	144
Adding Dummies						
Profitability	0.76%	0.04%	45.35%	0.02%	8.39%	0.60%
Size	7.52%	0.08%	8.92%	0.06%	7.75%	0.19%
Growth	1.41%	0.02%	7.85%	0.00%	7.59%	29.96%
Tangibility	36.40%	6.32%	2.76%	33.16%	0.10%	9.52%
Non-Debt Tax shield	8.11%	20.20%	2.51%	8.61%	0.02%	5.50%
Volatility	0.00%	0.59%	0.72%	0.03%	2.22%	9.76%
Dividends	24.32%	15.31%	11.14%	22.37%	10.32%	12.66%
Liquidity	5.01%	12.55%	15.86%	16.57%	35.87%	19.13%
Cash Flow	2.37%	19.40%	1.59%	15.61%	0.00%	0.00%
Ownership Dummies						
Government	0.27%	0.10%	2.07%	0.00%	11.75%	2.94%
Institutional	0.01%	3.83%	0.00%	3.57%	0.04%	2.00%
Individual	0.29%	0.47%	0.05%	0.00%	0.03%	1.39%
Industry Dummies						
Oil	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Basic Materials	0.08%	15.04%	0.43%	0.00%	0.14%	0.32%
Consumer Goods	0.63%	0.13%	0.02%	0.00%	2.45%	4.46%
Consumer Services	0.00%	0.13%	0.00%	0.00%	0.05%	0.01%
Health Care	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Industrials	0.15%	0.08%	0.40%	0.00%	0.00%	1.37%
Technology	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Telecommunications	12.67%	5.71%	0.33%	0.00%	13.28%	0.19%
Good prediction %	37.27%	28.18%	47.27%	71.82%	51.82%	41.82%
RMSE	0.0095	0.0132	0.0067	0.0050	0.0033	0.0110
MAE	0.0046	0.0048	0.0022	0.0015	0.0010	0.0041
S.D of abs errors	0.0084	0.0123	0.0063	0.0048	0.0031	0.0102
N	144	144	144	144	144	144

The following tables answer the research question:

What is the determinants of capital structure in Egypt using Panel Data, SEM, ANN ?

The Second country presented is Egypt which is one of the largest countries in the sample of the MENA countries. First, the table of the short term debt panel data results is presented. The R^2 is low and in the range of 10% across the models. The Wald test is not significant and therefore it can be concluded that there is no heteroskedasticiy. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model. From the Table 5.7 the following conclusions could be drawn:

- Liquidity is negatively significant with the short term debt in book value.

- Size is negatively significant with the short term debt in book value.

- Tangibility is positively significant across the models for both short term debt in book and market value.

- Non-debt tax shield is positively significant for the short term debt in market value.

- Growth is negative and significant for both the fixed effect and tobit model.

- The ownership structure show that the individual and institutional using the tobit model are negatively significant.

- The industry classification as the health is significant and positive in the panel data models for the book debt only. While the technology variable is significant for the short term debt in market value using the tobit model.

The second Table 5.8 show the long term debt using panel data models. The Wald test is not significant for the fixed effect. The R^2 is high for the book debt

with 20% and lower for the market value with 10% only. The Lagrange test is not significant and the following could be concluded:

- Profitability is positively significant for the long term debt in book values.

- Liquidity is negatively significant in by using the tobit model only.

- Size is negatively significant in for the long term debt in book values.

- Tangibility is positively significant for the long term debt in book and market values.

- Non-debt tax shield is positively significant for the long term debt in book and market values.

- Dividends is positively significant for the long term debt in book values.

- Growth is negatively significant in for the long term debt in book and market values.

- Ownership government is positively significant for both the long term in book and market values. On the other hand, individual is negatively significant for the long term debt in book values. It is also negative and significant for the tobit model in the long term debt in market value.

- industry classification variable which is the consumer services is positive significant for the long term debt in the market value except for the tobit model. Telecomincation is only significant using the tobit model for the book value long term debt and is negative.

The third tables which is Table 5.9 shows the results for the total debt for both book value and market value in Bahrain. The Wald test for the total debt for book value is not significant. The Lagrange test shows that the OLS could also be used.

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The Hausman test is not significant for total debt and significant for the total market value and therefore would indicate that it is possible to use the Random effect. The R^2 is higher than 18% for both the book and market value. From the Table 5.9 the following conclusions could be drawn:

- Profitability is negatively significant for the total debt in book and market values.

- Liquidity is negatively significant for the total debt in book and market values.

- Risk is positively significant for the total debt in book values.

- Size is positively significant for the total debt in book and market values.

- Tangibility is positively significant for the total debt in book value under the fixed effect and tobit model. Likewise, it is also positively significant for the total debt in market value.

- Non-debt tax shield is negatively significant for the total debt in market values. It is also significant for tobit model using the book value measures.

- Dividends is negatively significant in for the total debt in book and market values.

- Cash flow is positively significant for total debt for both book and market values.

- Ownership government is negatively significant for the total debt in book values. Institutional variable is negatively significant for total debt in book and market values. On the other hand, individual is positively significant for the total debt in book values.

- industry classification variable which is the basic materials is significantly positive for the total debt in book values. Technology on the other hand is positively significant using the market total debt. The health variable is also negatively significant using the OLS model and the random model only.

The only interest from Table 5.10 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is significant for the short term debt of book value and for both the long term debt either in book values or market values. Which, indicate that firms in this Egypt might adjust their capital structure for both the long term debt and the short term debt.

Table 5.11 show the SEM results for Egypt using the PLS approach. The model fits at the bottom of the model shows that the model fit is good without the dummy variables and with the dummy variables. The R^2 is acceptable except for the short term debt in market value where it is only 6%. With the dummies added the long term debt in market values dropped from 23% to 8%. From this table the following could be concluded:

- Profitability attribute is significantly negative in relation to total debt in both market and book leverage.

- Size attribute is significantly positive in relation to total debt in both market and book leverage. It is also negatively significant to the short and long term debt in market values.

- Growth is negatively significant to the short term and long term debt in market values and book values.

- Tangibility is significantly positive in relation to long term debt in both market and book leverage. Likewise, it is also significant to short term debt market leverage.

- Non-debt tax shield is significant for both short and long term debt in book and market values.

- Risk is only positively significant to the short term debt in market values.

- Dividends is negatively significant to the total debt in market values and book values.

- Liquidity is negatively significant to the total debt in market values and book values. It is also significant to long term debt in market values.

- Cash flow is only positively significant in relation to the total debt in book and market values.

- Ownership variable government is positively significant to the long term debt of the market and book values. It is also negatively significant to the total debt in both market and book values. Moreover, the individual variable is significantly negative with all the 6 leverage ratios. Institutional variable is positively significant to the short term debt in book and market values.

- In the industry classification the results show that all the industry variables are significant. The oil and the consumer services variables are positively significant to the short term and long term in both market and book leverage. The material variable is positive and significant with long term debt in book and market value. It is also positive significant with the short term debt in market leverage. The industrial variable is positive and significant with both short and long term debt in book and market value. The consumer goods and the health sectors are positively significant with both short term and long term in book and market values. On the other hand, both are negatively significant with the total debt in market and book values. The technology

sector is positively significant to the short term debt in both market and book values.

Table 5.12 show the ANN results for Egypt. The model fit is provided at the end of the table and the models are good. The good prediction is high with values more 46% for both measures without the dummies variables. From this table the following could be concluded:

- Profitability is an important determinants for the book value short term debt only.

- Size is slightly important determinant for the short term and total debt in book value.

- Tangibility is an important determinants for both the short term in book values. It is also important for both the short term and long term in market values.

- Non debt tax shield is apparently the only substantial variable for the long term debt of book value, short term debt and long term debt both in market value.

Table 5.7: Egypt Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

EGYPT	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.2378728***	.2394245***	.2378728***	.250916***	.1144399*	.1172102*	.1144399*	.1658005*
S.E.	5.2288	5.2532	5.2288	3.4928	2.0265	2.0710	2.0265	2.4517
Profitability	-0.0336	-0.0350	-0.0336	-0.0639	0.0462	0.0436	0.0462	0.1180
S.E	-0.9024	-0.9352	-0.9024	-1.0086	1.0006	0.9391	1.0006	1.5501
Liquidty	-.002659**	-.002592**	-.002659**	-.0049118**	-0.0021	-0.0020	-0.0021	-.0054154*
S.E	-2.8929	-2.8105	-2.8929	-2.8469	-1.8220	-1.7864	-1.8220	-2.3744
Risk	0.0014	-0.0019	0.0014	-0.0091	-0.0013	-0.0057	-0.0013	-0.0117
S.E	0.1985	-0.2582	0.1985	-0.8129	-0.1581	-0.6350	-0.1581	-0.8382
Size	-.0106671***	-.0106048***	-.0106671***	-.0114355***	-0.0045	-0.0045	-0.0045	-0.0054
S.E	-5.2033	-5.1555	-5.2033	-3.4752	-1.7653	-1.7455	-1.7653	-1.3274
Tangibilty	.1168598***	.117951***	.1168598***	.2639806***	.1745225***	.1755768***	.1745225***	.3467158***
S.E	6.4152	6.4645	6.4152	9.3987	7.7495	7.7180	7.7495	9.8774
Tax	0.0857	0.0848	0.0857	.2333705**	.3838377***	.3836113***	.3838377***	.572831***
S.E	1.7970	1.7745	1.7970	3.2554	6.4857	6.4683	6.4857	6.4291
Dividends	0.0039	-0.0005	0.0039	-0.1518	-0.0486	-0.0462	-0.0486	-0.2099
S.E	0.0518	-0.0072	0.0518	-1.1514	-0.5207	-0.4924	-0.5207	-1.3687
Growth	-0.2413	-0.2738	-0.2413	-0.3954	-0.4992	-.5287793*	-0.4992	-1.570433**
S.E	-1.1475	-1.2828	-1.1475	-1.1977	-1.9122	-1.9952	-1.9122	-2.9507
Cash Flow	-0.0004	-0.0004	-0.0004	-0.0008	-0.0007	-0.0007	-0.0007	-0.0013
S.E	-0.5221	-0.5559	-0.5221	-0.6379	-0.8031	-0.8227	-0.8031	-0.8576
Government	-0.0364	-0.0360	-0.0364	-0.0783	-0.0354	-0.0349	-0.0354	-0.0416
S.E	-1.3778	-1.3623	-1.3778	-1.7117	-1.0802	-1.0644	-1.0802	-1.2689
Instituional	-0.0079	-0.0077	-0.0079	-.0438624***	0.0065	0.0067	0.0065	0.0041
S.E	-1.0597	-1.0425	-1.0597	-3.7074	0.7054	0.7214	0.7054	0.4359
Indivdual	-0.0158	-0.0158	-0.0158	-.0348992*	0.0068	0.0069	0.0068	0.0048
S.E	-1.6657	-1.6657	-1.6657	-2.3713	0.5785	0.5800	0.5785	0.4024
Oil	-0.0160	-0.0170	-0.0160	-0.0634	0.0062	0.0051	0.0062	0.0043
S.E	-0.5382	-0.5679	-0.5382	-1.4245	0.1675	0.1387	0.1675	0.1164
B Materials	-0.0052	-0.0062	-0.0052	-0.0702	-0.0258	-0.0273	-0.0258	-0.0278
S.E	-0.1775	-0.2140	-0.1775	-1.6171	-0.7166	-0.7549	-0.7166	-0.7695
Industrials	-0.0109	-0.0118	-0.0109	-0.0765	0.0127	0.0116	0.0127	0.0124
S.E	-0.3920	-0.4231	-0.3920	-1.8527	0.3670	0.3363	0.3670	0.3603
C Goods	0.0050	0.0042	0.0050	-0.0520	-0.0053	-0.0062	-0.0053	-0.0060
S.E	0.1793	0.1491	0.1793	-1.2519	-0.1530	-0.1793	-0.1530	-0.1731
Health	.0681417*	.0672599*	.0681417*	0.0235	0.0600	0.0590	0.0600	0.0582
S.E	2.3242	2.2910	2.3242	0.5391	1.6477	1.6191	1.6477	1.5985
C Servicses	-0.0229	-0.0238	-0.0229	-0.0678	0.0359	0.0347	0.0359	0.0331
S.E	-0.7986	-0.8315	-0.7986	-1.5924	1.0107	0.9753	1.0107	0.9310
Telecom	0.0011	-0.0002	0.0011	-0.1032	-0.0147	-0.0163	-0.0147	-0.0022
S.E	0.0331	-0.0066	0.0331	-1.9612	-0.3541	-0.3912	-0.3541	-0.0519
Technology	0.0070	0.0060	0.0070	-0.0116	0.0633	0.0622	0.0633	.0920606*
S.E	0.2093	0.1785	0.2093	-0.2334	1.5148	1.4862	1.5148	2.1180
R2	10%	10%	10%		11%	11%	11%	
N	1480	1480	1480	1480	1480	1480	1480	1448
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	4.01	Prob2	0.8566	chi2 (8)	2.09	Prob2	0.9782
Hausman	chi2(19)	3.22	Prob2	1	chi2(19)	3.22	Prob2	1

Table 5.8: Egypt Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

EGYPT	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.3450284***	.3465082***	.3450284***	.2599808*	0.0798	0.0801	0.0798	0.0068
S.E.	5.6976	5.7070	5.6976	2.4746	1.6155	1.6169	1.6155	0.0799
Profitability	.2265286***	.2284111***	.2265286***	-0.0639	-0.0201	-0.0240	-0.0201	-0.0299
S.E	4.5768	4.5876	4.5768	-1.0086	-0.4968	-0.5911	-0.4968	-0.4095
Liquidty	-0.0002	-0.0002	-0.0002	-.0049118**	0.0014	0.0014	0.0014	0.0027
S.E	-0.1649	-0.1798	-0.1649	-2.8469	1.3624	1.4133	1.3624	1.5935
Risk	0.0026	0.0018	0.0026	-0.0091	0.0063	0.0035	0.0063	0.0070
S.E	0.2867	0.1874	0.2867	-0.8129	0.8489	0.4422	0.8489	0.5287
Size	-.0181521***	-.0181731***	-.0181521***	-.0114355***	-0.0039	-0.0038	-0.0039	-0.0036
S.E	-6.6517	-6.6319	-6.6517	-3.4752	-1.7680	-1.6950	-1.7680	-0.9358
Tangibilty	.0668796**	.0669044**	.0668796**	.2639806***	.1040894***	.1049271***	.1040894***	.2845372***
S.E	2.7581	2.7525	2.7581	9.3987	5.2598	5.2898	5.2598	8.3089
Tax	.7875206***	.7886585***	.7875206***	.2333705**	.3162332***	.3156052***	.3162332***	.5999296***
S.E	12.4090	12.3952	12.4090	3.2554	6.1056	6.0783	6.1056	7.2466
Dividends	.2807152**	.2790782**	.2807152**	-0.1518	-0.0168	-0.0137	-0.0168	-0.0459
S.E	2.8068	2.7724	2.8068	-1.1514	-0.2053	-0.1665	-0.2053	-0.3110
Growth	-1.341728***	-1.357796***	-1.341728***	-0.3954	-.5680391*	-.6075937**	-.5680391*	-1.130195**
S.E	-4.7929	-4.7755	-4.7929	-1.1977	-2.4863	-2.6186	-2.4863	-2.6056
Cash Flow	-0.0004	-0.0004	-0.0004	-0.0023	-0.0009	-0.0010	-0.0009	-0.0029
S.E	-0.3947	-0.3867	-0.3947	-1.1069	-1.1931	-1.2064	-1.1931	-1.6337
Government	.1907028***	.1906735***	.1907028***	.2571346***	.0826717**	.0830069**	.0826717**	.1313744**
S.E	5.4284	5.4186	5.4284	4.3907	2.8835	2.8906	2.8835	2.7283
Instituional	-0.0021	-0.0021	-0.0021	-.0525584**	0.0144	0.0145	0.0144	-0.0234
S.E	-0.2149	-0.2101	-0.2149	-2.9721	1.7820	1.7909	1.7820	-1.6342
Indivdual	-.0407954**	-.0407753**	-.0407954**	-.0947684***	-0.0037	-0.0034	-0.0037	-.0405496*
S.E	-3.2246	-3.2173	-3.2246	-4.2521	-0.3577	-0.3327	-0.3577	-2.2688
Oil	0.0267	0.0259	0.0267	0.0262	0.0126	0.0114	0.0126	0.0161
S.E	0.6736	0.6517	0.6736	0.4037	0.3896	0.3519	0.3896	0.3062
B Materials	0.0007	-0.0002	0.0007	-0.0675	0.0169	0.0152	0.0169	-0.0256
S.E	0.0181	-0.0050	0.0181	-1.0595	0.5344	0.4816	0.5344	-0.4974
Industrials	-0.0097	-0.0104	-0.0097	-0.0816	0.0184	0.0172	0.0184	-0.0292
S.E	-0.2615	-0.2810	-0.2615	-1.3454	0.6103	0.5683	0.6103	-0.5963
C Goods	0.0208	0.0202	0.0208	-0.0420	-0.0071	-0.0084	-0.0071	-0.0596
S.E	0.5592	0.5406	0.5592	-0.6876	-0.2344	-0.2744	-0.2344	-1.2078
Health	0.0258	0.0250	0.0258	-0.0478	0.0513	0.0502	0.0513	-0.0047
S.E	0.6617	0.6403	0.6617	-0.7416	1.6095	1.5719	1.6095	-0.0898
C Servicses	-0.0219	-0.0227	-0.0219	-0.0469	.0649501*	.0638107*	.0649501*	0.0614
S.E	-0.5762	-0.5957	-0.5762	-0.7491	2.0892	2.0483	2.0892	1.2180
Telecom	-0.0364	-0.0373	-0.0364	-.1728516*	-0.0126	-0.0144	-0.0126	-0.1144
S.E	-0.8153	-0.8330	-0.8153	-2.2294	-0.3467	-0.3950	-0.3467	-1.8223
Technology	-0.0152	-0.0160	-0.0152	0.0052	0.0485	0.0474	0.0485	0.0688
S.E	-0.3387	-0.3563	-0.3387	0.0722	1.3261	1.2940	1.3261	1.1694
R2	20%	20%	20%		10%	10%	10%	
N	1480	1480	1480	1480	1480	1480	1480	1480
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	4.29	Prob2	0.8296	chi2 (8)	2.94	Prob2	0.9379
Hausman	chi2(19)	0.91	Prob2	1	chi2(19)	2.02	Prob2	1

Table 5.9: Egypt Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

EGYPT	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-.1096492*	-.1142599*	-.1096492*	-0.1184	-.1886812**	-.1919815***	-.1886812**	-.2138884**
S.E.	-2.1553	-2.2421	-2.1553	-1.8851	-3.2391	-3.2983	-3.2391	-2.9973
Profitability	-.198266***	-.2027466***	-.198266***	-.19796***	-.2471882***	-.244086***	-.2471882***	-.2602039***
S.E	-4.7682	-4.8516	-4.7682	-3.9690	-5.1919	-5.1139	-5.1919	-4.6112
Liquidty	-.0064035***	-.0063328***	-.0064035***	-.0195753***	-.0057806***	-.0059391***	-.0057806***	-.019307***
S.E	-6.2298	-6.1409	-6.2298	-4.9116	-5.0424	-5.0424	-4.9116	-7.3793
Risk	.0174772*	.0175796*	.0174772*	.022639*	0.0094	0.0134	0.0094	0.0142
S.E	2.2745	2.1742	2.2745	2.4729	1.0686	1.4505	1.0686	1.3653
Size	.0165311***	.0167947***	.0165311***	.0168011***	.0237581***	.0236244***	.0237581***	.0247138***
S.E	7.2107	7.3020	7.2107	6.1210	9.0507	8.9931	9.0507	7.9258
Tangibilty	0.0398	.0406387*	0.0398	.0598353*	.0887397***	.0879694***	.0887397***	.1166395***
S.E	1.9536	1.9919	1.9536	2.4854	3.8045	3.7752	3.8045	4.2848
Tax	-0.0964	-0.1004	-0.0964	-.1476512*	-.1408582*	-.1443461*	-.1408582*	-.2647903***
S.E	-1.8076	-1.8794	-1.8076	-2.2898	-2.3074	-2.3665	-2.3074	-3.4991
Dividends	-.3154927***	-.3091238***	-.3154927***	-.3895021***	-.4036369***	-.3740944***	-.4036369***	-.4868197***
S.E	-3.7549	-3.6586	-3.7549	-3.8216	-4.1956	-3.8765	-4.1956	-4.2237
Growth	0.1270	0.1191	0.1270	-0.2885	0.0993	0.2043	0.0993	-0.3608
S.E	0.5400	0.4989	0.5400	-0.7811	0.3687	0.7497	0.3687	-0.8623
Cash Flow	.0017935*	.0017767*	.0017935*	.0022712*	.0025244**	.002553**	.0025244**	.0029243**
S.E	2.1623	2.1395	2.1623	2.3580	2.6787	2.7126	2.6787	2.6940
Government	-.1050158***	-.1049562***	-.1050158***	-.1193672***	-0.0397	-0.0404	-0.0397	-0.0424
S.E	-3.5582	-3.5536	-3.5582	-3.3056	-1.1746	-1.1975	-1.1746	-1.0602
Instituional	-.0357341***	-.0357928***	-.0357341***	-.0590828***	-.042618***	-.0428186***	-.042618***	-.064678***
S.E	-4.3030	-4.3070	-4.3030	-4.9573	-4.4821	-4.5111	-4.4821	-5.7669
Indivdual	.0295969**	.0299841**	.0295969**	.0299006*	-0.0061	-0.0059	-0.0061	-0.0051
S.E	2.7847	2.8187	2.7847	2.3986	-0.4990	-0.4872	-0.4990	-0.3604
Oil	0.0238	0.0239	0.0238	0.0397	-0.0395	-0.0368	-0.0395	-0.0245
S.E	0.7144	0.7155	0.7144	0.9583	-1.0344	-0.9648	-1.0344	-0.5203
B Materials	.0671215*	.0669346*	.0671215*	.0973788*	0.0425	0.0451	0.0425	0.0824
S.E	2.0666	2.0577	2.0666	2.4186	1.1428	1.2151	1.1428	1.8001
Industrials	-0.0009	-0.0009	-0.0009	0.0162	-0.0030	-0.0003	-0.0030	0.0225
S.E	-0.0282	-0.0304	-0.0282	0.4187	-0.0846	-0.0098	-0.0846	0.5110
C Goods	-0.0021	-0.0023	-0.0021	0.0209	-0.0334	-0.0305	-0.0334	-0.0093
S.E	-0.0686	-0.0743	-0.0686	0.5340	-0.9323	-0.8521	-0.9323	-0.2080
Health	-0.0617	-0.0616	-0.0617	-0.0676	-.0761579*	-0.0734	-.0761579*	-0.0761
S.E	-1.8808	-1.8759	-1.8808	-1.6447	-2.0287	-1.9582	-2.0287	-1.6319
C Servicses	0.0176	0.0179	0.0176	0.0520	0.0209	0.0235	0.0209	0.0606
S.E	0.5510	0.5593	0.5510	1.2904	0.5696	0.6428	0.5696	1.3238
Telecom	0.0554	0.0549	0.0554	0.0844	-0.0379	-0.0347	-0.0379	-0.0061
S.E	1.4762	1.4603	1.4762	1.8547	-0.8812	-0.8077	-0.8812	-0.1187
Technology	0.0515	0.0519	0.0515	.0951321*	.1173125**	.1205561**	.1173125**	.1680579**
S.E	1.3687	1.3769	1.3687	2.0711	2.7233	2.8023	2.7233	3.2200
R2	18%	18%	0%		18%	18%	0%	
N	1480	1480	1480	1480	1480	1480	1480	1480
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	6.69	Prob2	0.5708	chi2 (8)	21.17	Prob2	0.0067
Hausman	chi2(19)	3.94	Prob2	0.9999	chi2(19)	-8.67 chi2<0		

Table 5.10: Egypt Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

EGYPT

Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	-.0825831**	-0.0030561	.1073939***	.0680275**	-0.0111362	-0.0018675
S.E.	-3.228473	-0.1200545	4.34679	262.92%	-0.4600474	-0.0784879
Constant	.2609913***	.1272386*	.3644236***	0.0864823	-.0992585*	-.1963867***
S.E.	5.669661	2.240	5.872	1.731895	-1.96903	-3.487527
Profitability	-0.030	0.043	.2499174***	-0.0313895	-.1963297***	-.2726761***
S.E	-0.778	0.907	4.855	-0.7588405	-4.69005	-5.836113
Liquidty	-.0027974**	-0.002	0.000	0.0014483	-.0065038***	-.0057551***
S.E	-3.009	-1.789	-0.259	1.432503	-6.360496	-5.044918
Risk	-0.004	-0.005	0.000	0.0037807	.0180445*	0.0158709
S.E	-0.525	-0.579	-0.025	0.4808103	2.263731	1.783248
Size	-.0113251***	-0.005	-.0195657***	-.0044694*	.0161907***	.023773***
S.E	-5.441	-1.931	-6.947	-1.965137	7.096237	9.249081
Tangibilty	.1214543***	.1697328***	.0758618**	.0900501***	0.027831	0.0375118
S.E	6.423	7.247	2.967	4.392348	1.341326	1.609951
Tax	0.075	.3854356***	.7620426***	.3242535***	-.1041255*	-.1289677*
S.E	1.569	6.511	11.706	6.233358	-1.971512	-2.187694
Dividends	-0.020	-0.039	.2671867*	0.0204258	-.3084765***	-.3206981***
S.E	-0.262	-0.412	2.558	0.2435647	-3.627606	-3.391638
Growth	-0.270	-.5661601*	-1.36393***	-.6113045*	0.1218577	0.2291944
S.E	-1.256	-2.082	-4.512	-2.52682	0.5174227	0.8514161
Cash Flow	-0.0004305	-0.0007493	-0.0009165	-0.0011526	.0022712*	.0024749**
S.E	-0.5965662	-0.8365135	-0.9250722	-1.44969	2.357954	2.675699
Government	-0.0443231	-0.0415966	.186214***	.0807744**	-.1171393***	-0.0554024
S.E	-1.670332	-1.268931	5.208565	2.817123	-4.031802	-1.706026
Instituional	-0.009656	0.0040893	-0.0095781	0.0143141	-.043107***	-.0476896***
S.E	-1.277916	0.4359031	-0.9383016	1.755021	-5.194977	-5.161167
Indivdual	-.0213708*	0.0047953	-.0463498***	-0.0031427	.0245899*	-0.0050899
S.E	-2.216683	0.4023864	-3.567672	-0.3011557	2.332106	-0.4316515
Oil	-0.0169708	0.0043106	0.0241694	0.0146959	0.023365	-0.0305156
S.E	-0.5673625	0.1164452	0.5979206	0.4530991	0.7127312	-0.832126
B Materials	-0.0065629	-0.0277725	0.0034578	0.0148126	.0676376*	0.0498635
S.E	-0.2252054	-0.7695142	0.0877158	0.468457	2.117922	1.394633
Industrials	-0.0147252	0.0124474	-0.0100656	0.0205236	0.0010767	0.0085035
S.E	-0.5275068	0.3603053	-0.2668932	0.6781974	0.0352187	0.2485153
C Goods	0.0027054	-0.0060214	0.0158815	-0.0086498	0.0019258	-0.0192631
S.E	0.0962531	-0.1730682	0.4179957	-0.2836668	0.0625261	-0.5586449
Health	.0654365*	0.0582233	0.0258593	0.0545975	-0.062453	-0.0643074
S.E	2.223609	1.598502	0.6499607	1.710896	-1.936532	-1.781417
C Servicses	-0.0259496	0.0331075	-0.0158141	0.0607177	0.0179239	0.0150311
S.E	-0.9029097	0.9309546	-0.4073455	1.950708	0.5691465	0.426759
Telecom	0.0100212	-0.0021878	-0.018763	-0.0012954	.0761003*	0.0002372
S.E	0.2944893	-0.051927	-0.4078562	-0.035115	2.041325	0.005685
Technology	0.0301445	.0920606*	0.0079516	0.0604399	.0985875*	.1976766***
S.E	0.8577618	2.117957	0.1675651	1.581895	2.561361	4.591704
N	1448	1448	1448	1448	1448	1448

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Table 5.11: Egypt SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Prof	-0.003	0.019	-0.199	0.045	0.017	-0.17	0.019	0.043	-0.206	0.018	0.041	-0.206
	0.459	0.232	<0.001	0.043	0.255	<0.001	0.228	0.047	<0.001	0.242	0.057	<0.001
Size	-0.063	-0.055	0.102	-0.133	-0.082	0.201	-0.012	-0.051	0.137	-0.015	-0.083	0.138
	0.007	0.018	<0.001	<0.001	<0.001	<0.001	0.321	0.025	<0.001	0.286	<0.001	<0.001
Growth	-0.125	-0.127	-0.027	-0.102	-0.218	-0.032	-0.105	-0.105	0.002	-0.118	-0.187	-0.024
	<0.001	<0.001	0.152	<0.001	<0.001	0.112	<0.001	<0.001	0.472	<0.001	<0.001	0.176
Tang	0.173	0.171	0.006	0.055	0.211	0.001	0.14	0.105	-0.023	0.181	0.216	-0.01
	<0.001	<0.001	0.402	0.017	<0.001	0.492	<0.001	<0.001	0.184	<0.001	<0.001	0.357
Tax	0.121	0.143	-0.068	0.131	0.234	-0.036	0.141	0.151	-0.075	0.13	0.225	-0.076
	<0.001	<0.001	0.004	<0.001	<0.001	0.08	<0.001	<0.001	0.002	<0.001	<0.001	0.002
Risk	0.116	0.027	0.044	-0.017	-0.004	0.048	0.106	0.016	0.027	0.106	-0.009	0.024
	<0.001	0.147	0.046	0.259	0.443	0.033	<0.001	0.275	0.152	<0.001	0.369	0.174
Div	-0.024	-0.001	-0.163	-0.007	0.115	-0.208	-0.019	0.008	-0.147	-0.017	0.12	-0.146
	0.175	0.491	<0.001	0.389	<0.001	<0.001	0.228	0.38	<0.001	0.252	<0.001	<0.001
Liqud	-0.057	0.08	-0.223	-0.063	-0.048	-0.252	-0.051	0.067	-0.205	-0.045	-0.058	-0.203
	0.014	<0.001	<0.001	0.008	0.033	<0.001	0.026	0.005	<0.001	0.041	0.013	<0.001
Cash Flow	-0.017	-0.034	0.174	-0.009	-0.034	0.138	-0.04	-0.058	0.114	-0.03	-0.04	0.115
	0.251	0.095	<0.001	0.361	0.094	<0.001	0.06	0.012	<0.001	0.122	0.061	<0.001
Ownership												
Gov							-0.027	0.15	-0.175	-0.022	0.227	-0.175
							0.148	<0.001	<0.001	0.2	<0.001	<0.001
indv							-0.106	-0.124	-0.105	-0.101	-0.078	-0.105
							<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Inst							0.121	0.032	-0.064	0.119	0.032	-0.064
							<0.001	0.112	0.007	<0.001	0.106	0.007
Industry												
Oil							0.118	0.103	-0.034	0.099	0.139	-0.041
							<0.001	<0.001	0.094	<0.001	<0.001	0.055
Mater							0.087	0.159	0.055	0.068	0.127	0.046
							<0.001	<0.001	0.017	0.004	<0.001	0.039
Indust							0.241	0.229	0.013	0.207	0.164	0
							<0.001	<0.001	0.305	<0.001	<0.001	0.492
Cgoods							0.203	0.174	-0.088	0.174	0.222	-0.1
							<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Health							0.24	0.198	-0.109	0.222	0.139	-0.116
							<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cserv							0.239	0.294	0.037	0.226	0.122	0.028
							<0.001	<0.001	0.076	<0.001	<0.001	0.138
Telec							0.072	0.067	-0.025	0.06	0.041	-0.03
							0.003	0.005	0.166	0.01	0.057	0.122
Techno							0.121	0.078	0.036	0.104	0.012	0.03
							<0.001	0.001	0.085	<0.001	0.318	0.122
N	1480	1480	1480	1480	1480	1480	1480	1480	1480	1480	1480	1480
R2	6	23	26	11	11	22	10	8	29	11	30	29
Model Fit												
(APC)	0.092	P<0.001		0.092	P<0.001		0.102	P<0.001		0.1	P<0.001	
(ARS)	0.166	P<0.001		0.166	P<0.001		0.157	P<0.001		0.234	P<0.001	
(AARS)	0.161	P<0.001		0.161	P<0.001		0.145	P<0.001		0.224	P<0.001	
(AVIF)	1.159			1.159			3.766			3.73		

Table 5.12: Egypt ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Egypt	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	22.17%	8.46%	9.80%	9.30%	6.25%	13.55%
Size	17.26%	8.33%	17.85%	12.92%	12.48%	11.66%
Growth	9.92%	9.88%	13.70%	7.32%	4.81%	11.12%
Tangibility	20.01%	9.17%	8.26%	18.45%	16.43%	8.20%
Non-Debt Tax shield	10.30%	22.66%	7.21%	22.27%	32.43%	10.31%
Volatility	0.74%	9.00%	10.95%	9.74%	5.75%	6.85%
Dividends	6.71%	18.55%	7.86%	6.51%	2.99%	12.27%
Liquidity	6.57%	3.07%	12.43%	6.70%	9.88%	12.16%
Cash Flow	6.33%	10.87%	11.95%	6.80%	8.98%	13.89%
Good prediction %	56.37%	52.04%	73.68%	50.00%	46.77%	65.87%
S.D of abs errors	0.07	0.14	0.0775	0.1080	0.0846	0.1207
RMSE	0.08	0.15	0.0907	0.1171	0.0908	0.1448
MAE	0.02	0.05	0.04703	0.04527	0.03280	0.0800
N	1472	1472	1472	1472	1472	1472
Adding Dummies						
Profitability	21.84%	2.70%	2.72%	5.63%	4.42%	5.57%
Size	9.21%	8.29%	10.29%	14.32%	9.54%	11.05%
Growth	3.66%	6.32%	4.30%	6.28%	3.23%	6.04%
Tangibility	11.03%	7.66%	5.75%	20.80%	8.26%	13.11%
Non-Debt Tax shield	13.22%	21.35%	7.88%	18.01%	16.14%	7.11%
Volatility	1.30%	1.96%	7.84%	0.27%	6.15%	2.58%
Dividends	1.66%	7.00%	7.12%	4.73%	11.60%	3.10%
Liquidity	4.80%	7.68%	11.40%	4.00%	8.48%	9.04%
Cash Flow	4.09%	5.44%	9.14%	3.62%	7.02%	8.45%
Ownership Dummies						
Government	2.39%	5.79%	5.47%	1.86%	6.16%	5.66%
Institutional	3.31%	2.92%	4.06%	3.69%	1.91%	2.37%
Individual	3.70%	2.73%	2.05%	0.01%	4.50%	3.53%
Industry Dummies						
Oil	1.83%	3.24%	3.06%	1.13%	1.16%	3.00%
Basic Materials	2.74%	1.63%	3.33%	3.11%	0.16%	0.23%
Consumer Goods	0.33%	1.19%	0.20%	0.01%	0.93%	2.59%
Consumer Services	1.51%	2.10%	1.76%	1.71%	0.24%	1.87%
Health Care	6.17%	1.80%	2.09%	2.61%	1.24%	2.84%
Industrials	0.11%	0.43%	1.40%	0.81%	1.81%	0.17%
Technology	5.37%	6.54%	6.61%	6.49%	5.55%	8.26%
Telecommunications	1.74%	3.24%	3.50%	0.90%	1.50%	3.43%
Good prediction %	46.86%	66.13%	70.63%	53.74%	51.61%	67.57%
RMSE	0.0332	0.0175	0.0370	0.0353	0.0300	0.0527
MAE	0.0090	0.0023	0.0163	0.0091	0.0060	0.0255
S.D of abs errors	0.0319	0.0173	0.0332	0.0341	0.0294	0.0461
N	1472	1472	1472	1472	1472	1472

The following tables answer the research question:

What is the determinants of capital structure in Jordan using Panel Data, SEM, ANN ?

The third country in this chapter is Jordan which is one of the largest countries in the sample of the MENA countries. First, the table of the short term debt panel data results is presented. The R^2 is low and in the range of 10% across the models. The Wald test is not significant and therefore it can be concluded that there is no heteroskedasticiy. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model. From the Table 5.13 the following conclusions could be drawn:

- Profitability is negatively significant with the short term debt in book value.

- Liquidity is negatively significant with the short term debt in book and market value.

- Size is positively significant with the short term debt in book and market value.

- Tangibility is negatively significant across the models for both short term debt in book and market value.

- Non-debt tax shield is positively significant for the short term debt in market value.

- Dividends is significantly negative for both short term debt in book and market value.

- Growth is negative and significant for both the tobit model in the book value.

- Cash flow is significantly negative for both short term debt in book and market value.

- The ownership structure show that the gooverment variable is negative and significant for both market value and book value of short term debt. On the other hand, individual variable also significantly negative using the tobit model.

- The industry classification show that only the oil sector is positive and significant.

The second Table 5.14 show the long term debt using panel data models. The Wald test is not significant for the fixed effect. The R^2 is acceptable for the book debt with 15% and lower for the market value with 8% only. The Lagrange test is not significant and the following could be concluded:

- Profitability is negatively significant for the long term debt in book values.

- Liquidity is negatively significant for the long term debt in market values.

- Size is positively significant for the long term debt in book values using the tobit model.

- Tangibility is negatively significant in for the long term debt in book values using the tobit model.

- Non-debt tax shield is positively significant for the long term debt in book and market values.

- Dividends is negatively significant for the long term debt in book and market values using the tobit model only.

- Growth is negatively significant in for the long term debt in market values using tobit.

- Ownership individual is negatively significant for the long term debt in book values. It is also negative and significant for institutional variable for both the long term debt in market value and book value.

- industry classification variable which is the oil is significantly negative using the tobit model.

The third tables which is Table 5.15 shows the results for the total debt for both book value and market value in Jordan. The Wald test for the total debt for book value is not significant but significant for the market total debt and therefore the errors reported are robust. The Lagrange test is not significant and therefore the random effect could be used. The Hausman test is not significant for total debt and significant for the total market value and therefore would indicate that it is possible to use the Random effect. The R^2 is higher than 25% for both the book and market value. From the Table 5.15 the following conclusions could be drawn:

- Profitability is negatively significant for the total debt in book and market values.

- Liquidity is negatively significant for the total debt in book and market values.

- Size is positively significant for the total debt in book and market values.

- Tangibility is negatively significant for the total debt in book and market values across all the models.

- Non-debt tax shield is negatively significant for the total debt book and market values across all the models.

- Dividends is negatively significant in for the total debt in book and market values.

- Growth is negatively significant in for the total debt in book and market values except for the fixed effect model with the book values.

- Cash flow is negatively significant for total debt for book value.

- Ownership government is negatively significant for the total debt in book and market values. Institutional variable is negatively significant for total debt in book values and only using the tobit model for the market value. On the other hand, individual negatively significant for total debt in book values,

- industry classification variable which is the oil positively significant using both market and book total debt.

The only interest from Table 5.16 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is negatively significant for the long term debt of book and market value. Which, indicate that firms in this Jordan might adjust their capital structure for both the long term debt.

Table 5.17 show the SEM results for Jordan using the PLS approach. The model fits at the bottom of the model shows that the model fit is good without the dummy variables and not fit with the dummy variables. The R^2 is acceptable except for the long term debt in both market value and book values. From this table the following could be concluded:

- Profitability attribute is significantly negative to long term debt in market value. On the other hand, it is positively significant to the short term debt in books value

- Growth is negatively significant to the long term debt in book values.

- Tangibility is significantly positive in relation to short term debt book leverage.

- Non-debt tax shield is positively significant for long term debt in book and market values. Similarly, it is positively significant to short term debt in book value.

- Dividends is negatively significant to the total debt in book values and short term debt in book values.

- Liquidity is negatively significant to the total debt in market values and book values. It is also significant to long term debt in book values and short term debt in market values.

- Cash flow is negatively significant in relation all debt variables in book and market values.

- Ownership variable government is positively significant to the long term debt book values. It is also negatively significant to the short term debt in book values. In addition, the individual variable is significantly negative with the long term debt in book values. Institutional variable is negatively significant to the three measures of debt in book values.

- industry variables of consumer services and the health sectors are negatively significant with total debt in book value. It is also negatively significant short term debt in book values.

In addition, Table 5.18 show the ANN results for Jordan. Overall the good prediction is high with values higher than 41% without dummies and 45% with dummies. From this table the following could be concluded:

- Profitability measure is slightly important for both the total debt in market and book values.

- Non debt tax shield is substantially important in relation to both the long term debt in market and book values.

- Volatility is slightly important for the long term and total debt in book values.

- Liquidity is substantially important in relation short term debt in book value, short term and long term debt in market value.

- Cash flow is only substantially important for the total debt in market value.

Table 5.13: Jordan Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

JORDAN	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-0.1555	-0.1519	-0.1555	-.2226235*	-0.0681	-0.0593	-0.0681	-0.0771
S.E.	-1.8973	-1.8477	-1.8973	-2.2838	-0.8242	-0.7184	-0.8242	-1.3246
Profitability	-0.0611	-0.0495	-0.0611	-0.0707	-.3092574***	-.283172***	-.3092574***	-.335566***
S.E	-0.7975	-0.6384	-0.7975	-0.7745	-4.0035	-3.6380	-4.0035	-3.8126
Liquidty	-.0032614*	-.0031635*	-.0032614*	-.0074067***	-.0075037***	-.0072603***	-.0075037***	-.0088681***
S.E	-2.2775	-2.1980	-2.2775	-3.5432	-5.2001	-5.0251	-5.2001	-5.4581
Risk	0.0055	0.0045	0.0055	0.0058	-0.0021	-0.0033	-0.0021	-0.0068
S.E	0.4754	0.3923	0.4754	0.4343	-0.1810	-0.2836	-0.1810	-0.5135
Size	.019093***	.0189167***	.019093***	.0277607***	.0175238***	.017133***	.0175238***	.0211121***
S.E	5.9489	5.8733	5.9489	7.0150	5.4185	5.2992	5.4185	5.7818
Tangibilty	-.128091***	-.127932***	-.128091***	-.1303067***	-.1312641***	-.1320287***	-.1312641***	-.1257089***
S.E	-6.2755	-6.2436	-6.2755	-5.3869	-6.3821	-6.4190	-6.3821	-5.3747
Tax	.3364587***	.3391821***	.3364587***	.4578499***	-0.0649	-0.0615	-0.0649	-0.0157
S.E	4.0475	4.0661	4.0475	4.7500	-0.7754	-0.7343	-0.7754	-0.1688
Dividends	-.7142422***	-.7301185***	-.7142422***	-1.119206***	-.6427842***	-.6721812***	-.6427842***	-1.03565***
S.E	-3.9450	-4.0084	-3.9450	-4.8564	-3.5233	-3.6762	-3.5233	-4.5726
Growth	-0.5509	-0.5766	-0.5509	-.8535814*	-0.5366	-0.5172	-0.5366	-0.6416
S.E	-1.7512	-1.8069	-1.7512	-2.1371	-1.6928	-1.6144	-1.6928	-1.7775
Cash Flow	-.2533697***	-.2531289***	-.2533697***	-.4797422***	-.2002205***	-.2005003***	-.2002205***	-.3355396***
S.E	-7.4887	-7.4533	-7.4887	-9.1969	-5.7248	-5.7329	-5.7248	-7.0560
Government	-.1043207**	-.1046249**	-.1043207**	-.1624971***	-.0906961**	-.0926465**	-.0906961**	-.1074825**
S.E	-3.1512	-3.1504	-3.1512	-3.8879	-2.7189	-2.7790	-2.7189	-3.1713
Instituional	-0.0246	-0.0246	-0.0246	-0.0280	-0.0210	-0.0210	-0.0210	-0.0203
S.E	-1.7711	-1.7637	-1.7711	-1.7358	-1.5026	-1.5041	-1.5026	-1.4598
Indivdual	-0.0244	-0.0245	-0.0244	-.0369062*	-0.0236	-0.0245	-0.0236	-0.0257
S.E	-1.7776	-1.7814	-1.7776	-2.3059	-1.7101	-1.7764	-1.7101	-1.8590
Oil	0.0616	0.0616	0.0616	0.0363	.1791718***	.1794259***	.1791718***	.2769011***
S.E	1.2729	1.2690	1.2729	0.5972	3.6715	3.6816	3.6715	4.4221
B Materials	0.0764	0.0759	0.0764	0.0181	0.0833	0.0815	0.0833	0.0772
S.E	1.2748	1.2633	1.2748	0.2569	1.3800	1.3523	1.3800	1.2916
Industrials	0.0874	0.0868	0.0874	0.0217	0.0700	0.0679	0.0700	0.0644
S.E	1.4424	1.4285	1.4424	0.3018	1.1464	1.1131	1.1464	1.0639
C Goods	0.0477	0.0474	0.0477	-0.0299	0.0219	0.0202	0.0219	0.0103
S.E	0.7812	0.7743	0.7812	-0.4142	0.3558	0.3292	0.3558	0.1691
Health	0.0266	0.0260	0.0266	-0.0406	-0.0119	-0.0144	-0.0119	-0.0346
S.E	0.4250	0.4138	0.4250	-0.5487	-0.1894	-0.2282	-0.1894	-0.5527
C Servicses	0.0279	0.0273	0.0279	-0.0477	0.0126	0.0106	0.0126	0.0061
S.E	0.4678	0.4566	0.4678	-0.6712	0.2089	0.1760	0.2089	0.1019
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
R2	15%	15%	10%		21%	21%	11%	
N	904	904	904	904	904	904	904	904
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	3.39	Prob2	0.9079	chi2 (8)	6.92	Prob2	0.5452
Hausman	chi2(17)	1.96	Prob2	1	chi2(17)	14.7	Prob2	0.6169

Table 5.14: Jordan Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

JORDAN	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-0.0029	-0.0006	-0.0029	-0.1377	0.0275	0.0335	0.0275	0.0343
S.E.	-0.0512	-0.0105	-0.0512	-1.4706	0.3915	0.4767	0.3915	0.3160
Profitability	-0.0643	-0.0546	-0.0643	-0.0707	-.2128158**	-.1916461**	-.2128158**	-.2171555*
S.E	-1.2106	-1.0178	-1.2106	-0.7745	-3.2444	-2.8962	-3.2444	-2.0386
Liquidty	-.0039886***	-.0039657***	-.0039886***	-.0074067***	-0.0022	-0.0020	-0.0022	-.0081907**
S.E	-4.0210	-3.9792	-4.0210	-3.5432	-1.7703	-1.5982	-1.7703	-3.0639
Risk	.032788***	.0336229***	.032788***	0.0058	0.0044	0.0048	0.0044	0.0154
S.E	4.1269	4.2035	4.1269	0.4343	0.4474	0.4870	0.4474	0.9689
Size	0.0026	0.0025	0.0026	.0277607***	0.0028	0.0025	0.0028	0.0018
S.E	1.1761	1.1377	1.1761	7.0150	1.0185	0.9224	1.0185	0.3981
Tangibilty	0.0100	0.0092	0.0100	-.1303067***	0.0003	-0.0005	0.0003	0.0216
S.E	0.7050	0.6512	0.7050	-5.3869	0.0174	-0.0277	0.0174	0.7636
Tax	.4023031***	.4019845***	.4023031***	.4578499***	.288891***	.2907504***	.288891***	.4471265***
S.E	6.9868	6.9595	6.9868	4.7500	4.0616	4.0843	4.0616	4.0444
Dividends	-0.1808	-0.1942	-0.1808	-1.119206***	-0.1359	-0.1586	-0.1359	-.6377373*
S.E	-1.4414	-1.5395	-1.4414	-4.8564	-0.8772	-1.0204	-0.8772	-2.2243
Growth	0.1090	0.1328	0.1090	-.8535814*	0.2688	0.2992	0.2688	0.3483
S.E	0.5002	0.6012	0.5002	-2.1371	0.9985	1.0986	0.9985	0.7977
Cash Flow	0.0274	0.0267	0.0274	-0.0498	-0.0190	-0.0195	-0.0190	-.1197028*
S.E	1.1403	1.1042	1.1403	-1.0918	-0.6599	-0.6450	-0.6599	-2.1756
Government	-0.0233	-0.0240	-0.0233	0.0097	-0.0315	-0.0334	-0.0315	0.0327
S.E	-1.0141	-1.0440	-1.0141	0.2482	-1.1123	-1.1794	-1.1123	0.7011
Instituional	-.0264371**	-.026477**	-.0264371**	-.0426454**	-.027463*	-.0275059*	-.027463*	-.0403288*
S.E	-2.7475	-2.7461	-2.7475	-2.6782	-2.3105	-2.3148	-2.3105	-2.1048
Indivdual	-.0366178***	-.0372149***	-.0366178***	-.0552502***	-0.0219	-0.0229	-0.0219	-0.0286
S.E	-3.8567	-3.9082	-3.8567	-3.5241	-1.8707	-1.9511	-1.8707	-1.5275
Oil	-0.0311	-0.0313	-0.0311	-.2252559**	0.0093	0.0095	0.0093	0.0010
S.E	-0.9272	-0.9303	-0.9272	-2.8177	0.2235	0.2302	0.2235	0.0149
B Materials	0.0219	0.0211	0.0219	-0.0217	0.0158	0.0140	0.0158	-0.0644
S.E	0.5272	0.5067	0.5272	-0.3390	0.3072	0.2731	0.3072	-0.8318
Industrials	0.0464	0.0454	0.0464	0.0435	0.0371	0.0351	0.0371	0.0174
S.E	1.1062	1.0807	1.1062	0.6666	0.7153	0.6778	0.7153	0.2212
C Goods	0.0108	0.0096	0.0108	-0.0558	0.0000	-0.0019	0.0000	-0.0978
S.E	0.2546	0.2272	0.2546	-0.8444	0.0002	-0.0363	0.0002	-1.2256
Health	0.0145	0.0133	0.0145	0.0326	0.0018	-0.0005	0.0018	0.0049
S.E	0.3356	0.3057	0.3356	0.4824	0.0343	-0.0094	0.0343	0.0607
C Servicses	0.0305	0.0296	0.0305	0.0092	0.0236	0.0218	0.0236	-0.0178
S.E	0.7363	0.7131	0.7363	0.1428	0.4627	0.4259	0.4627	-0.2287
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	15%	15%			8%	8%		
N	904	904	904	904	904	904	904	904
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	4.07	Prob2	0.8508	chi2 (8)	12.58	Prob2	0.1273
Hausman	chi2(17)	2.53	Prob2	1	chi2(17)	7.46	Prob2	0.9767

Table 5.15: Jordan Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

JORDAN	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	0.0078	0.0149	0.0078	0.0940	-0.1174	-0.1047	-0.1174	-0.0817
S.E.	0.0981	0.1861	0.0981	1.0652	-1.2400	-1.1098	-1.2400	-0.7998
Profitability	-.1932536**	-.1700635*	-.1932536**	-0.0936	-.4772154***	-.4359042***	-.4772154***	-.480185***
S.E	-2.5873	-2.2561	-2.5873	-1.1202	-5.3876	-4.9005	-5.3876	-5.0282
Liquidty	-.012059***	-.011853***	-.012059***	-.0261425***	-.0125057***	-.0121405***	-.0125057***	-.0161687***
S.E	-8.6428	-8.4716	-8.6428	-11.2333	-7.5581	-7.3531	-7.5581	-8.6933
Risk	0.0078	0.0076	0.0078	0.0122	0.0039	0.0032	0.0039	0.0049
S.E	0.6947	0.6799	0.6947	0.9912	0.2936	0.2398	0.2936	0.3433
Size	.0161643***	.0158723***	.0161643***	.0158715***	.0273273***	.0267872***	.0273273***	.0329264***
S.E	5.1691	5.0695	5.1691	4.5222	7.3692	7.2502	7.3692	8.2461
Tangibilty	-.1235096***	-.1242597***	-.1235096***	-.1413768***	-.1721724***	-.1739346***	-.1721724***	-.1788995***
S.E	-6.2105	-6.2384	-6.2105	-6.4515	-7.3005	-7.3999	-7.3005	-7.0518
Tax	-.2347219**	-.2346632**	-.2347219**	-.1941224*	-.3487603***	-.3446654***	-.3487603***	-.4325256***
S.E	-2.8981	-2.8938	-2.8981	-2.0345	-3.6311	-3.6018	-3.6311	-3.8551
Dividends	-.8566488***	-.8813773***	-.8566488***	-1.206744***	-.9927813***	-1.038311***	-.9927813***	-1.498028***
S.E	-4.8562	-4.9776	-4.8562	-5.6233	-4.7458	-4.9692	-4.7458	-6.0079
Growth	-.6353319*	-0.5920	-.6353319*	-1.144487**	-.8094482*	-.7526461*	-.8094482*	-1.144578**
S.E	-2.0728	-1.9083	-2.0728	-3.0778	-2.2269	-2.0559	-2.2269	-2.8265
Cash Flow	-.1145043***	-.1154679***	-.1145043***	-.1582394***	-0.0155	-0.0158	-0.0155	-0.0317
S.E	-3.3754	-3.3984	-3.3754	-4.1506	-0.3798	-0.3887	-0.3798	-0.7114
Government	-.0905818**	-.0928101**	-.0905818**	-.1188416**	-.110369**	-.1139792**	-.110369**	-.1841462***
S.E	-2.8083	-2.8748	-2.8083	-3.1104	-2.8855	-2.9918	-2.8855	-4.0910
Instituional	-.0430878**	-.0431791**	-.0430878**	-.0463266**	-0.0273	-0.0274	-0.0273	-.0366262*
S.E	-3.1835	-3.1899	-3.1835	-3.1109	-1.7008	-1.7131	-1.7008	-2.1213
Indivdual	-.0452145***	-.0463279***	-.0452145***	-.0532079***	-0.0199	-0.0217	-0.0199	-0.0318
S.E	-3.3855	-3.4655	-3.3855	-3.6419	-1.2583	-1.3745	-1.2583	-1.8716
Oil	.1388575**	.1392293**	.1388575**	.2000812***	.1843384***	.1847551***	.1843384***	.2440595***
S.E	2.9427	2.9501	2.9427	3.8193	3.2942	3.3174	3.2942	3.9769
B Materials	0.0517	0.0498	0.0517	0.0188	0.0796	0.0766	0.0796	-0.0180
S.E	0.8852	0.8524	0.8852	0.2904	1.1503	1.1114	1.1503	-0.2384
Industrials	0.0784	0.0762	0.0784	0.0359	0.0979	0.0943	0.0979	-0.0027
S.E	1.3274	1.2904	1.3274	0.5440	1.3988	1.3538	1.3988	-0.0344
C Goods	0.0167	0.0147	0.0167	-0.0389	0.0194	0.0163	0.0194	-0.0923
S.E	0.2807	0.2464	0.2807	-0.5863	0.2758	0.2317	0.2758	-1.1864
Health	0.0026	0.0000	0.0026	-0.0455	-0.0251	-0.0294	-0.0251	-0.1396
S.E	0.0427	-0.0001	0.0427	-0.6677	-0.3471	-0.4082	-0.3471	-1.7497
C Servicses	0.0406	0.0385	0.0406	-0.0206	0.0278	0.0244	0.0278	-0.0900
S.E	0.6972	0.6612	0.6972	-0.3153	0.4032	0.3558	0.4032	-1.1736
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	25%	25%	0%		30%	29%	0%	
N	904	904	904	904	904	904	904	904
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	7.78	Prob2	0.4554	chi2 (8)	17.91	Prob2	0.0219
Hausman	chi2(17)	6.76	Prob2	0.9865	chi2(17)	54.15	Prob2	0

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Table 5.16: Jordan Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

JORDAN

Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	-0.0420104	0.0397705	-.0893221**	-.0748131*	0.0102283	0.0029305
S.E.	-1.303087	1.272381	-2.71488	-222.44%	0.336592	0.0971596
Constant	-0.0900788	-0.026	0.007	0.0302422	0.0223465	-0.085699
S.E.	-1.070937	-0.311	0.110	0.4182185	0.2714943	-0.8744235
Profitability	-0.019	-.2726191***	-0.054	-.1958952**	-.1757114*	-.4304253***
S.E	-0.241	-3.454	-0.959	-2.864843	-2.272382	-4.658102
Liquidty	-0.003	-.0064575***	-.0041404***	-0.002275	-.011708***	-.0119674***
S.E	-1.726	-4.419	-3.991	-1.799209	-8.202046	-7.007559
Risk	0.002	-0.003	.0336619***	0.0056113	0.0068295	0.0014211
S.E	0.198	-0.301	4.099	0.5614315	0.6036562	0.1050588
Size	.0161944***	.0154775***	0.003	0.0034335	.0160932***	.0261201***
S.E	4.781	4.594	1.249	1.177916	4.877126	6.624997
Tangibilty	-.1443107***	-.1494297***	0.001	-0.0101205	-.1502928***	-.1890372***
S.E	-6.755	-7.037	0.044	-0.5466262	-7.23144	-7.612005
Tax	.3751539***	-0.005	.4085815***	.3014406***	-.1945679*	-.3226886**
S.E	4.376	-0.056	6.778	4.10186	-2.337906	-3.236783
Dividends	-.8325089***	-.7396958***	-0.215	-0.1606034	-.9535894***	-1.102963***
S.E	-4.489	-4.004	-1.648	-1.010041	-5.275329	-5.101913
Growth	-.6679288*	-0.618	0.114	0.2941051	-.7007462*	-.9103887*
S.E	-1.999	-1.859	0.479	1.021734	-2.1483	-2.352908
Cash Flow	-.2455085***	-.2050755***	0.0505043	-0.0190072	-.1582394***	-0.0235185
S.E	-6.692258	-5.525978	1.946897	-0.6158604	-4.150555	-0.5476383
Government	-.1052125**	-.1074825**	-0.0314294	-0.0416532	-.1070591**	-.1185825**
S.E	-3.109185	-3.171283	-1.320521	-1.435158	-3.246011	-3.00203
Instituional	-0.0250824	-0.0203105	-.0278677**	-.0293425*	-.0449542***	-0.0278387
S.E	-1.795933	-1.45979	-2.833763	-2.446278	-3.312198	-1.714448
Indivdual	-0.023656	-0.0256615	-.0404495***	-.0267235*	-.0470583***	-0.0205676
S.E	-1.705148	-1.858977	-4.120981	-2.228865	-3.486492	-1.274251
Oil	.1842213**	.2769011***	-0.0261938	-0.0027337	.1320569*	.207633**
S.E	2.925276	4.422106	-0.5896486	-0.0503644	2.154623	2.826413
B Materials	0.0692886	0.0772405	0.0208338	0.0161476	0.0501979	0.0751259
S.E	1.152533	1.291599	0.4919715	0.3127297	0.8580431	1.073918
Industrials	0.0856963	0.0643739	0.0424048	0.0364607	0.0824306	0.0973207
S.E	1.409941	1.063872	0.9898982	0.6983252	1.393964	1.374547
C Goods	0.0424238	0.0103109	0.0060835	-0.0030425	0.0122033	0.0134379
S.E	0.6930475	0.1690879	0.1410358	-0.0578577	0.2049452	0.1886203
Health	0.0090394	-0.0345965	0.0039376	-0.0063765	-0.015099	-0.0396079
S.E	0.1437698	-0.5527425	0.0887756	-0.1179684	-0.2467545	-0.5413157
C Servicses	0.0211023	0.0060766	0.0263854	0.0230539	0.0400754	0.0239906
S.E	0.352106	0.1019341	0.6248607	0.4479392	0.6869422	0.3440822
Telecom	0	0	0	0	0	0
S.E	0	0	0	0	0	0
Technology	0	0	0	0	0	0
S.E	0	0	0	0	0	0
N	872	872	872	872	872	872

Table 5.17: Jordan SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Profit	-0.022	-0.127	-0.06	0.119	-0.064	0.005	-0.078	-0.248	-0.162	-0.048	-0.07	-0.101
	0.256	<0.001	0.034	<0.001	0.026	0.443	0.367	0.265	0.294	0.075	0.017	0.001
Size	0.032	-0.072	0.009	0.04	0.029	0.043	0.027	-0.102	0.083	-0.013	0.007	0.054
	0.169	0.015	0.39	0.115	0.194	0.097	0.459	0.43	0.391	0.351	0.413	0.05
Growth	0.004	0.076	-0.005	-0.041	0.107	-0.012	-0.021	0.046	-0.001	0.022	0.111	0.026
	0.452	0.011	0.442	0.108	<0.001	0.354	0.478	0.468	0.499	0.252	<0.001	0.215
Tang	-0.042	0.044	-0.07	0.137	0.077	-0.092	0.044	0.102	-0.032	-0.035	-0.102	-0.073
	0.102	0.09	0.017	<0.001	0.01	0.003	0.474	0.339	0.479	0.144	<0.001	0.014
Tax	0	0.185	-0.061	0.17	0.254	-0.033	0.106	0.001	0.132	0.021	0.226	-0.055
	0.499	<0.001	0.034	<0.001	<0.001	0.159	0.213	0.498	0.207	0.261	<0.001	0.047
Risk	-0.037	-0.041	-0.059	-0.035	-0.037	-0.062	-0.044	-0.021	-0.062	-0.049	-0.045	-0.047
	0.13	0.11	0.037	0.145	0.133	0.031	0.352	0.444	0.246	0.071	0.087	0.077
Div	-0.087	-0.055	-0.115	-0.114	-0.016	-0.085	-0.039	0.013	-0.072	-0.05	0.021	-0.067
	0.004	0.049	<0.001	<0.001	0.31	0.005	0.399	0.472	0.33	0.066	0.263	0.021
Liqud	-0.137	-0.04	-0.222	-0.047	-0.128	-0.22	-0.217	-0.004	-0.302	-0.133	-0.106	-0.223
	<0.001	0.112	<0.001	<0.001	<0.001	<0.001	0.213	0.493	0.083	<0.001	<0.001	<0.001
Cash Flow	-0.273	-0.149	-0.247	-0.349	-0.166	-0.336	-0.086	0.015	0.008	-0.296	-0.136	-0.23
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.378	0.489	0.492	<0.001	<0.001	<0.001
Ownership												
Gov							-0.068	0.094	0.043	-0.127	0.168	-0.02
							0.389	0.38	0.435	<0.001	<0.001	0.278
indv							-0.102	-0.185	-0.13	-0.08	-0.115	-0.099
							0.471	0.24	0.282	0.008	<0.001	0.001
Inst							-0.1	-0.087	-0.116	-0.112	-0.123	-0.115
							0.431	0.375	0.285	<0.001	<0.001	<0.001
Industry												
Oil							0.178	0.033	0.172	0.161	0.067	0.169
							0.311	0.451	0.261	<0.001	0.021	<0.001
Mater							0.015	-0.098	-0.049	0.068	-0.075	-0.013
							0.48	0.375	0.497	0.02	0.011	0.353
Indust							0	0	0	0	0	0
							0	0	0	0	0	0
Cgoods							-0.052	-0.149	-0.077	-0.008	-0.096	-0.06
							0.469	0.273	0.493	0.4	0.002	0.036
Health							-0.067	-0.147	-0.127	-0.055	-0.096	-0.117
							0.342	0.282	0.316	0.049	0.002	<0.001
Cserv							-0.186	-0.053	-0.204	-0.159	-0.02	-0.166
							0.234	0.493	0.276	<0.001	0.27	<0.001
Telec							-0.043	-0.044	-0.061	-0.005	-0.068	-0.022
							0.378	0.436	0.359	0.442	0.02	0.251
Techno							0	0	0	0	0	0
							0	0	0	0.5	0.5	0.5
N	904	904	904	904	904	904	904	904	904	904	904	904
R2	14	16	26	16	12	24	22	11	29	22	11	29
Model Fit												
(APC)	0.094	P<0.001		0.094	P<0.001		0.088	P=1.000		0.083	P=0.003	
(ARS)	0.181	P<0.001		0.181	P<0.001		0.206	P=1.000		0.236	P<0.001	
(AARS)	0.173	P<0.001		0.173	P<0.001		0.19	P=1.000		0.219	P<0.001	
(AVIF)	1.38			1.38			1.432			Inf		

Table 5.18: Jordan ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Jordan	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	8.91%	8.48%	16.12%	9.18%	8.75%	16.99%
Size	13.30%	1.36%	9.34%	14.64%	7.91%	5.39%
Growth	6.19%	5.13%	2.80%	11.71%	0.59%	0.17%
Tangibility	10.24%	8.33%	9.99%	8.83%	6.41%	11.80%
Non-Debt Tax shield	13.97%	39.06%	13.15%	9.03%	31.13%	14.41%
Volatility	8.14%	15.56%	15.68%	12.67%	12.67%	7.76%
Dividends	6.03%	3.83%	9.22%	8.86%	1.79%	9.19%
Liquidity	23.10%	8.17%	12.64%	17.79%	23.31%	12.10%
Cash Flow	10.13%	10.08%	11.05%	7.29%	7.46%	22.21%
Good prediction %	73.17%	41.08%	80.91%	78.98%	48.55%	82.43%
S.D of abs errors	0.09	0.08	0.0892	0.0931	0.0975	0.1039
RMSE	0.11	0.09	0.1191	0.1181	0.1099	0.1333
MAE	0.06	0.04	0.07888	0.07268	0.05081	0.0835
N	1472	1472	1472	1472	1472	1472
Adding Dummies						
Profitability	6.40%	6.16%	0.19%	8.54%	1.19%	8.80%
Size	12.66%	6.91%	17.71%	16.15%	10.87%	13.62%
Growth	14.34%	5.44%	5.61%	1.68%	13.30%	10.19%
Tangibility	6.95%	7.17%	13.28%	3.26%	19.92%	5.25%
Non-Debt Tax shield	10.90%	5.43%	12.97%	2.13%	21.09%	8.40%
Volatility	0.02%	5.44%	15.74%	1.87%	12.66%	11.59%
Dividends	0.20%	5.46%	0.99%	7.02%	2.35%	0.65%
Liquidity	18.93%	5.46%	16.15%	21.39%	0.51%	9.77%
Cash Flow	0.17%	5.26%	0.21%	0.00%	0.04%	9.28%
Ownership Dummies						
Government	1.17%	4.68%	0.45%	0.08%	0.44%	0.98%
Institutional	3.30%	5.22%	1.16%	4.38%	5.28%	2.22%
Individual	7.16%	4.75%	4.52%	7.37%	1.91%	1.77%
Industry Dummies						
Oil	2.32%	4.66%	0.98%	0.93%	1.96%	1.95%
Basic Materials	0.87%	4.66%	0.50%	2.58%	0.33%	4.63%
Consumer Goods	0.45%	4.66%	0.28%	0.04%	0.17%	2.43%
Consumer Services	1.89%	4.66%	0.14%	7.60%	2.26%	0.22%
Health Care	4.34%	4.66%	2.20%	7.07%	3.22%	1.88%
Industrials	0.02%	4.66%	0.01%	0.83%	0.22%	0.17%
Technology	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Telecommunications	7.92%	4.66%	6.92%	7.10%	2.28%	6.19%
Good prediction %	78.01%	96.68%	81.47%	78.28%	45.64%	77.32%
RMSE	0.0217	0.0002	0.0199	0.0296	0.0274	0.0455
MAE	0.0088	0.0000	0.0075	0.0134	0.0123	0.0222
S.D of abs errors	0.0198	0.0002	0.0184	0.0264	0.0244	0.0397
N	1472	1472	1472	1472	1472	1472

The following tables answer the research question:

What is the determinants of capital structure in Kuwait using Panel Data, SEM, ANN ?

The fourth country in this chapter is Kuwait which is one of the GCC countries in the sample of the MENA countries. First, the table of the short term debt panel data results is presented. The R^2 is acceptable and in the range of 19% across the models. The Wald test is not significant and therefore it can be concluded that there is no heteroskedasticiy. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model. From the Table 5.19 the following conclusions could be drawn:

- Profitability is negatively significant with the short term debt in book and market value.

- Liquidity is negatively significant with the short term debt in book and market value.

- Size is positively significant with the short term debt in book and market value.

- Tangibility is negatively significant across the models for short term debt in market value.

- Non-debt tax shield is negatively significant for the short term debt in market value except the tobit model.

- Dividends is significantly negative for short term debt market value models except the tobit.

- Growth is negative and significant for the market value of short term debt.

- Cash flow is significantly negative for both short term debt in book and market value.

- The industry classification show that the oil sector is negative and significant. However, the basic materials is positive and significant across all the models. In addition, the industrials variable shows that for the book value all models are significant and positive except the random model. The consumer services sector is also significant and positive across all the models.

The second Table 5.20 show the long term debt using panel data models. The Wald test is not significant for the book value but significant for the market value and therefore the fixed effect can not be used. The R^2 is acceptable for the book debt with 16% and lower for the market value with 10% only. The Lagrange test is not significant and the following could be concluded:

- Profitability is negatively significant for the long term debt in book values using tobit model only.

- Liquidity is negatively significant for the long term debt in market and book values.

- Size is positively significant for the long term debt in book values using the tobit model and for all the models using the market value.

- Tangibility is positively significant for the long term debt in book values except when using the tobit model and for all the models in market value.

- Non-debt tax shield is positively significant for the long term debt in book and market values.

- Dividends is negatively significant for the long term debt in book and market values using the tobit model only.

- Growth is negatively significant in for the long term debt in market values using tobit.

- Ownership individual is negatively significant for the long term debt in book values. It is also negative and significant for institutional variable for both the long term debt in market value and book value.

- industry classification variable which is the oil is significantly negative using the tobit model.

The third tables which is Table 5.21 shows the results for the total debt for both book value and market value in Jordan. The Wald test for the total debt for book value is not significant for both book and market and. The Lagrange test is not significant and therefore the random effect could be used. The Hausman test is not significant for both book and market total debt and therefore would indicate that it is possible to use the Random effect. The R^2 is higher than 28% for both the book and market value. From the Table5.21 the following conclusions could be drawn:

- Profitability is negatively significant for the total debt in book and market values except for the tobit model using total debt book value.

- Liquidity is negatively significant for the total debt in book and market values.

- Size is positively significant for the total debt in book and market values.

- Tangibility is positively significant for the total debt in book values across all the models.

- Dividends is negatively significant in for the total debt in book and market values.

- Growth is negatively significant in for the total debt in market values except for the fixed effect model.

- Cash flow is negatively significant for total debt for book value and market value.

- Ownership government is negatively significant for the total debt in book and market values.

- industry classification which is the oil negatively significant using book total debt. Basic materials is positively significant across all models. Industrials, Health, Consumer services are all positively significant using OLS and fixed model.

The only interest from Table 5.22 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is negatively significant for the short term debt only. Which, indicate that firms in Kuwait do not have a target capital structure.

Table 5.23 show the SEM results for Kuwait using the PLS approach. The model fits at the bottom of the model shows that the model fit is good without the dummy variables and with the dummy variables. However, caution should be taken with the results of the book value with the dummy variables as the dummies cause the model to have a high variance inflation factor. The R^2 is good except for the long term debt in book values without the dummies. From this table the following could be concluded:

- Profitability attribute is significantly negative to short term debt in market value.

- Size attribute is significantly positive to all the 6 debt measures.

- Tangibility is significantly positive in relation to short term debt market and book leverage. It is also significant to the long term debt in book values.

- Dividends is only negatively significant to the total debt in book values.

- Liquidity is negatively significant to the 6 dependent variables of debt.

- Cash flow is negatively significant in relation all debt variables in book and market values.

- Ownership variable government is positively significant to the long term debt book values. It is also negatively significant to the long term debt in market values. Similarly, the individual variable is significantly positive to the long term debt in market values. Institutional variable is negatively significant to the total debt in book values.

- industry variables of basic materials is positively significant with three debt measures in book value.

In Kuwait Table 5.24 show the ANN results. Again the prediction percentage is high more than 57% without dummies and 61% with dummy variables. Therefore, from the table we could present the important results as follow:

- Size substantially important for all the measures of both market and book leverage.

- Tangibility is also important for the long term debt in book value.

- Volatility is slightly important for the total debt in market value.

- Liquidity is slightly important for the short term debt in book value as well as the total debt.

Table 5.19: Kuwait Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

KUWAIT	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-.1769373*	-.182219*	-.1510389*	-.1816995*	-0.0235	-0.0251	-0.0060	0.1297
S.E.	-2.4615	-2.5185	-2.2232	-2.2798	-0.2399	-0.2540	-0.0649	1.4670
Profitability	-.2987079***	-.3084883***	-.2987079***	-.2578441**	-.4381915***	-.4408119***	-.4381915***	-.4978515***
S.E	-3.6018	-3.6880	-3.6018	-2.6758	-3.8785	-3.8646	-3.8785	-3.8605
Liquidty	-.0080992***	-.008148**	-.0080992***	-.0275161***	-.0107891***	-.0108423**	-.0107891***	-.0241294***
S.E	-4.7126	-4.7273	-4.7126	-9.4326	-4.6804	-4.6130	-4.6082	-7.4241
Risk	-0.0042	-0.0043	-0.0042	-0.0015	0.0098	0.0097	0.0098	0.0115
S.E	-0.3791	-0.3846	-0.3791	-0.1219	0.6482	0.6331	0.6482	0.6848
Size	.015001***	.0153175***	.015001***	.017419***	.0120351*	.0121715*	.0120351*	.0174428**
S.E	4.3246	4.3805	4.3246	4.3661	2.5469	2.5526	2.5469	3.2154
Tangibilty	0.0168	0.0175	0.0168	0.0178	-.1359265***	-.1356313***	-.1359265***	-.1271946***
S.E	0.7820	0.8143	0.7820	0.7535	-4.6566	-4.6287	-4.6566	-3.9293
Tax	-0.2784	-0.2943	-0.2784	-0.2476	-.6261661*	-.6385846*	-.6261661*	-0.6620
S.E	-1.2356	-1.2937	-1.2356	-0.9911	-2.0403	-2.0583	-2.0403	-1.9340
Dividends	-0.2533	-0.2383	-0.2533	-.5209356**	-.503414**	-.4972627**	-.503414**	-.5241746*
S.E	-1.9570	-1.8125	-1.9570	-3.1607	-2.8548	-2.7738	-2.8548	-2.4969
Growth	-0.0209	-0.0792	-0.0209	-0.1278	-1.123362*	-1.204331*	-1.123362*	-1.387992*
S.E	-0.0568	-0.2063	-0.0568	-0.3097	-2.2383	-2.3010	-2.2383	-2.4509
Cash Flow	-.1520496***	-.1528458***	-.1520496***	-.2325647***	-.2473277***	-.2498717***	-.2473277***	-.4352242***
S.E	-3.3919	-3.3958	-3.3919	-3.8932	-4.0717	-4.0942	-4.0717	-5.7203
Government	-0.0594	-0.0606	-0.0594	-0.0702	-0.0652	-0.0660	-0.0652	-0.0717
S.E	-1.9051	-1.9382	-1.9051	-1.8212	-1.5354	-1.5476	-1.5354	-1.7051
Instituional	0.0127	0.0126	0.0127	0.0211	-0.0070	-0.0071	-0.0070	-0.0085
S.E	1.1329	1.1210	1.1329	1.6449	-0.4578	-0.4605	-0.4578	-0.5612
Indivdual	-0.0059	-0.0061	-0.0059	-0.0050	0.0000	-0.0001	0.0000	-0.0043
S.E	-0.3304	-0.3438	-0.3304	-0.2520	0.0000	-0.0031	0.0000	-0.1726
Oil	-.0553011*	-.0554823*	-.0553011*	-.0722353*	0.0087	0.0089	0.0087	0.0113
S.E	-2.1405	-2.1422	-2.1405	-2.4187	0.2483	0.2520	0.2483	0.3254
B Materials	.1193493***	.1196512***	.0934509**	.1185565***	.1019912*	.1017701*	.08451*	.0895047*
S.E	3.8628	3.8626	3.1727	3.3175	2.4232	2.4093	2.1061	2.2579
Industrials	.0582957*	.0582226*	0.0324	.0588818*	0.0411	0.0407	0.0236	0.0283
S.E	2.3410	2.3314	1.3747	2.0449	1.2174	1.1937	0.7366	0.8905
C Goods	0.0288	0.0291	0.0029	-0.0346	0.0223	0.0221	0.0049	0.0094
S.E	0.9798	0.9855	0.1014	-0.9382	0.5574	0.5498	0.1236	0.2426
Health	0.0598	0.0601	0.0339	0.0298	0.0432	0.0430	0.0257	0.0324
S.E	1.8386	1.8406	1.0856	0.8055	0.9757	0.9666	0.6053	0.7694
C Servicses	.0759744**	.0761539**	.050076*	.0606766*	.0934548**	.0930421**	.0759736*	.0801255*
S.E	2.9024	2.9008	2.0356	2.0216	2.6207	2.5990	2.2670	2.4244
Telecom	0.0000	0.0000	-0.0259	-0.0339	0.0000	0.0000	-0.0175	-0.0128
S.E	.	.	-0.7978	-0.8871	.	.	-0.3953	-0.2943
Technology	0.0259	0.0259	0.0000	0.0000	0.0175	0.0171	0.0000	0.0000
S.E	0.7978	0.7965	.	.	0.3953	0.3859	.	0.0000
R2	19%	19%			21%	21%		
N	720	720	720	720	720	720	720	704
Lagrange	chibar2(01) =	0	Prob >chibar2 =	1	chibar2(01) =	0	Prob >chibar2 =	1
Wald	chi2 (8) =	10.17	Prob2 =	0.253	chi2 (8) =	1.23	Prob2 =	0.9963
Hausman	chi2(17)	1.67	Prob2 =	1	chi2(17)	0.54	Prob2 =	1

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Table 5.20: Kuwait Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

KUWAIT	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	0.0536	0.0523	0.0434	-0.1086	-0.0806	-0.0735	-0.0566	-.2738795**
S.E.	0.8466	0.8193	0.7249	-1.2467	-1.2270	-1.1109	-0.9123	-3.1182
Profitability	0.1255	0.1290	0.1255	-.2578441**	0.0013	0.0082	0.0013	-0.0160
S.E	1.7170	1.7480	1.7170	-2.6758	0.0167	0.1074	0.0167	-0.1539
Liquidty	-.0041512**	-.0041786**	-.0041512**	-.0275161***	-.0040336*	-.0040107*	-.0040336*	-.0090556***
S.E	-2.7414	-2.7471	-2.7414	-9.4326	-2.5688	-2.5438	-2.5688	-3.7385
Risk	-.0222517*	-.0225153*	-.0222517*	-0.0015	-.020828*	-.0217655*	-.020828*	-.0358681*
S.E	-2.2829	-2.2779	-2.2829	-0.1219	-2.0607	-2.1244	-2.0607	-2.4612
Size	0.0022	0.0023	0.0022	.017419***	.0094843**	.0090621**	.0094843**	.0192951***
S.E	0.7157	0.7540	0.7157	4.3661	2.9926	2.8331	2.9926	4.3210
Tangibilty	.1365406***	.1366589***	.1365406***	0.0178	.1537072***	.1528761***	.1537072***	.2124285***
S.E	7.2323	7.2065	7.2323	0.7535	7.8514	7.7775	7.8514	8.1137
Tax	-0.1166	-0.1320	-0.1166	-0.2476	-0.1908	-0.1675	-0.1908	-0.1349
S.E	-0.5875	-0.6575	-0.5875	-0.9911	-0.9270	-0.8046	-0.9270	-0.4886
Dividends	-.3275075**	-.3369289**	-.3275075**	-.5209356**	-.4173978***	-.4199587***	-.4173978***	-.6144162***
S.E	-2.8716	-2.9041	-2.8716	-3.1607	-3.5293	-3.4921	-3.5293	-3.6150
Growth	-0.0944	-0.1561	-0.0944	-0.1278	-0.5253	-0.4257	-0.5253	-0.6775
S.E	-0.2908	-0.4609	-0.2908	-0.3097	-1.5553	-1.2124	-1.5553	-1.4289
Cash Flow	-.1802401***	-.1804122***	-.1802401***	-.3475043***	-.1334018**	-.1348685***	-.1334018***	-.3294644***
S.E	-4.6216	-4.6007	-4.6216	-5.5028	-3.3031	-3.3236	-3.3031	-5.3494
Government	0.0102	0.0095	0.0102	-0.0110	-0.0006	0.0008	-0.0006	-0.0246
S.E	0.3719	0.3428	0.3719	-0.2780	-0.0207	0.0274	-0.0207	-0.6160
Instituional	-.0274917**	-.0277325**	-.0274917**	-.0374497**	-0.0174	-0.0173	-0.0174	-0.0151
S.E	-2.7790	-2.7914	-2.7790	-2.6563	-1.6966	-1.6758	-1.6966	-1.0635
Indivdual	-0.0175	-0.0177	-0.0175	-0.0149	0.0063	0.0065	0.0063	0.0131
S.E	-1.1181	-1.1280	-1.1181	-0.6952	0.3917	0.4019	0.3917	0.6068
Oil	-.0527914*	-.0528001*	-.0527914*	-.0937565**	-0.0323	-0.0321	-0.0323	-0.0509
S.E	-2.3191	-2.3100	-2.3191	-2.9538	-1.3699	-1.3539	-1.3699	-1.5990
B Materials	0.0512	0.0511	.0614686*	.1056223**	0.0388	0.0387	0.0149	0.0493
S.E	1.8822	1.8684	2.3685	2.7967	1.3748	1.3658	0.5520	1.2952
Industrials	-0.0089	-0.0092	0.0013	0.0215	0.0059	0.0064	-0.0180	0.0076
S.E	-0.4059	-0.4190	0.0638	0.6959	0.2596	0.2794	-0.8383	0.2451
C Goods	-0.0274	-0.0274	-0.0172	-0.0320	-0.0216	-0.0215	-0.0455	-.0840686*
S.E	-1.0566	-1.0521	-0.6742	-0.8223	-0.8033	-0.7954	-1.7256	-2.1417
Health	-0.0304	-0.0306	-0.0201	-0.0088	-0.0234	-0.0223	-0.0474	-0.0137
S.E	-1.0599	-1.0629	-0.7323	-0.2198	-0.7879	-0.7456	-1.6616	-0.3419
C Servicses	0.0113	0.0110	0.0215	0.0221	0.0045	0.0048	-0.0195	-0.0174
S.E	0.4893	0.4731	0.9927	0.6830	0.1864	0.1989	-0.8674	-0.5352
Telecom	0.0000	0.0000	0.0102	0.0280	0.0000	0.0000	-0.0240	-0.0028
S.E	.	.	0.3577	0.6889	.	.	-0.8077	-0.0699
Technology	-0.0102	-0.0104	0.0000	0.0000	0.0240	0.0240	0.0000	0.0000
S.E	-0.3577	-0.3625	.	.	0.8077	0.8069	.	.
R2	16%	16%	20%		19%	18%	10%	
N	720	720	720	720	720	720	720	720
Lagrange	chibar2(01) =	0	Prob >chibar2 =	1	chibar2(01) =	0	Prob >chibar2 =	1
Wald	chi2 (8) =	2.25	Prob2 =	0.9723	chi2 (8) =	67.5	Prob2 =	0
Hausman	chi2(17)	0.9	Prob2 =	1	chi2(17) = (b-B)	1.53	Prob2 =	1

Table 5.21: Kuwait Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

KUWAIT	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-.3445776***	-.3533364***	-.3178267***	-.3711384***	-.3824303***	-.3797241***	-.3143413**	-.4499591***
S.E.	-4.2476	-4.3297	-4.1453	-4.3549	-3.5662	-3.5158	-3.1015	-3.9957
Profitability	-.1873633*	-.1921614*	-.1873633*	-0.1397	-.5299386***	-.530593***	-.5299386***	-.6314662***
S.E	-2.0019	-2.0367	-2.0019	-1.3426	-4.2832	-4.2493	-4.2832	-4.6484
Liquidty	-.0121189***	-.0122064***	-.0121189***	-.029564***	-.0139158***	-.0139467***	-.0139158***	-.026305***
S.E	-6.2483	-6.2786	-6.2483	-10.8095	-5.4276	-5.4205	-5.4276	-8.1157
Risk	-0.0050	-0.0046	-0.0050	-0.0026	0.0004	0.0002	0.0004	0.0000
S.E	-0.4025	-0.3643	-0.4025	-0.1952	0.0253	0.0144	0.0253	0.0002
Size	.027627***	.0281923***	.027627***	.0317091***	.0342527***	.0340809***	.0342527***	.0412849***
S.E	7.0574	7.1478	7.0574	7.3794	6.6191	6.5290	6.6191	7.2128
Tangibilty	.0933226***	.0938815***	.0933226***	.0884987***	0.0140	0.0136	0.0140	0.0161
S.E	3.8593	3.8734	3.8593	3.4469	0.4395	0.4247	0.4395	0.4723
Tax	0.1057	0.0730	0.1057	0.0908	-0.2910	-0.2686	-0.2910	-0.3923
S.E	0.4157	0.2846	0.4157	0.3348	-0.8659	-0.7907	-0.8659	-1.0853
Dividends	-.449829**	-.4500241**	-.449829**	-.8372222***	-.7271855***	-.7269287***	-.7271855***	-.7704492***
S.E	-3.0793	-3.0348	-3.0793	-4.7092	-3.7657	-3.7041	-3.7657	-3.4888
Growth	0.0982	-0.0261	0.0982	0.0567	-1.109434*	-1.0857	-1.109434*	-1.429932*
S.E	0.2362	-0.0604	0.2362	0.1257	-2.0186	-1.8949	-2.0186	-2.3633
Cash Flow	-.2838237***	-.2829898***	-.2838237***	-.4301421***	-.3268001***	-.329461***	-.3268001***	-.5531578***
S.E	-5.6038	-5.5656	-5.6038	-6.6984	-4.9073	-4.9263	-4.9073	-6.9088
Government	-.0766276*	-.0788414*	-.0766276*	-.0877622*	-.1043852*	-.1038539*	-.1043852*	-.1310634*
S.E	-2.1786	-2.2358	-2.1786	-2.1420	-2.2451	-2.2253	-2.2451	-2.4394
Institutional	-0.0075	-0.0079	-0.0075	-0.0082	-0.0218	-0.0216	-0.0218	-0.0161
S.E	-0.5897	-0.6215	-0.5897	-0.5958	-1.2997	-1.2846	-1.2997	-0.8781
Individual	-0.0039	-0.0045	-0.0039	-0.0047	0.0191	0.0193	0.0191	0.0159
S.E	-0.1973	-0.2233	-0.1973	-0.2195	0.7226	0.7279	0.7226	0.5597
Oil	-.111322***	-.111686***	-.111322***	-.151568***	-0.0383	-0.0382	-0.0383	-0.0505
S.E	-3.8181	-3.8230	-3.8181	-4.8169	-0.9932	-0.9877	-0.9932	-1.2124
B Materials	.1894904***	.1898003***	.1627395***	.2121743***	.1749369***	.1750421***	.1068479*	.1491085**
S.E	5.4345	5.4322	4.8958	5.6435	3.7953	3.7854	2.4316	3.0263
Industrials	.059979*	.0596375*	0.0332	0.0603	.0791567*	.079393*	0.0111	0.0483
S.E	2.1342	2.1172	1.2494	1.9610	2.1307	2.1297	0.3148	1.2091
C Goods	0.0271	0.0276	0.0004	-0.0448	0.0330	0.0332	-0.0350	-.105033*
S.E	0.8170	0.8287	0.0116	-1.1382	0.7528	0.7547	-0.8131	-2.0533
Health	.0911621*	.0904449*	0.0644	0.0628	0.0937	0.0940	0.0256	0.0553
S.E	2.4853	2.4572	1.8299	1.5868	1.9322	1.9300	0.5502	1.0715
C Services	.0694601*	.069254*	0.0427	0.0550	0.0662	0.0662	-0.0019	0.0297
S.E	2.3513	2.3388	1.5383	1.7184	1.6956	1.6904	-0.0510	0.7156
Telecom	0.0000	0.0000	-0.0268	-0.0371	0.0000	0.0000	-0.0681	-0.0567
S.E	.	.	-0.7302	-0.9002	.	.	-1.4059	-1.0568
Technology	0.0268	0.0267	0.0000	0.0000	0.0681	0.0683	0.0000	0.0000
S.E	0.7302	0.7279	.	.	1.4059	1.4058	.	.
R2	31%	31%	0%		28%	28%	0%	
N	720	720	720	720	720	720	720	720
Lagrange	chibar2(01) =	0	Prob >chibar2 =	1	chibar2(01) =	0	Prob >chibar2 =	1
Wald	chi2 (8) =	4.28	Prob2 =	0.8313	chi2 (8) =	3.86	Prob2 =	0.8695
Hausman	chi2(17) = (b-B)	2.14	Prob2 =	1	chi2(17) = (b-B)	0.27	Prob2 =	1

Table 5.22: Kuwait Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

KUWAIT

Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	-.1379509***	-0.0458691	-0.064629	-1.81%	-0.0074311	-0.0202601
S.E.	-3.819883	-1.186313	-1.750353	-52.16%	-0.2228875	-0.5877999
Constant	-.1787509**	-0.017	0.042	-0.0607445	-.3393992***	-.2935405**
S.E.	-2.751835	-0.181	0.785	-1.01836	-4.527203	-2.82226
Profitability	-.2930488***	-.4321572***	.1386635*	0.0043796	-.1922555*	-.5300387***
S.E	-3.698	-3.858	2.116	0.0596461	-2.084214	-4.219925
Liquidty	-.0067904***	-.0099979***	-.0032467*	-.003028*	-.0111045***	-.0126701***
S.E	-4.086	-4.199	-2.426	-2.008666	-5.781209	-4.810282
Risk	-0.006	0.009	-.0216527*	-.0199431*	-0.0018136	0.0018253
S.E	-0.580	0.611	-2.483	-2.037171	-0.1462888	0.1087211
Size	.0167596***	.0126721**	0.002	.009322**	.0284916***	.0344435***
S.E	5.034	2.698	0.773	3.059713	7.444657	6.598961
Tangibilty	0.010	-.1394165***	.1422113***	.1615557***	.0983924***	0.0180197
S.E	0.491	-4.835	8.456	8.571342	4.139738	0.5581388
Tax	-0.198	-0.568	-0.081	-0.1174669	0.1424237	-0.1885525
S.E	-0.912	-1.842	-0.455	-0.5911622	0.5652413	-0.5489566
Dividends	-0.244	-.5088038**	-.3178286**	-.3995821***	-.4437424**	-.7181138***
S.E	-1.956	-2.889	-3.118	-3.492772	-3.077105	-3.649322
Growth	-0.150	-1.236137*	-0.168	-0.4530026	-0.1095617	-1.146771*
S.E	-0.412	-2.404	-0.563	-1.354055	-0.2602073	-1.993239
Cash Flow	-.1677576***	-.2613984***	-.1777831***	-.1271608**	-.4301421***	-.3223607***
S.E	-3.840717	-4.329275	-5.09113	-3.274775	-6.698359	-4.816064
Government	-.0765705*	-0.0717424	0.0110643	0.00343	-.0771214*	-.1045203*
S.E	-2.566839	-1.705057	0.4564372	0.1262106	-2.237314	-2.233132
Instituional	0.0078636	-0.008476	-.0267005**	-0.0153185	-0.0061277	-0.0199609
S.E	0.7336339	-0.5612492	-3.063113	-1.568967	-0.4917726	-1.188642
Indivdual	-0.0098633	-0.0042535	-.048498***	-0.0243585	-.0403583*	-0.0131157
S.E	-0.5656697	-0.1726422	-3.39875	-1.523617	-2.000476	-0.4766317
Oil	-.0674599**	0.0112635	-.0459753*	-0.0273368	-.1046218***	-0.0318171
S.E	-2.724445	0.3254302	-2.289675	-1.216821	-3.691757	-0.8230238
B Materials	.1197733***	.0895047*	.0611193**	0.0136767	.1627199***	0.0779685
S.E	4.17155	2.257917	2.6779	0.5348905	5.010517	1.71479
Industrials	.0456492*	0.0283198	0.000126	-0.0214367	0.0294487	-0.0203305
S.E	2.019726	0.8905129	0.006862	-1.045255	1.120967	-0.5941902
C Goods	0.0135411	0.0094301	-0.021137	-.0512555*	-0.0044435	-0.0692735
S.E	0.4923477	0.2426454	-0.9431239	-2.042041	-0.139665	-1.579296
Health	0.0508612	0.0323583	-0.0146432	-0.0455107	0.0646961	0
S.E	1.700114	0.7693956	-0.5938002	-1.65077	1.849043	0
C Servicses	.0595367*	.0801255*	0.0275808	-0.0143032	0.0491475	-0.024957
S.E	2.543966	2.42439	1.444184	-0.6687203	1.812363	-0.7219095
Telecom	-0.0165959	-0.0128164	0.012106	-0.0247523	-0.0255504	-.0964398*
S.E	-0.5386392	-0.294278	0.4804764	-0.8778169	-0.714691	-1.974003
Technology	0	0	0	0	0	-0.0297792
S.E	0	0	0	0	0	-0.6309666
N	704	704	704	704	704	704

Table 5.23: Kuwait SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Profit	-0.123	0.021	-0.082	-0.033	0.035	0.032	-0.109	0.003	-0.063	-0.11	0.02	-0.063
	<0.001	0.284	0.013	0.185	0.175	0.197	0.002	0.466	0.044	0.001	0.294	0.045
Size	0.108	0.128	0.153	0.222	0.168	0.218	0.097	0.134	0.173	0.093	0.125	0.155
	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	0.006	<0.001	<0.001
Growth	-0.037	-0.057	-0.025	-0.016	-0.071	-0.061	-0.072	-0.105	-0.104	-0.079	-0.075	-0.104
	0.16	0.061	0.251	0.331	0.027	0.049	0.026	0.002	0.002	0.017	0.022	0.002
Tang	0.291	0.074	-0.013	0.168	0.369	-0.053	0.286	0.091	-0.02	0.282	0.356	-0.003
	<0.001	0.023	0.365	<0.001	<0.001	0.078	<0.001	0.007	0.295	<0.001	<0.001	0.465
Tax	-0.078	0.009	0.053	-0.011	0.079	0.071	-0.072	0.006	0.039	-0.078	0.077	0.039
	0.018	0.401	0.078	0.382	0.016	0.027	0.026	0.432	0.147	0.017	0.019	0.147
Risk	0.014	-0.048	-0.003	0.004	-0.075	-0.046	0.012	-0.048	0.009	0.015	-0.064	0.005
	0.35	0.1	0.47	0.456	0.022	0.109	0.378	0.098	0.407	0.343	0.041	0.446
Div	-0.076	-0.106	-0.101	-0.093	-0.076	-0.12	-0.086	-0.107	-0.119	-0.075	-0.086	-0.122
	0.02	0.002	0.003	0.006	0.02	<0.001	0.01	0.002	<0.001	0.022	0.01	<0.001
Liqud	-0.264	-0.177	-0.3	-0.253	-0.093	-0.34	-0.241	-0.153	-0.265	-0.244	-0.115	-0.309
	<0.001	<0.001	<0.001	<0.001	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cash Flow	-0.151	-0.114	-0.214	-0.203	-0.2	-0.218	-0.139	-0.088	-0.207	-0.156	-0.168	-0.183
	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.009	<0.001	<0.001	<0.001	<0.001
Ownership												
Gov							-0.03	-0.124	-0.059	-0.009	0.156	-0.044
							0.207	<0.001	0.055	0.407	<0.001	0.119
indv							0.074	0.151	0.096	0.069	-0.113	0.096
							0.022	<0.001	0.005	0.031	0.001	0.005
Inst							-0.079	-0.11	-0.121	0.078	-0.098	-0.113
							0.016	0.001	<0.001	0.018	0.004	0.001
Industry												
Oil							0.051	0.032	0.057	-0.037	-0.061	-0.053
							0.085	0.198	0.064	0.158	0.051	0.075
Mater							0	0	0	0.127	0.133	0.138
							0	0	0	<0.001	<0.001	<0.001
Indust							0	0	0	0	0	0
							0	0	0	0	0	0
Cgoods							0	0	0	-0.029	0.049	-0.029
							0	0	0	0.221	0.094	0.218
Health							0	0	0	-0.028	-0.055	0.009
							0	0	0	0.228	0.069	0.405
Cserv							0	0	0	0.08	0.014	-0.025
							0	0	0	0.015	0.349	0.247
Telec							0	0	0	-0.005	-0.032	-0.031
							0	0	0	0.449	0.195	0.203
Techno							0	0	0	0.035	0.011	0.046
							0	0	0	0.177	0.387	0.109
N	720	720	720	720	720	720	720	720	720	720	720	720
R2	31	24	39	32	14	35	33	45	39	35	25	40
Model Fit												
(APC)	0.114	P<0.001		0.114	P<0.001		0.098	P=0.002		0.088	P<0.001	
(ARS)	0.292	P<0.001		0.292	P<0.001		0.293	P<0.001		0.331	P<0.001	
(AARS)	0.283	P<0.001		0.283	P<0.001		0.28	P<0.001		0.313	P<0.001	
(AVIF)	1.322			1.322			1.282			Inf		

Table 5.24: Kuwait ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Kuwait	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	9.71%	7.24%	12.17%	5.65%	9.89%	7.81%
Size	19.03%	19.78%	22.14%	21.59%	19.34%	22.99%
Growth	4.22%	2.78%	3.96%	12.73%	13.55%	11.64%
Tangibility	9.94%	24.66%	10.95%	8.39%	9.94%	10.07%
Non-Debt Tax shield	10.79%	9.59%	3.67%	10.42%	8.59%	10.74%
Volatility	9.30%	8.87%	15.04%	11.53%	7.59%	10.02%
Dividends	9.18%	0.22%	8.51%	9.18%	6.48%	8.90%
Liquidity	16.94%	12.72%	15.31%	10.04%	13.13%	12.92%
Cash Flow	10.90%	14.15%	8.25%	10.46%	11.49%	4.92%
Good prediction %	68.40%	68.23%	81.08%	62.15%	57.64%	78.30%
S.D of abs errors	0.09	0.06	0.1007	0.1052	0.0562	0.1134
RMSE	0.11	0.07	0.1236	0.1298	0.0704	0.1443
MAE	0.06	0.04	0.07157	0.07602	0.04240	0.0892
N	1472	1472	1472	1472	1472	1472
Adding Dummies						
Profitability	4.47%	8.74%	5.45%	5.78%	4.66%	7.30%
Size	19.02%	18.91%	17.34%	16.30%	15.37%	18.01%
Growth	8.24%	1.52%	7.15%	1.30%	6.19%	6.36%
Tangibility	5.66%	4.06%	0.39%	8.08%	11.75%	6.49%
Non-Debt Tax shield	6.69%	11.96%	0.04%	8.68%	5.21%	6.57%
Volatility	1.28%	7.33%	12.23%	1.34%	2.35%	7.03%
Dividends	7.29%	8.74%	9.15%	11.64%	8.82%	10.34%
Liquidity	12.40%	11.80%	14.32%	10.72%	10.81%	11.00%
Cash Flow	5.87%	10.55%	10.67%	7.55%	7.72%	6.87%
Ownership Dummies						
Government	0.00%	0.37%	0.51%	0.51%	0.55%	0.70%
Institutional	7.69%	2.42%	0.95%	6.11%	1.42%	1.29%
Individual	1.43%	3.03%	3.47%	0.97%	4.04%	2.23%
Industry Dummies						
Oil	3.26%	0.68%	1.40%	1.64%	7.31%	1.85%
Basic Materials	10.55%	1.24%	3.61%	3.64%	0.99%	1.71%
Consumer Goods	0.43%	1.33%	2.79%	0.90%	1.81%	1.11%
Consumer Services	0.03%	0.01%	0.77%	3.27%	0.92%	4.65%
Health Care	1.63%	2.38%	2.39%	2.04%	3.55%	2.10%
Industrials	0.33%	0.29%	0.02%	0.00%	0.01%	0.00%
Technology	2.08%	2.79%	3.21%	3.18%	3.70%	2.61%
Telecommunications	1.65%	1.84%	4.14%	6.36%	2.82%	1.77%
Good prediction %	82.12%	66.32%	80.38%	76.22%	61.98%	80.73%
RMSE	0.0118	0.0127	0.0206	0.0284	0.0232	0.0349
MAE	0.0054	0.0045	0.0097	0.0123	0.0088	0.0165
S.D of abs errors	0.0105	0.0119	0.0182	0.0256	0.0215	0.0308
N	1472	1472	1472	1472	1472	1472

The following tables answer the research question:

What is the determinants of capital structure in Morocco using Panel Data, SEM, ANN ?

The fifth country in this chapter is Morocco which is one of the largest countries in the sample of the MENA countries. First, the table of the short term debt panel data results is presented. The R^2 is low and in the range of 27% across the models. The Wald test is significant for the short term debt in market leverage and therefore the robust errors are reported. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model. From the Table 5.25 the following conclusions could be drawn:

- Profitability is negatively significant with the short term debt. in book and market value.

- Liquidity is positively significant with the short term debt in book and market value.

- Size is positively significant with the short term debt in book and market value except for market value using fixed effect.

- Tangibility is negatively significant across the models for both short term debt in book and market value.

- Dividends is significantly positive for both short term debt in book except for tobit model and only significant using the fixed effect for the market value.

- Cash flow is significantly negative for short term debt in book value using OLS and random effects only..

- The ownership structure show that the Institutional is positive and significant for both book and market values.

- The industry classification show that only the industrial sector is positive and significant using the random effect.

The second Table 5.26 show the long term debt using panel data models. The Wald test is significant for the fixed effect for the market value and therefore robust errors are provided. The R^2 is high for the book debt with 45% and lower for the market value with 44% only. The Lagrange test is not significant and the following could be concluded:

- Profitability is negatively significant for the long term debt in market values and book values.

- Liquidity is positively significant for the long term debt in market values and book values. except for the tobit model using the book value which shows a negative sign.

- Risk is positively significant for the long term debt in book values.

- Size is positively significant for the long term debt in book values using the tobit model.

- Tangibility is positively significant in for the long term debt in book and market values and negative for book values only when using the tobit model.

- Growth is negatively significant in for the long term debt in market values using tobit.

- Ownership government variable is positively significant for the long term debt in market values only. Institutional is negatively significant for both the book and market values.

- industry classification basic materials is only positive and significant using the OLS and fixed effect and the same with the industrials. Consumer goods is negative and significant using only the random and tobit models. Health variable is the same as consumer goods with the exception of random for the book value. Technology is significantly positive using the OLS and fixed effect model for the market value.

The third tables which is Table 5.27 shows the results for the total debt for both book value and market value in Morroco. The Wald test for the total debt for is not significant. The Lagrange test is not significant and therefore the random effect could be used. The Hausman test is not significant for total debt and therefore would indicate that it is possible to use the Random effect. The R^2 is higher than 39% for both the book and market value. From the Table 5.27 the following conclusions could be drawn:

- Profitability is negatively significant for the total debt in book and market values.

- Size is positively significant for the total debt in book and only using tobit for market values.

- Tangibility is positively significant for the total debt in book values across all the models.

- Cash flow is negatively significant for total debt for book value.

- Ownership government is positive and significant for the total debt in market values using OLS and fixed models. On the other hand, individual negatively significant for total debt in book values using the tobit model.

- industry classification variable which industrials is positive and significant for the market value total debt only. Consumer goods is negative and significant for both measures using only the random and tobit models. Health is significant and negative using the tobit model for market values only. Consumer services is significant using the OLS and fixed model for market values and positive.

The only interest from Table 5.28 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is not significant for all the measures and therefore would indicate that firms don't have a target capital structure.

Table 5.29 show the SEM results for Morocco using the PLS approach. The model fits at the bottom of the model shows that the model fit is good without the dummy variables and with the dummy variables. However, caution should be taken with the results of the book value with the dummy variables as the dummies cause the model to have a high variance inflation factor. The R^2 is good except for the long term debt in book values without the dummies. From this table the following could be concluded:

- Profitability attribute is significantly negative to all debt variables except for the long term debt in book values.

- Size attribute is significantly positive to short term and total debt in book values.

- Non-debt tax shield is positively significant with the long term debt in books value.

- Liquidity is negatively significant to short term debt in both market and book values. It is also significant to positively to total debt in book values.

- Cash flow is negatively significant in relation to long term and total debt in book and market value.

- None of the ownership or the industry variable are significant.

Table 5.30 show the important variable using the ANN approach. The good prediction is high with values of higher than 59%. From this table we could conclude the following:

- Profitability is important for the book total debt. It is also important for both the market short term debt and total debt.

- Size is important for book short term debt and the total debt. It is also important for the long term debt and total debt in market values.

- Growth is important only for long term debt in book value.

- Tangibility is important for long term debt and total debt in book values. It Is also important for the long term debt in market value.

- Volatility is important for the short term debt in market value.

- Liquidity is important for both the long term and total debt in book values.

Table 5.25: Morocco Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care, industrials, technology and telecommunications.

MOROCCO	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-0.0377	-0.0260	-0.0421	0.0170	0.0075	0.0299	0.0248	0.1302
S.E.	-0.4231	-0.2914	-0.4996	0.1682	0.0685	0.2726	0.2384	1.2964
Profitability	-.4451517***	-.4090426***	-.4451517***	-.4216428***	-.6856868***	-.6417852***	-.6856868***	-.5604098***
S.E	-5.8337	-5.2760	-5.8337	-4.5240	-7.2843	-6.7343	-7.2843	-5.2735
Liquidty	-.0274358***	-.0286942***	-.0274358***	-.0716946***	-.028698***	-.0310285***	-.028698***	-.0850997***
S.E	-5.8028	-6.0070	-5.8028	-8.8748	-4.9203	-5.2844	-4.9203	-9.1953
Risk	0.0082	0.0348	0.0082	-0.0002	0.0216	0.0499	0.0216	0.0225
S.E	0.1960	0.7988	0.1960	-0.0034	0.4175	0.9315	0.4175	0.4042
Size	.0139275**	.0127434**	.0139275**	.0152784**	.0123755*	0.0106	.0123755*	0.0115
S.E	2.9572	2.6957	2.9572	2.7604	2.1301	1.8248	2.1301	1.7943
Tangibilty	-.1268033***	-.1323769***	-.1268033***	-.1699022***	-.2084701***	-.2167539***	-.2084701***	-.2567577***
S.E	-3.6563	-3.8165	-3.6563	-4.2879	-4.8728	-5.0838	-4.8728	-5.5877
Tax	0.1212	0.2010	0.1212	-0.0177	-0.1766	-0.0929	-0.1766	-0.5165
S.E	0.4217	0.6961	0.4217	-0.0530	-0.4981	-0.2618	-0.4981	-1.2921
Dividends	.3063006**	.3029549*	.3063006**	0.2389	0.2568	.2930899*	0.2568	-0.0145
S.E	2.6343	2.5452	2.6343	1.5400	1.7904	2.0031	1.7904	-0.0808
Growth	-0.6749	-0.3761	-0.6749	-0.7961	-0.7253	-0.3032	-0.7253	-0.7832
S.E	-1.4662	-0.7789	-1.4662	-1.5215	-1.2773	-0.5109	-1.2773	-1.2871
Cash Flow	-.1927034*	-0.1632	-.1927034*	-0.1843	-0.1301	-0.0976	-0.1301	-0.0213
S.E	-2.0720	-1.7023	-2.0720	-1.5906	-1.1053	-0.8076	-1.1053	-0.1586
Government	-0.0485	-0.0536	-0.0441	-0.0643	0.0360	0.0242	0.0187	0.0000
S.E	-0.8993	-0.9936	-0.8729	-1.1125	0.5407	0.3651	0.3003	0.0000
Instituional	.025528*	.0255646*	.025528*	0.0143	.0456599**	.0462629**	.0456599**	.0540679***
S.E	2.0476	2.0519	2.0476	0.9859	2.9688	3.0207	2.9688	3.3963
Indivdual	0.0371	0.0357	0.0371	0.0227	0.0371	0.0351	0.0371	0.0358
S.E	1.9505	1.8762	1.9505	1.0011	1.5789	1.5037	1.5789	1.5294
Oil	-0.0380	-0.0324	-0.0380	-0.0541	-0.0059	0.0013	-0.0059	0.0062
S.E	-1.2227	-1.0416	-1.2227	-1.5641	-0.1546	0.0344	-0.1546	0.1628
B Materials	0.0196	0.0181	0.0240	0.0210	0.0548	0.0523	0.0375	0.0181
S.E	0.6748	0.6238	1.2585	0.9486	1.5298	1.4698	1.5972	0.2970
Industrials	-0.0194	-0.0219	-0.0150	-0.0225	0.0641	0.0605	.0468559*	0.0193
S.E	-0.6825	-0.7726	-0.8410	-1.0964	1.8319	1.7363	2.1324	0.3196
C Goods	-0.0224	-0.0239	-0.0180	-0.0028	-0.0041	-0.0065	-0.0214	-0.0475
S.E	-0.7896	-0.8460	-0.8497	-0.1150	-0.1175	-0.1884	-0.8182	-0.8096
Health	0.0000	0.0000	0.0044	0.0323	0.0000	0.0000	-0.0172	-0.0476
S.E	.	.	0.1450	0.8514	.	.	-0.4627	-0.7077
C Servicses	-0.0227	-0.0242	-0.0184	-0.0224	-0.0264	-0.0287	-0.0436	-0.0701
S.E	-0.7344	-0.7832	-0.7853	-0.8342	-0.6899	-0.7567	-1.5119	-1.1181
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
Technology	-0.0044	-0.0092	0.0000	0.0000	0.0172	0.0104	0.0000	-0.0358
S.E	-0.1450	-0.3036	.	.	0.4627	0.2812	.	-0.5692
R2	27%	27%	10%		38%	38%	11%	
N	384	384	384	384	384	384	384	368
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	1.06	Prob2	0.9978	chi2 (8)	15.98	Prob2	0.0426
Hausman	chi2(16)	9.78	Prob2	0.8777	chi2(16)	3.62	Prob2	0.9994

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Table 5.26: Morocco Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

MORROCO	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-0.0772	-0.0916	-0.0290	-0.1572	-0.0396	-0.0337	0.0291	-0.0967
S.E.	-0.9047	-1.0639	-0.3597	-1.5152	-0.4255	-0.3589	0.3300	-0.8764
Profitability	-.6584098***	-.6675765***	-.6584098***	-.4216428***	-.8217161***	-.8161018***	-.8217161***	-1.062642***
S.E	-9.0159	-8.9370	-9.0159	-4.5240	-10.3099	-10.0111	-10.3099	-10.4055
Liquidty	.0302652***	.0312761***	.0302652***	-.0716946***	.0278952***	.0274549***	.0278952***	.0350739***
S.E	6.6887	6.7957	6.6887	-8.8748	5.6486	5.4662	5.6486	5.7513
Risk	.0879021*	.0950527*	.0879021*	-0.0002	.1179686**	.1289061**	.1179686**	.1120964*
S.E	2.1893	2.2622	2.1893	-0.0034	2.6921	2.8111	2.6921	2.0758
Size	0.0021	0.0027	0.0021	.0152784**	0.0007	0.0001	0.0007	0.0071
S.E	0.4624	0.5940	0.4624	2.7604	0.1331	0.0213	0.1331	1.1500
Tangibilty	.3569678***	.3591697***	.3569678***	-.1699022***	.28506***	.2837357***	.28506***	.3391101***
S.E	10.7551	10.7476	10.7551	-4.2879	7.8693	7.7798	7.8693	7.5049
Tax	-0.2911	-0.2917	-0.2911	-0.0177	-0.5151	-0.4822	-0.5151	-0.5357
S.E	-1.0584	-1.0481	-1.0584	-0.0530	-1.7159	-1.5878	-1.7159	-1.4864
Dividends	-0.1197	-0.1500	-0.1197	0.2389	-0.1871	-0.1740	-0.1871	-0.2234
S.E	-1.0761	-1.3077	-1.0761	1.5400	-1.5403	-1.3901	-1.5403	-1.4421
Growth	1.335953**	1.327825**	1.335953**	-0.7961	1.019706*	1.148526*	1.019706*	1.330477**
S.E	3.0326	2.8545	3.0326	-1.5215	2.1209	2.2624	2.1209	2.2841
Cash Flow	-.2413971**	-.2366064*	-.2413971**	-.4439671***	-.2488211*	-.2408069*	-.2488211*	-.4717024***
S.E	-2.6169	-2.4711	-2.6169	-3.5127	-2.4411	-2.2801	-2.4411	-3.4451
Government	0.0795	0.0854	0.0314	0.0608	.1622051**	.1598036**	0.0935	.125707*
S.E	1.5411	1.6420	0.6486	1.0210	2.8794	2.8158	1.7718	1.9720
Instituional	-.0407315***	-.0415695***	-.0407315***	-.0490343**	-.0308396*	-.0306973*	-.0308396*	-.0405179*
S.E	-3.4137	-3.4629	-3.4137	-3.2960	-2.3682	-2.3432	-2.3682	-2.5524
Indivdual	0.0091	0.0099	0.0091	0.0143	-0.0018	-0.0019	-0.0018	-0.0010
S.E	0.5006	0.5386	0.5006	0.6129	-0.0904	-0.0967	-0.0904	-0.0389
Oil	-0.0161	-0.0176	-0.0161	-0.0259	0.0184	0.0207	0.0184	0.0100
S.E	-0.5393	-0.5882	-0.5393	-0.7234	0.5669	0.6315	0.5669	0.2616
B Materials	0.0409	0.0413	-0.0073	-0.0138	.0609495*	.0600995*	-0.0077	-0.0203
S.E	1.4728	1.4802	-0.3984	-0.5963	2.0105	1.9732	-0.3879	-0.8293
Industrials	0.0415	0.0418	-0.0067	-0.0087	.0835749**	.0826025**	0.0149	0.0112
S.E	1.5291	1.5321	-0.3906	-0.4049	2.8206	2.7736	0.8014	0.4948
C Goods	-0.0083	-0.0081	-.0565172**	-.0561844*	0.0128	0.0120	-.0558658*	-.0590031*
S.E	-0.3079	-0.2988	-2.7914	-2.1963	0.4328	0.4055	-2.5282	-2.1643
Health	0.0000	0.0000	-0.0482	-.076424*	0.0000	0.0000	-.0686659*	-.1096637**
S.E	.	.	-1.6656	-1.9942	.	.	-2.1754	-2.6233
C Servicses	.0937197**	.0938657**	.0455474*	0.0166	.1354978***	.1348686***	.0668319**	0.0353
S.E	3.1626	3.1522	2.0359	0.5684	4.1895	4.1501	2.7371	1.1409
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0482	0.0491	0.0000	0.0000	.0686659*	.0668094*	0.0000	0.0000
S.E	1.6656	1.6863	.	.	2.1754	2.1032	.	.
R2	45%	45%			45%	44%		
N	384	384	384	384	384	384	384	384
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	30.42	Prob2	0.0002	chi2 (8)	10.11	Prob2	0.2572
Hausman	chi2(16)	2.61	Prob2	0	chi2(16)	1.68	Prob2	1

Table 5.27: Morocco Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

MORROCO	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-0.1070	-0.1073	-0.0600	-0.1702	-0.0321	-0.0038	0.0538	-0.0513
S.E.	-0.8529	-0.8504	-0.5063	-1.3107	-0.2184	-0.0258	0.3877	-0.3540
Profitability	-1.126432***	-1.090066***	-1.126432***	-1.225051***	-1.507403***	-1.457887***	-1.507403***	-1.579146***
S.E	-10.4917	-9.9554	-10.4917	-10.4780	-11.9897	-11.4710	-11.9897	-12.1556
Liquidty	0.0056	0.0048	0.0056	0.0043	-0.0008	-0.0036	-0.0008	-0.0029
S.E	0.8411	0.7100	0.8411	0.5967	-0.1031	-0.4564	-0.1031	-0.3620
Risk	0.1006	.1398289*	0.1006	0.1091	.139575*	.1788405*	.139575*	.1488587*
S.E	1.7047	2.2702	1.7047	1.7028	2.0192	2.5016	2.0192	2.0809
Size	.0144517*	.0136739*	.0144517*	.0203263**	0.0130	0.0107	0.0130	.019226*
S.E	2.1809	2.0481	2.1809	2.7992	1.6792	1.3820	1.6792	2.3713
Tangibilty	.2670733***	.261741***	.2670733***	.2738215***	0.0766	0.0670	0.0766	0.0760
S.E	5.4732	5.3431	5.4732	5.1940	1.3404	1.1780	1.3404	1.2952
Tax	-0.1970	-0.1189	-0.1970	-0.1369	-0.6917	-0.5751	-0.6917	-0.5801
S.E	-0.4871	-0.2914	-0.4871	-0.3148	-1.4607	-1.2147	-1.4607	-1.1929
Dividends	0.1699	0.1465	0.1699	0.2646	0.0697	0.1191	0.0697	0.1527
S.E	1.0388	0.8713	1.0388	1.4861	0.3640	0.6104	0.3640	0.7691
Growth	0.6580	1.0117	0.6580	0.7637	0.2944	0.8453	0.2944	0.4086
S.E	1.0160	1.4837	1.0160	1.0991	0.3882	1.0681	0.3882	0.5258
Cash Flow	-.4446259***	-.4125832**	-.4446259***	-.6708025***	-.3789272*	-.3384551*	-.3789272*	-.5303363**
S.E	-3.4015	-3.0491	-3.4015	-4.4126	-2.4109	-2.0995	-2.4109	-3.1361
Government	0.0483	0.0467	0.0014	-0.0156	.1981808*	.1840246*	0.1123	0.0776
S.E	0.6370	0.6126	0.0198	-0.2032	2.2302	2.0799	1.3481	0.9060
Instituional	-0.0140	-0.0147	-0.0140	-0.0252	0.0148	0.0156	0.0148	0.0033
S.E	-0.7999	-0.8330	-0.7999	-1.3231	0.7215	0.7621	0.7215	0.1529
Indivdual	0.0520	0.0510	0.0520	.0682502*	0.0353	0.0332	0.0353	0.0548
S.E	1.9425	1.9012	1.9425	2.3415	1.1248	1.0655	1.1248	1.6912
Oil	-0.0505	-0.0456	-0.0505	-0.0628	0.0125	0.0220	0.0125	-0.0006
S.E	-1.1541	-1.0361	-1.1541	-1.3404	0.2436	0.4309	0.2436	-0.0110
B Materials	0.0639	0.0623	0.0170	0.0189	.1157254*	.1124341*	0.0298	0.0233
S.E	1.5649	1.5231	0.6335	0.6490	2.4199	2.3677	0.9500	0.7193
Industrials	0.0235	0.0205	-0.0234	-0.0188	.1476801**	.1430526**	.061765*	.0611921*
S.E	0.5896	0.5120	-0.9335	-0.6911	3.1596	3.0810	2.1046	2.0325
C Goods	-0.0281	-0.0300	-.0750628*	-.0718897*	0.0087	0.0055	-.0772179*	-.0859905*
S.E	-0.7061	-0.7504	-2.5217	-2.2321	0.1864	0.1188	-2.2153	-2.4008
Health	0.0000	0.0000	-0.0469	-0.0786	0.0000	0.0000	-0.0859	-.1362925*
S.E	.	.	-1.1037	-1.6324	.	.	-1.7255	-2.5228
C Servicses	0.0594	0.0575	0.0125	0.0105	.1091463*	.1061192*	0.0232	0.0150
S.E	1.3631	1.3164	0.3787	0.2915	2.1394	2.0945	0.6032	0.3758
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0469	0.0416	0.0000	0.0000	0.0859	0.0773	0.0000	0.0000
S.E	1.1037	0.9761	.	.	1.7255	1.5600	.	.
R2	39%	39%	0%		47%	47%	0%	
N	384	384	384	384	384	384	384	384
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	7.69	Prob2	0.464	chi2 (8)	14.76	Prob2	0.0639
Hausman	chi2(16)	5.52	Prob2	0.9925	chi2(16)	9.99	Prob2	0.8669

Table 5.28: Morocco Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care, industrials, technology and telecommunications.

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Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	-0.0718281	-0.0508286	-0.0108496	-2.60%	-0.0074977	-0.0155476
S.E.	-1.529822	-1.140193	-0.2586314	-62.78%	-0.1736952	-0.3944677
Constant	0.002815	0.166	0.055	0.1918748	0.0537555	0.341812
S.E.	0.0252827	1.215	0.549	1.760036	0.3444552	1.938911
Profitability	-.3891938***	-.6117051***	-.6553508***	-.8075547***	-1.064167***	-1.415483***
S.E	-4.908	-6.299	-9.013	-10.24046	-9.515804	-11.18057
Liquidty	-.0286072***	-.0309491***	.0323128***	.0285132***	0.0061125	-0.0022402
S.E	-5.947	-5.242	7.326	6.002889	0.8987083	-0.2911575
Risk	0.020	0.033	0.080	.111022*	0.117611	.1471119*
S.E	0.456	0.607	1.950	2.49626	1.866607	2.053291
Size	0.009	0.006	0.000	-0.0026494	0.0087572	0.0036721
S.E	1.856	0.932	0.043	-0.5323175	1.235561	0.4579949
Tangibilty	-.1313506***	-.2163265***	.3681139***	.2959733***	.2769351***	0.0840225
S.E	-3.738	-4.993	11.369	8.458619	5.597076	1.502941
Tax	0.186	-0.113	-0.303	-0.4547825	-0.147193	-0.5943132
S.E	0.643	-0.317	-1.132	-1.563068	-0.3584176	-1.270031
Dividends	.2964749*	0.265	-0.192	-0.2132166	0.0860382	0.0389591
S.E	2.436	1.780	-1.719	-1.758528	0.5002077	0.200422
Growth	-0.445	-0.350	1.263164**	1.084143*	0.9080254	0.6959627
S.E	-0.914	-0.585	2.823	2.243753	1.315053	0.8913455
Cash Flow	-0.1707708	-0.0911696	-.247073**	-.2460712*	-.6708025***	-.3536219*
S.E	-1.692693	-0.7185365	-2.595099	-2.335181	-4.412575	-2.133007
Government	0	0	0	0	0	0
S.E	0	0	0	0	0	0
Instituional	.0300451*	.0540679***	-.0355891**	-0.02356	-0.0038761	0.0308523
S.E	2.313324	3.396308	-2.97914	-1.838715	-0.2110697	1.486051
Indivdual	0.0346657	0.0358034	0.0094819	-0.0005589	0.0494488	0.0324617
S.E	1.822834	1.529417	0.5395454	-0.0291782	1.832498	1.049841
Oil	-0.0274857	0.0062359	-0.0149396	0.0236088	-0.0433523	0.0273365
S.E	-0.8785409	0.1627943	-0.5200572	0.7668307	-0.9804906	0.5479151
B Materials	0.0627532	0.0181231	-0.0547933	-.1075438*	-0.0015736	-0.0908415
S.E	1.259449	0.2970228	-1.188572	-2.187536	-0.0221979	-1.140561
Industrials	0.0199852	0.0192995	-0.0597698	-0.0919676	-0.0527263	-0.0743742
S.E	0.4055523	0.3195524	-1.307444	-1.889438	-0.752283	-0.9433507
C Goods	0.0190892	-0.0475413	-.108961*	-.1624405***	-0.1023375	-.2108654**
S.E	0.3984818	-0.8096246	-2.442898	-3.431677	-1.498444	-2.75015
Health	0.0405675	-0.0475781	-.1048831*	-.1800157***	-0.0776665	-.2256703*
S.E	0.7403233	-0.7076594	-2.065168	-3.320968	-0.9975339	-2.56831
C Servicses	0.0185747	-0.070087	-0.0087589	-0.0419252	-0.0185765	-0.114233
S.E	0.3631586	-1.118118	-0.1829366	-0.8282289	-0.2544296	-1.39529
Telecom	0	0	0	0	0	0
S.E	0	0	0	0	0	0
Technology	0.0282863	-0.0358197	-0.052685	-.1067379*	-0.0323764	-0.1421049
S.E	0.5502094	-0.5691709	-1.115201	-2.104658	-0.4444612	-1.731837
N	368	368	368	368	368	368

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Table 5.29: Morocco SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Profit	-0.324	-0.379	-0.489	-0.273	-0.132	-0.282	-0.273	-0.143	-0.286	-0.255	-0.103	-0.269
	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	0.005	0.326	0.025	<0.001	0.126	<0.001
Size	-0.262	0.115	0.233	0.173	0.145	0.158	-0.263	0.177	-0.317	-0.275	0.093	-0.302
	0.066	0.037	0.144	<0.001	0.002	<0.001	<0.001	0.073	0.007	0.003	0.106	0.195
Growth	-0.087	0.05	0.065	-0.143	0.06	0.059	0.104	0.001	0.053	0.1	0.029	0.05
	0.257	0.165	0.164	0.002	0.119	0.123	0.357	0.498	0.176	0.255	0.296	0.161
Tang	0.242	-0.127	-0.015	-0.128	0.154	0.048	0.252	0.169	0.035	0.199	0.09	-0.035
	0.204	0.18	0.425	0.006	0.001	0.171	0.399	0.311	0.421	0.166	0.202	0.306
Tax	-0.111	0.171	-0.088	-0.025	0.198	0.085	-0.079	0.174	0.102	-0.103	0.185	0.076
	0.055	0.167	0.225	0.313	<0.001	0.046	0.135	0.244	0.488	0.07	0.104	0.262
Risk	0.034	0.05	0.032	-0.04	0.047	-0.051	0.009	0.031	0.015	0.02	0.044	0.019
	0.216	0.319	0.306	0.216	0.178	0.156	0.491	0.488	0.488	0.402	0.304	0.418
Div	0.022	-0.064	-0.039	-0.021	0.041	-0.022	-0.023	-0.081	-0.053	-0.02	-0.058	-0.078
	0.353	0.021	0.133	0.34	0.204	0.335	0.332	0.079	0.324	0.322	0.204	0.104
Liqud	-0.499	-0.046	0.264	-0.476	0.067	0.247	-0.495	-0.053	-0.237	-0.481	0.088	-0.223
	<0.001	0.225	0.278	<0.001	0.094	<0.001	<0.001	0.33	0.313	<0.001	0.094	0.236
Cash Flow	0.103	-0.35	-0.118	0.07	-0.321	-0.263	-0.008	-0.421	-0.267	0.005	-0.335	-0.266
	0.161	<0.001	<0.001	0.083	<0.001	<0.001	0.456	<0.001	<0.001	0.471	<0.001	<0.001
Ownership												
Gov							0.075	-0.091	0.04	-0.089	-0.086	-0.202
							0.075	0.488	0.411	0.011	0.056	0.012
indv							0.038	-0.127	-0.142	0.062	-0.016	0.11
							0.302	0.115	0.06	0.225	0.354	0.241
Inst							0.161	0.074	0.029	0.115	-0.067	0.005
							0.024	0.17	0.4	0.076	0.165	0.457
Industry												
Oil							0.047	0.034	0.081	0.032	-0.019	0.089
							0.175	0.407	0.117	0.248	0.305	0.015
Mater							0	0	0	0.002	0.045	0
							0	0	0	0.483	0.229	0
Indust							0	0	0	0	0	0.075
							0	0	0	0	0	0.122
Cgoods							0	0	0	-0.092	-0.071	-0.128
							0	0	0	0.042	0.128	0.023
Health							0	0	0	-0.038	0.041	-0.061
							0	0	0	0.081	0.097	0.029
Cserv							0	0	0	-0.124	0.132	0.006
							0	0	0	0.007	0.018	0.453
Telec							0	0	0	0.033	0.043	0.16
							0	0	0	0.339	0.241	0.092
Techno							0	0	0	-0.018	-0.035	-0.046
							0	0	0	0.38	0.267	0.211
N	384	384	384	384	384	384	384	384	384	384	384	384
R2	32	30	22	32	14	35	37	45	56	46	26	58
Model Fit												
(APC)	0.138	P=0.002		0.138	P=0.002		0.13	P<0.001		0.102	P<0.001	
(ARS)	0.278	P<0.001		0.278	P<0.001		0.46	P=0.004		0.459	P<0.001	
(AARS)	0.26	P<0.001		0.26	P<0.001		0.441	P=0.012		0.431	P<0.001	
(AVIF)	1.409			1.409			1.47			Inf		

Table 5.30: Morocco ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Morocco	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	11.19%	8.45%	19.76%	20.71%	14.27%	20.42%
Size	22.61%	12.71%	17.06%	13.63%	17.96%	21.40%
Growth	11.62%	16.70%	3.67%	3.70%	6.25%	2.58%
Tangibility	4.60%	16.18%	18.71%	14.30%	16.01%	14.63%
Non-Debt Tax shield	13.79%	12.05%	6.44%	11.72%	4.23%	9.17%
Volatility	12.92%	1.16%	0.24%	20.83%	8.87%	12.29%
Dividends	0.50%	6.98%	0.52%	0.23%	7.23%	1.15%
Liquidity	14.60%	15.91%	21.16%	14.51%	15.64%	15.16%
Cash Flow	8.17%	9.85%	12.44%	0.37%	9.54%	3.19%
Good prediction %	69.06%	59.28%	78.50%	70.68%	60.91%	82.41%
S.D of abs errors	0.07	0.08	0.0841	0.0603	0.0862	0.1020
RMSE	0.09	0.10	0.1185	0.0771	0.1024	0.1294
MAE	0.05	0.05	0.08350	0.04806	0.05531	0.0795
N	384	384	384	384	384	384
Adding Dummies						
Profitability	6.50%	6.55%	5.34%	15.72%	25.67%	13.94%
Size	12.28%	3.96%	13.65%	15.79%	21.50%	26.14%
Growth	0.02%	0.34%	8.51%	1.95%	2.28%	1.29%
Tangibility	17.55%	23.40%	18.17%	4.65%	0.93%	13.58%
Non-Debt Tax shield	1.05%	8.70%	7.76%	11.29%	0.00%	0.01%
Volatility	0.03%	13.94%	0.24%	3.62%	1.31%	0.40%
Dividends	7.11%	0.22%	6.87%	0.42%	0.51%	11.95%
Liquidity	22.59%	22.26%	18.84%	17.26%	19.75%	19.14%
Cash Flow	14.23%	10.45%	10.83%	0.32%	15.68%	5.72%
Ownership Dummies						
Government	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Institutional	0.62%	4.07%	0.56%	6.29%	0.65%	2.78%
Individual	1.15%	0.32%	0.52%	1.42%	0.34%	0.18%
Industry Dummies						
Oil	4.28%	1.78%	2.29%	3.52%	1.52%	0.39%
Basic Materials	0.06%	0.84%	0.10%	0.00%	0.47%	0.05%
Consumer Goods	5.65%	0.06%	0.15%	7.88%	0.05%	0.07%
Consumer Services	2.88%	0.74%	1.01%	4.87%	8.76%	3.51%
Health Care	1.98%	2.08%	1.58%	1.43%	0.34%	0.38%
Industrials	0.97%	0.06%	3.55%	1.66%	0.15%	0.39%
Technology	1.04%	0.22%	0.01%	1.91%	0.08%	0.09%
Telecommunications	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Good prediction %	62.21%	65.15%	75.24%	67.10%	65.47%	85.34%
RMSE	0.0319	0.0141	0.0382	0.0358	0.0183	0.0333
MAE	0.0175	0.0065	0.0214	0.0182	0.0088	0.0186
S.D of abs errors	0.0267	0.0126	0.0317	0.0309	0.0161	0.0276
N	384	384	384	384	384	384

The following tables answer the research question:

What is the determinants of capital structure in Oman using Panel Data, SEM, ANN ?

The sixth country in this chapter is Oman. First, the table of the short term debt panel data results is presented. The R^2 is low and in the range of 10% across the models. The Wald test is not significant and therefore it can be concluded that there is no heteroskedasticiy. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model also the Lagrange multiplier is not significant. From the Table 5.31 the following conclusions could be drawn:

- Liquidity is negatively significant with the short term debt in book and market value.

- Risk is only significant using the fixed model for the book value.

- Size is negatively significant with the short term debt in book and market value.

- Tangibility is positively significant across the models for both short term debt in book and market value.

- Non-debt tax shield is positively significant for the short term in book values and significantly negative in market values.

- The ownership structure show that the government variable is positive and significant for market value. However, individual variable also significantly negative using the tobit model.

- The industry classification show that only the oil sector is negative and significant for book values. Basic materials is positive and significant for book values and only for the fixed model in the market value.

The second Table 5.32 show the long term debt using panel data models. The Wald test is not significant for the fixed effect. The R^2 is acceptable for the book debt with 29% and lower for the market value with 30% only. The Lagrange test is not significant and the following could be concluded:

- Profitability is positive for the the long term debt in book values except for tobit model.

- Liquidity is positive and significant for the long term debt in market values. And negative using the tobit model for book values.

- Size is positively significant for the long term debt in book values and market values except for the tobit model in book values which is negative.

- Tangibility is positively significant in for the long term debt in book values and market values.

- Non-debt tax shield is positively significant for the long term debt in market values and only negative using the tobit for book value.

- Growth is positively significant in for the long term debt in market values using tobit and for all the book value models.

- Ownership individual is negatively significant for the long term debt in market values but the individual variable is significant and negative for both market and book.

- industry classification variable which is the oil is significantly negative for the book debt and only significant for the market debt using fixed model. Basic materials is positive and significant for both debt measures. Industrials variable is positive for the market and book using the fixed model. Consumer

goods and consumer services are positive for the market and book using the fixed model and tobit models.

The third tables which is Table 5.33 shows the results for the total debt for both book value and market value in Oman. The Wald test for the total debt for market and book value is not significant. The Lagrange test is not significant and therefore the random effect could be used. The Hausman test is not and therefore would indicate that it is possible to use the Random effect. The R^2 is higher than 41% for both the book and market value. From the Table 5.33 the following conclusions could be drawn:

- Profitability is negatively significant for the total debt in book and market values.

- Liquidity is negatively significant for the total debt in book and market values.

- Size is significant and negative for the total debt market values.

- Non-debt tax shield is significant and negative for the total debt market values.

- Dividends is negatively significant in for the total debt in book and market values.

- Cash flow is negatively significant for total debt for market value using OLS and tobit.

- Ownership government, institutional and individual are negatively significant for the total debt in book values.

- industry classification variable which are basic materials, industrials and consumer goods are negative and significant using the fixed effects only.

The only interest from Table 5.34 is the lagged variable of the leverage ratio. As it shows that the lagged dependent variable is negatively significant for the total debt of book and market value. Which, indicate that firms in Oman might adjust their capital structure.

Table 5.35 show the SEM results for Oman using the PLS approach. The model fits at the bottom of the model shows that the model fit is good without the dummy variables and with the dummy variables. However, as with the previous result caution should be taken in interpreting the results of the book value with the dummy variables as the dummies cause the model to have a high variance inflation factor. The R^2 is good for all the models with or without the dummies. From this table the following could be concluded:

- Profitability attribute is significantly negative to total debt in market value and book values. It also significantly positive to long term debt in book values.

- Size attribute is significantly negative to short term debt in market value and book values. It also significantly negative to total debt in market values.

- Tangibility is significantly positive in relation to short and long term debt market and book leverage. It is also negatively significant to the total debt in book and market values.

- Dividends is negatively significant to the total debt in book and market values.

- Liquidity is negatively significant to total debt in both market and book value. It is also negatively significant to short term debt in book values and positively significant to long term debt in market value.

- Cash flow is negatively significant in relation long and total debt variables in book and market values.

- Ownership variable individual and institutional variables are significantly negative to the long term debt in market values. It is also negatively significant to total debt in market value only for individual.

- industry variables of oil, basic materials and health services are significantly negative to short term debt in book values.

Table 5.36 show the important variable using the ANN approach. The good prediction percentage is high with the lowest model is 49%. From the table we conclude the following results:

- Profitability is important for the short term debt in market value. It is important for the short term debt and total debt in book value as well.

- Tangibility is considerably important for the long term debt in market value leverage and slightly important for the total debt market leverage.

- Volatility is substantially important for the short term debt and long term debt book leverage. It is also slightly important for both short term debt and total debt in market value.

- Liquidity is important for both the short term debt in market values and in book values as well.

- Cash flow is significantly important for the total debt in book values with a variable impact of almost a half. It is also important for both the long term debt in market value and book value.

- Technology as an industry classification is important for the short term debt in market values.

Table 5.31: Oman Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care, industrials, technology and telecommunications.

OMAN	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.2454647**	0.1458	.2454647**	0.0903	.4493603***	.3428974**	.4493603***	.4512155***
S.E.	2.7932	1.5785	2.7932	0.7680	3.8539	2.7996	3.8539	4.0981
Profitability	-0.0120	-0.0010	-0.0120	-0.0754	-0.1066	-0.0995	-0.1066	-0.1585
S.E	-0.1786	-0.0147	-0.1786	-0.9301	-1.1950	-1.0955	-1.1950	-1.5120
Liquidty	-.0112769***	-.0111585***	-.0112769***	-.0114496***	-.0153653***	-.0151729***	-.0153653***	-.0160145***
S.E	-4.3976	-4.3275	-4.3976	-3.8167	-4.5161	-4.4362	-4.5161	-4.0714
Risk	0.0136	.0152879*	0.0136	0.0141	0.0138	0.0166	0.0138	0.0174
S.E	1.9063	2.0943	1.9063	1.6582	1.4596	1.7181	1.4596	1.5780
Size	-.0122059**	-.0130676**	-.0122059**	-.0112979*	-.022101***	-.0231116***	-.022101***	-.0211572**
S.E	-2.8594	-3.0111	-2.8594	-2.1722	-3.9022	-4.0150	-3.9022	-3.1204
Tangibilty	.1721843***	.1712269***	.1721843***	.2293807***	.114869***	.1130672***	.114869***	.1805516***
S.E	7.9792	7.8952	7.9792	8.7911	4.0120	3.9305	4.0120	5.3198
Tax	-.1267474*	-.1297481*	-.1267474*	-.1474623*	.44921***	.4472011***	.44921***	.4624478***
S.E	-2.4396	-2.4842	-2.4396	-2.3445	6.5165	6.4551	6.5165	5.7951
Dividends	0.0162	0.0082	0.0162	0.0511	-0.1631	-0.1761	-0.1631	-0.1532
S.E	0.1564	0.0781	0.1564	0.4206	-1.1835	-1.2687	-1.1835	-0.9646
Growth	-0.6460	-0.6368	-0.6460	-0.3959	-1.1615	-1.1338	-1.1615	-0.8260
S.E	-1.3653	-1.3139	-1.3653	-0.7047	-1.8502	-1.7637	-1.8502	-1.1239
Cash Flow	-0.0008	-0.0009	-0.0008	-0.0080	0.0065	0.0065	0.0065	0.0084
S.E	-0.2459	-0.2721	-0.2459	-0.9180	1.5884	1.5653	1.5884	1.7743
Government	0.0049	0.0049	0.0049	0.0138	.0861421**	.0862973**	.0861421**	.0871706**
S.E	0.1989	0.1961	0.1989	0.4720	2.6178	2.6130	2.6178	2.6646
Instituonal	0.0054	0.0057	0.0054	0.0025	0.0155	0.0160	0.0155	0.0150
S.E	0.3560	0.3723	0.3560	0.1390	0.7660	0.7894	0.7660	0.7382
Indivdual	-0.0329	-0.0327	-0.0329	-.0475584*	-0.0108	-0.0108	-0.0108	-0.0140
S.E	-1.6560	-1.6560	-1.6560	-1.9886	-0.4111	-0.4073	-0.4111	-0.5234
Oil	-.1483278***	-.1449416***	-.1483278***	-.1344726**	-0.1009	-0.0967	-0.1009	-0.1038
S.E	-3.6055	-3.5028	-3.6055	-2.7847	-1.8484	-1.7610	-1.8484	-1.8749
B Materials	.1577526**	.2696125***	.1577526**	.2758394***	0.1297	.250513**	0.1297	0.1287
S.E	3.0940	5.1753	3.0940	3.5851	1.9173	3.6253	1.9173	1.9161
Industrials	-0.0060	.1074368*	-0.0060	0.0766	0.0111	.1336699*	0.0111	0.0077
S.E	-0.1202	2.1544	-0.1202	1.0115	0.1676	2.0208	0.1676	0.1163
C Goods	0.0288	.1421752**	0.0288	0.1328	0.0089	.1311012*	0.0089	0.0070
S.E	0.5768	2.8743	0.5768	1.7543	0.1342	1.9982	0.1342	0.1053
Health	-0.1137	0.0000	-0.1137	-0.1468	-0.1229	0.0000	-0.1229	-0.1248
S.E	-1.6460	.	-1.6460	-1.3930	-1.3407	.	-1.3407	-1.3690
C Servicses	-0.0075	.1051631*	-0.0075	0.0896	-0.0078	0.1140	-0.0078	-0.0110
S.E	-0.1489	2.0679	-0.1489	1.1744	-0.1166	1.6894	-0.1166	-0.1654
Telecom	0.0106	.1255347*	0.0106	0.1276	0.0013	0.1266	0.0013	-0.0013
S.E	0.1716	2.0020	0.1716	1.4693	0.0161	1.5218	0.0161	-0.0154
Technology	0.0000	0.1121	0.0000	0.0000	0.0000	0.1212	0.0000	0.0000
S.E	.	1.6153	.	.	.	1.3172	.	0.0000
R2	28%	28%			29%	29%		
N	648	648	648	648	648	648	648	632
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	2.87	Prob2	0.9423	chi2 (8)	0.7003	Prob2	0.7003
Hausman	chi2(17)	0.94	Prob2	1	chi2(17)	1.68	Prob2	1

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Table 5.32: Oman Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

OMAN	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-.4569322***	-.623031***	-.4569322***	-1.11193***	-.3493647**	-.4844545***	-.3493647**	-.9418656***
S.E.	-3.8159	-4.9804	-3.8159	-5.5400	-2.8869	-3.8214	-2.8869	-4.8024
Profitability	.2058207*	.1989706*	.2058207*	-0.0754	0.0363	0.0235	0.0363	0.0883
S.E	2.2465	2.1450	2.2465	-0.9301	0.3919	0.2500	0.3919	0.7225
Liquidty	0.0011	0.0008	0.0011	-.0114496***	.0111062**	.0110353**	.0111062**	.0137141**
S.E	0.3286	0.2392	0.3286	-3.8167	3.1450	3.1172	3.1450	3.0514
Risk	-0.0077	-0.0129	-0.0077	0.0141	-0.0049	-0.0084	-0.0049	-0.0026
S.E	-0.7961	-1.3056	-0.7961	1.6582	-0.5033	-0.8421	-0.5033	-0.1982
Size	.0207335***	.0222445***	.0207335***	-.0112979*	.0148945*	.0160809**	.0148945*	.0302036***
S.E	3.5646	3.7836	3.5646	-2.1722	2.5337	2.6990	2.5337	3.7459
Tangibilty	.3675366***	.3705723***	.3675366***	.2293807***	.2888177***	.2905725***	.2888177***	.41601***
S.E	12.4997	12.6127	12.4997	8.7911	9.7190	9.7588	9.7190	10.3888
Tax	0.0927	0.0988	0.0927	-.1474623*	.4782895***	.4826067***	.4782895***	.5677458***
S.E	1.3098	1.3963	1.3098	-2.3445	6.6849	6.7302	6.6849	6.2302
Dividends	0.0700	0.0875	0.0700	0.0511	-0.1355	-0.1307	-0.1355	-0.1213
S.E	0.4943	0.6172	0.4943	0.4206	-0.9474	-0.9100	-0.9474	-0.6719
Growth	1.668068**	1.592623*	1.668068**	-0.3959	1.1294	1.0338	1.1294	1.933809*
S.E	2.5873	2.4256	2.5873	-0.7047	1.7332	1.5537	1.7332	2.2889
Cash Flow	-0.0035	-0.0039	-0.0035	-.0510888*	-0.0006	-0.0009	-0.0006	0.0013
S.E	-0.8187	-0.8980	-0.8187	-2.5576	-0.1387	-0.1970	-0.1387	0.2451
Government	-0.0477	-0.0480	-0.0477	-0.0467	-.0740848*	-.0744504*	-.0740848*	-0.0863
S.E	-1.4115	-1.4234	-1.4115	-1.0302	-2.1692	-2.1779	-2.1692	-1.9326
Instituonal	0.0046	0.0037	0.0046	-0.0014	0.0037	0.0032	0.0037	-0.0135
S.E	0.2238	0.1776	0.2238	-0.0485	0.1776	0.1529	0.1776	-0.4907
Indivdual	-.0567917*	-.056834*	-.0567917*	-.0764508*	-.0831233**	-.0833723**	-.0831233**	-.1121168**
S.E	-2.0954	-2.1007	-2.0954	-2.0828	-3.0346	-3.0408	-3.0346	-3.1196
Oil	-.1635737**	-.1698436**	-.1635737**	-.1574668*	-0.1098	-.1140274*	-0.1098	-0.0934
S.E	-2.9180	-3.0298	-2.9180	-2.1694	-1.9374	-2.0072	-1.9374	-1.2969
B Materials	.1693396*	.3143764***	.1693396*	.4253168**	.1390196*	.2582608***	.1390196*	.3821659**
S.E	2.4375	4.4544	2.4375	3.0188	1.9799	3.6108	1.9799	2.7782
Industrials	0.0360	.1779948**	0.0360	0.2285	0.0651	.1817718**	0.0651	.2709085*
S.E	0.5305	2.6346	0.5305	1.6403	0.9492	2.6549	0.9492	1.9932
C Goods	0.1284	.2712482***	0.1284	.3723237**	0.1158	.232757***	0.1158	.35629**
S.E	1.8888	4.0478	1.8888	2.6734	1.6864	3.4274	1.6864	2.6211
Health	-0.1417	0.0000	-0.1417	-0.1709	-0.1161	0.0000	-0.1161	-0.1464
S.E	-1.5056	.	-1.5056	-0.8945	-1.2198	.	-1.2198	-0.7754
C Servicses	0.0694	.2130089**	0.0694	.3094*	0.0932	.2114781**	0.0932	.3280617*
S.E	1.0108	3.0918	1.0108	2.2094	1.3439	3.0289	1.3439	2.3995
Telecom	0.0000	0.1379	0.0000	0.1777	0.0685	.1835659*	0.0685	0.2437
S.E	-0.0003	1.6235	-0.0003	1.1471	0.8080	2.1323	0.8080	1.6047
Technology	0.0000	0.1444	0.0000	0.0000	0.0000	0.1191	0.0000	0.0000
S.E	.	1.5363	.	.	.	1.2504	.	.
R2	29%	30%			30%	30%		
N	648	648	648	648	648	648	648	648
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	11.76	Prob2	0.1621	chi2 (8)	4.76	Prob2	0.7826
Hausman	chi2(17)	5.3	Prob2	0	chi2(17)	3.86	Prob2	0.9996

Table 5.33: Oman Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

OMAN	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.3908411**	.6575316***	.3908411**	.4388071**	.7846055***	1.071315***	.7846055***	.9138242***
S.E.	3.2653	5.2683	3.2653	3.2961	5.8042	7.5663	5.8042	6.1520
Profitability	-.6840823***	-.7200563***	-.6840823***	-.705687***	-.5967336***	-.6217477***	-.5967336***	-.5515445***
S.E	-7.4696	-7.7803	-7.4696	-6.9318	-5.7694	-5.9219	-5.7694	-4.8406
Liquidty	-.0205626***	-.0207906***	-.0205626***	-.0277406***	-.034794***	-.0347722***	-.034794***	-.0557023***
S.E	-5.8873	-5.9653	-5.8873	-6.0977	-8.8207	-8.7946	-8.8207	-9.6081
Risk	-0.0114	-0.0174	-0.0114	-0.0142	0.0182	0.0145	0.0182	0.0185
S.E	-1.1771	-1.7600	-1.1771	-1.3250	1.6646	1.2931	1.6646	1.5711
Size	0.0028	0.0058	0.0028	0.0024	-.019418**	-.0174924**	-.019418**	-.0220854**
S.E	0.4840	0.9940	0.4840	0.3726	-2.9572	-2.6287	-2.9572	-3.0595
Tangibilty	-0.0124	-0.0087	-0.0124	-0.0277	0.0402	0.0425	0.0402	0.0268
S.E	-0.4212	-0.2981	-0.4212	-0.8454	1.2111	1.2781	1.2111	0.7324
Tax	0.0405	0.0454	0.0405	0.0465	-.3247412***	-.3252039***	-.3247412***	-.3762555***
S.E	0.5716	0.6437	0.5716	0.5994	-4.0606	-4.0634	-4.0606	-4.2454
Dividends	-.6614904***	-.6569457***	-.6614904***	-.7684991***	-.837849***	-.8416341***	-.837849***	-.9690544***
S.E	-4.6759	-4.6459	-4.6759	-4.8833	-5.2441	-5.2466	-5.2441	-5.4428
Growth	0.9286	0.6532	0.9286	1.2410	0.2140	-0.0450	0.2140	0.3743
S.E	1.4409	0.9972	1.4409	1.7449	0.2941	-0.0605	0.2941	0.4723
Cash Flow	-0.0026	-0.0022	-0.0026	-0.0032	-.0100617*	-0.0094	-.0100617*	-.050112**
S.E	-0.5722	-0.4736	-0.5722	-0.6409	-2.0415	-1.8978	-2.0415	-3.0694
Government	-.1711282***	-.1711605***	-.1711282***	-.1910759***	-0.0697	-0.0702	-0.0697	-0.0449
S.E	-5.0660	-5.0858	-5.0660	-4.9797	-1.8277	-1.8378	-1.8277	-1.0618
Instituional	-.0498642*	-.0504878*	-.0498642*	-.0553216*	-0.0258	-0.0261	-0.0258	-0.0292
S.E	-2.4033	-2.4424	-2.4033	-2.4120	-1.0994	-1.1112	-1.0994	-1.1409
Indivdual	-.176766***	-.177196***	-.176766***	-.1822152***	-0.0594	-0.0595	-0.0594	-0.0566
S.E	-6.5246	-6.5647	-6.5246	-6.0958	-1.9403	-1.9422	-1.9403	-1.7064
Oil	0.0328	0.0218	0.0328	0.0483	0.0363	0.0298	0.0363	0.0331
S.E	0.5850	0.3895	0.5850	0.7666	0.5742	0.4693	0.5742	0.4721
B Materials	0.0048	-.3026237***	0.0048	-0.0497	0.0591	-.2530555**	0.0591	-0.0064
S.E	0.0695	-4.2977	0.0695	-0.6508	0.7533	-3.1679	0.7533	-0.0748
Industrials	0.0242	-.2893347***	0.0242	0.0050	0.0208	-.2953111***	0.0208	-0.0260
S.E	0.3568	-4.2925	0.3568	0.0675	0.2711	-3.8619	0.2711	-0.3159
C Goods	0.0533	-.2601113***	0.0533	0.0286	0.0583	-.2578824***	0.0583	0.0086
S.E	0.7846	-3.8905	0.7846	0.3855	0.7592	-3.4001	0.7592	0.1047
Health	.315236***	0.0000	.315236***	.3015637**	.3175912**	0.0000	.3175912**	.2810639*
S.E	3.3499	.	3.3499	2.9364	2.9883	.	2.9883	2.4626
C Servicses	-0.0933	-.4031811***	-0.0933	-0.1265	-0.1161	-.4295318***	-0.1161	-.1826299*
S.E	-1.3597	-5.8655	-1.3597	-1.6837	-1.4977	-5.5083	-1.4977	-2.1854
Telecom	0.0312	-.2865278***	0.0312	0.0230	-0.0491	-.3669936***	-0.0491	-0.1151
S.E	0.3719	-3.3808	0.3719	0.2495	-0.5178	-3.8170	-0.5178	-1.1198
Technology	0.0000	-.3072745**	0.0000	0.0000	0.0000	-.3116723**	0.0000	0.0000
S.E	.	-3.2768	.	.	.	-2.9298	.	.
R2	41%	41%			44%	44%		
N	648	648	648	648	648	648	648	648
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	11.14	Prob2	0.194	chi2 (8)	2.01	Prob2	0.9806
Hausman	chi2(17)	19.29	Prob2	0.3119	chi2(17)	4.95	Prob2	0.9979

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Table 5.34: Oman Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

OMAN

Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	-0.0329641	-0.0234319	-0.0122102	-4.83%	-.2145016***	-.1340322***
S.E.	-0.8898188	-0.628172	-0.3262576	-135.46%	-7.031306	-4.400952
Constant	.2636595**	.4623496***	-.4640578***	-.3615135**	.45741***	.8385028***
S.E.	3.038362	3.956	-3.768	-2.956645	4.047406	6.440753
Profitability	0.001	-0.101	.2038793*	0.0286456	-.7073015***	-.6060145***
S.E	0.022	-1.113	2.131	0.3017949	-8.078615	-6.021176
Liquidty	-.0115919***	-.0155939***	0.001	.0105828**	-.0219411***	-.0360749***
S.E	-4.521	-4.473	0.167	2.971287	-6.73084	-9.59659
Risk	.0163799*	0.018	-0.016	-0.0116977	-.0221669*	0.0130579
S.E	2.290	1.837	-1.533	-1.136223	-2.348102	1.201998
Size	-.0127369**	-.0224502***	.0217155***	.0166401**	0.0072531	-.0176796**
S.E	-3.029	-3.899	3.607	2.762003	1.317019	-2.796723
Tangibilty	.171366***	.1123348***	.3657079***	.2829122***	-0.0229598	0.0272018
S.E	8.087	3.875	12.129	9.43735	-0.8333631	0.8555099
Tax	-.1315889***	.4455678***	0.101	.4835468***	0.0551573	-.3176461***
S.E	-2.609	6.494	1.399	6.732436	0.8360548	-4.182489
Dividends	0.004	-0.179	0.094	-0.1238205	-.7176698***	-.904447***
S.E	0.043	-1.303	0.650	-0.8592059	-5.39801	-5.892197
Growth	-0.673	-1.182	1.568159*	1.058144	0.5324478	-0.1285339
S.E	-1.428	-1.847	2.315	1.567424	0.8558096	-0.1808802
Cash Flow	-0.0008553	0.0065784	-0.0040467	-0.0010919	-0.0032142	-.0100237*
S.E	-0.2753083	1.603039	-0.9257808	-0.2550926	-0.6408949	-2.11744
Government	0.0067894	.0871706**	-0.04592	-.0705669*	-.1529074***	-0.065689
S.E	0.2811579	2.664604	-1.297567	-2.052718	-4.851755	-1.815614
Instituional	0.0053537	0.0150032	0.0024294	0.0009444	-0.0377769	-0.019766
S.E	0.3606066	0.7381809	0.113974	0.044981	-1.938825	-0.8843687
Indivdual	-0.0357892	-0.014025	-.0572357*	-.0876454**	-.1745047***	-.0650047*
S.E	-1.820059	-0.5234072	-2.07431	-3.177983	-6.92611	-2.23885
Oil	-.1502136***	-0.1038231	-.1668444**	-0.1102865	0.0250331	0.0061111
S.E	-3.728072	-1.874888	-2.910858	-1.944208	0.4795642	0.1012244
B Materials	.1545669**	0.128668	.1693627*	.137548*	-0.0703254	0.0375967
S.E	3.125324	1.916142	2.397252	1.960905	-1.075032	0.5048291
Industrials	-0.0123881	0.0076697	0.0334848	0.062518	-0.0469244	-0.0045572
S.E	-0.252988	0.1162953	0.4854736	0.913183	-0.7369423	-0.0626556
C Goods	0.0239908	0.0069594	0.1234178	0.110212	-0.0404502	0.0135415
S.E	0.4877626	0.1052803	1.780283	1.603781	-0.6299164	0.1847664
Health	-0.1189567	-0.124777	-0.1432761	-0.1166991	.2354019**	.2441757*
S.E	-1.767523	-1.369042	-1.495925	-1.227831	2.671678	2.393981
C Servicses	-0.0138549	-0.011022	0.0683352	0.0931459	-.151817*	-0.1327238
S.E	-0.2801552	-0.1654387	0.9797701	1.344753	-2.363639	-1.805341
Telecom	0.0088662	-0.0012604	-0.0078782	0.0563712	-0.1055143	-0.1078316
S.E	0.1479701	-0.0153878	-0.0922502	0.6635752	-1.317824	-1.189578
Technology	0	0	0	0	0	0
S.E	0	0	0	0	0	0
N	632	632	632	632	632	632

Table 5.35: Oman SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Profit	-0.01	-0.001	-0.155	-0.103	0.193	-0.193	-0.015	0.012	-0.185	-0.039	0.154	-0.119
	0.401	0.486	<0.001	0.004	<0.001	<0.001	0.351	0.38	<0.001	0.266	0.006	0.003
Size	-0.201	-0.02	-0.137	-0.333	-0.012	0.006	-0.203	0.049	-0.185	-0.152	0.061	-0.157
	<0.001	0.308	<0.001	<0.001	0.382	0.436	<0.001	0.107	<0.001	0.01	0.272	<0.001
Growth	-0.024	-0.114	-0.014	-0.006	-0.099	0.039	-0.053	-0.017	0.034	-0.032	-0.077	-0.017
	0.266	0.002	0.358	0.436	0.006	0.159	0.09	0.335	0.195	0.22	0.165	0.4
Tang	0.271	0.487	-0.111	0.221	0.535	-0.133	0.187	0.443	-0.105	0.293	0.527	-0.111
	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	0.023	<0.001	0.153
Tax	-0.085	-0.083	-0.019	-0.072	0.046	-0.077	0.172	0.152	-0.08	-0.093	0.036	-0.011
	0.014	0.017	0.313	0.033	0.122	0.024	<0.001	<0.001	0.021	0.154	0.24	0.425
Risk	0.026	0.014	-0.006	0.007	0.015	-0.026	0.019	0.018	-0.022	0.026	0.064	-0.011
	0.256	0.364	0.435	0.43	0.349	0.257	0.312	0.323	0.284	0.244	0.138	0.288
Div	-0.102	0.013	-0.216	-0.078	-0.003	-0.187	-0.104	-0.038	-0.165	-0.113	0.019	-0.171
	0.005	0.375	<0.001	0.023	0.471	<0.001	0.004	0.164	<0.001	0.002	0.348	0.05
Liqud	-0.119	0.15	-0.216	-0.131	0.058	-0.152	-0.093	0.176	-0.173	-0.121	0.062	-0.195
	0.001	<0.001	<0.001	<0.001	0.07	<0.001	0.008	<0.001	<0.001	0.005	0.132	<0.001
Cash Flow	0.104	-0.164	-0.179	0.097	-0.194	-0.326	0.096	-0.144	-0.184	0.079	-0.205	-0.174
	0.004	<0.001	<0.001	0.007	<0.001	<0.001	0.007	<0.001	<0.001	0.03	0.125	<0.001
Ownership												
Gov							0.113	-0.115	-0.061	0.14	-0.029	-0.03
							0.002	0.002	0.058	0.011	0.256	0.178
indv							-0.036	-0.163	-0.128	-0.056	-0.122	-0.148
							0.176	<0.001	<0.001	0.21	0.004	0.114
Inst							-0.083	-0.148	0.083	-0.046	-0.153	-0.085
							0.016	<0.001	0.017	0.134	0.007	0.253
Industry												
Oil							-0.004	-0.011	0.042	-0.077	-0.05	0.014
							0.457	0.392	0.141	<0.001	0.042	0.28
Mater							0	0	0	0.192	0.175	-0.006
							0	0	0	<0.001	0.076	0.465
Indust							0	0	0	0.044	0	-0.134
							0	0	0	0.135	0	0.043
Cgoods							0	0	0	0	0.221	0
							0	0	0	0	0.089	0
Health							0	0	0	-0.06	-0.027	0.075
							0	0	0	<0.001	0.284	0.003
Cserv							0	0	0	0.037	0.066	-0.2
							0	0	0	0.168	0.287	0.002
Telec							0	0	0	0.028	0.011	-0.085
							0	0	0	0.162	0.421	0.011
Techno							0	0	0	-0.004	-0.044	-0.009
							0	0	0	0.414	0.124	0.345
N	648	648	648	648	648	648	648	648	648	648	648	648
R2	26	27	33	25	26	35	26	37	36	26	36	35
Model Fit												
(APC)	0.118	P<0.001		0.118	P<0.001		0.105	P=0.002		0.096	P<0.001	
(ARS)	0.287	P<0.001		0.287	P<0.001		0.329	P<0.001		0.322	P<0.001	
(AARS)	0.277	P<0.001		0.277	P<0.001		0.316	P<0.001		0.302	P<0.001	
(AVIF)	1.285			1.285			1.305			Inf		

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Table 5.36: Oman ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Oman	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	14.56%	9.31%	14.10%	18.60%	8.36%	13.30%
Size	6.31%	8.88%	0.51%	9.89%	14.39%	7.30%
Growth	7.09%	2.61%	0.04%	1.63%	4.60%	2.58%
Tangibility	10.84%	14.04%	8.23%	12.09%	37.39%	16.41%
Non-Debt Tax shield	12.68%	1.75%	10.63%	13.16%	5.06%	13.38%
Volatility	20.62%	28.01%	10.36%	17.17%	9.04%	22.42%
Dividends	1.93%	8.74%	0.38%	0.24%	0.56%	10.95%
Liquidity	15.94%	11.87%	5.76%	18.63%	2.28%	4.58%
Cash Flow	10.04%	14.79%	49.99%	8.59%	18.32%	9.08%
Good prediction %	79.12%	65.76%	57.20%	73.90%	49.06%	79.54%
S.D of abs errors	0.13	0.12	0.0716	0.1329	0.1115	0.0857
RMSE	0.18	0.14	0.0788	0.1861	0.1318	0.1057
MAE	0.12	0.07	0.03295	0.13026	0.07013	0.0619
N	648	648	648	648	648	648
Adding Dummies						
Profitability	14.76%	4.61%	6.33%	14.77%	13.37%	24.91%
Size	1.51%	19.22%	1.73%	4.16%	0.00%	2.68%
Growth	0.35%	4.43%	5.75%	0.51%	0.24%	0.83%
Tangibility	16.84%	26.69%	7.91%	16.04%	7.56%	0.05%
Non-Debt Tax shield	11.00%	1.39%	5.08%	13.47%	0.12%	12.09%
Volatility	20.72%	20.19%	0.73%	10.41%	24.86%	17.78%
Dividends	0.01%	3.80%	6.66%	0.40%	0.04%	10.39%
Liquidity	1.21%	0.56%	0.01%	1.19%	0.53%	0.89%
Cash Flow	1.11%	0.21%	17.83%	2.89%	25.20%	1.52%
Ownership Dummies						
Government	4.14%	0.40%	0.30%	5.40%	3.99%	0.80%
Institutional	7.24%	0.66%	4.84%	0.31%	1.10%	3.34%
Individual	0.61%	0.00%	6.34%	0.94%	1.89%	1.85%
Industry Dummies						
Oil	0.07%	8.97%	5.48%	0.65%	0.23%	2.05%
Basic Materials	1.99%	0.48%	0.17%	0.60%	3.71%	3.32%
Consumer Goods	7.42%	2.24%	6.33%	8.06%	3.45%	5.68%
Consumer Services	0.40%	0.11%	6.31%	0.07%	2.24%	3.00%
Health Care	0.00%	3.84%	5.17%	0.01%	5.54%	0.61%
Industrials	2.89%	0.18%	0.00%	1.59%	0.80%	0.01%
Technology	3.87%	0.76%	6.70%	13.19%	1.04%	1.99%
Telecommunications	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Good prediction %	82.67%	61.17%	90.40%	83.30%	41.34%	85.18%
RMSE	0.0370	0.0420	0.0002	0.0448	0.0836	0.0150
MAE	0.0191	0.0174	0.0000	0.0224	0.0416	0.0086
S.D of abs errors	0.0317	0.0382	0.0002	0.0387	0.0726	0.0124
N	648	648	648	648	648	648

The following tables answer the research question:

What is the determinants of capital structure in Palestine using Panel Data, SEM, ANN ?

The seventh country in this chapter is Palestine. First, the table of the short term debt panel data results is presented. The R^2 is substantially high and in the range of 76% across the models. The Wald test is significant and therefore it can be concluded that there is heteroskedasticiy and robust errors are presnted. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model. From the Table 5.37 the following conclusions could be drawn:

- Profitability is positive and significant with the short term debt in market value using tobit.

- Liquidity is negatively significant with the short term debt in book and market value.

- Risk is significantly positive for short term debt market value.

- Size is positively significant with the short term debt in market value and vice versa for the book.

- Tangibility is positively significant across the models for both short term debt in book and market value.

- Non-debt tax shield is positively significant for the short term debt in market value.

- Dividends is significantly positively short term debt in book value.

- Growth is negative and significant for book value debt and vice versa for the market debt.

- Cash flow is significantly negative for both short term debt in market value.

- The ownership structure show that the individual variable is negative and significant for both market value and book value of short term debt. On the other hand, institutional is positive and significant for the book value and vice versa for the market.

- The industry classification show that only the consumer services is positive and significant for the market value. The health variable is only positive significant using the tobit model for the book value.

The second Table 5.38 show the long term debt using panel data models. The Wald test is not significant for the fixed effect. The R^2 is good for the book debt with 20% and problematic with the market where it is 92% and therefore would indicate a high collinearity and will be ignored. The Lagrange test is not significant and the following could be concluded:

- Profitability is negatively significant for the long term debt in book values and the inverse for the tobit model.

- Size is positively significant for the long term debt in book except for the fixed effect model and negative for the tobit.

- Tangibility is positively significant in for the long term debt in book values.

- Dividends is positive significant for the long term debt in book using tobit model only.

- Growth is negatively significant in for the long term debt in book values.

- Ownership individual is positively y significant for the long term debt in book values.

The third tables which is Table 5.39 shows the results for the total debt for both book value and market value in Palestine. The Wald test for the total debt is not significant. The Lagrange test is not significant and therefore the random effect could be used. The Hausman test is not significant for total debt and significant for the total market value and therefore would indicate that it is possible to use the Random effect. The R^2 is higher than 50% for both the book and market value. The market R^2 is problematic where it is 80% and therefore would indicate a high collinearity and will be ignored From the Table 5.39 the following conclusions could be drawn:

- Size is negatively significant for the total debt in book values.

- Dividends is positively significant in for the total debt in book.

- Growth is negatively significant in for the total debt in book.

- Cash flow is negatively significant for total debt for book value using tobit model.

- Ownership individual is negatively significant for the total debt in book values. Institutional variable is positively significant for total debt in book values.

- industry classification variable which is the oil positively significant using both market and book total debt.

The only interest from Table 5.40 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is negatively significant for the short, long and total debt of book value. Which, indicate that firms might adjust their capital structure for both the long term debt and total debt.

Table 5.41 show the SEM-PLS results for Oman. The model fits at the bottom of the model shows that the model fit is good without the dummy variables but doesn't

hold when the dummy variables are added. The R^2 is good for all the models with or without the dummies except for the short term debt in market values. From the previous table the following could be concluded:

- Profitability attribute is significantly negative to long term debt in book values.

- Size attribute is significantly positive to long term debt in market values.

- Non-debt tax shield is positively significant to the three measure of the market value.

- Dividends is negatively significant to the total debt and short term debt in market values.

Table 5.42 show the important variable using the ANN approach. It shows the variable impact factor as a percentage. The good prediction is high with values of higher than 69%. From the ANN results table we could conclude the following:

- Profitability is substantially important for the total debt in market value (TD-MVE).

- Size is significantly important for long term debt in book value (LTDBVA) and slightly important for the total debt in book value (TDBVA).

- Growth is important for the short term debt in book value (STDBVA).

- Tangibility is the most important variable especially for the market leverage ratios which are the short term, long term and total debt in market leverage.

- Non debt tax shield is only important for the long term debt in market value.

- Volatility is significantly important for the short term debt in market value and slightly important for the short term debt in book values.

- Liquidity is marginally important for the short term debt in book value and for the total debt in market value.

- Ownership structure shows that the individual variable is somewhat important for the short term debt of book value.

- Industry classification shows that oil variable is somewhat important for the short term debt of book value.

Table 5.37: Palestine Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

PALESTINE	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.4199938***	.4309323***	.4199938***	.6273545***	-.4002474***	-.398771***	-.4002474***	-0.0446
S.E.	5.9061	5.8461	5.9061	5.9220	-4.8222	-4.6451	-4.8222	-0.5111
Profitability	0.0253	0.0270	0.0253	.2502637**	-1.1095	-0.0696	-1.1095	.3153194***
S.E	0.4367	0.4492	0.4367	2.6384	-1.1095	-0.9934	-1.1095	4.5746
Liquidity	-.0081767**	-.0082312**	-.0081767***	-.0090787**	-.006124*	-.0062818*	-.006124*	-.0542946***
S.E	-3.3129	-3.2610	-3.3129	-2.9629	-2.1258	-2.1369	-2.1258	-16.0711
Risk	-0.0045	-0.0045	-0.0045	-0.0019	.007884**	.0081118*	.007884**	0.0011
S.E	-1.8079	-1.7778	-1.8079	-0.6514	2.7287	2.7255	2.7287	0.7939
Size	-.0230226***	-.0236689***	-.0230226***	-.0362451***	.0231621***	.023088***	.0231621***	.04901***
S.E	-5.6983	-5.6574	-5.6983	-5.8328	4.9117	4.7385	4.9117	5.6028
Tangibilty	.0915398***	.0899837***	.0915398***	.0699598***	.0909452***	.0919164***	.0909452***	.2751288***
S.E	7.2672	6.9876	7.2672	4.1623	6.1858	6.1288	6.1858	15.4506
Tax	-0.5168	-0.4534	-0.5168	0.6550	4.325539***	4.308625***	4.325539***	2.23007***
S.E	-0.9927	-0.8511	-0.9927	0.9759	7.1193	6.9448	7.1193	5.8565
Dividends	.4019609***	.4124872**	.4019609***	.3225444*	-0.1297	-0.1437	-0.1297	2.808148***
S.E	3.3614	3.3265	3.3614	2.1471	-0.9295	-0.9950	-0.9295	6.5521
Growth	-5.302995***	-5.402376***	-5.302995***	-7.174382***	7.282517***	7.470277***	7.282517***	17.31727***
S.E	-7.7096	-7.6270	-7.7096	-7.7149	9.0710	9.0556	9.0710	17.1282
Cash Flow	-0.0063	-0.0069	-0.0063	0.0194	-.3655342***	-.3671684***	-.3655342***	-.7815127***
S.E	-0.1300	-0.1404	-0.1300	0.2901	-6.4612	-6.3975	-6.4612	-8.1688
Government	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
Instituional	.0535231***	.054746***	.0535231***	.0855996***	-.0505778***	-.0509938***	-.0505778***	-.0695263***
S.E	6.2300	6.2293	6.2300	6.9733	-5.0439	-4.9822	-5.0439	-6.0770
Indivdual	-0.0236	-0.0251	-0.0236	-.047913*	-.0893447***	-.0903309***	-.0893447***	-.0881953***
S.E	-1.5956	-1.6670	-1.5956	-2.3164	-5.1799	-5.1415	-5.1799	-4.9557
Oil	0.0118	0.0118	0.0118	0.0200	-0.0017	-0.0018	-0.0017	-0.0097
S.E	1.4087	1.3915	1.4087	1.9479	-0.1775	-0.1806	-0.1775	-0.9689
B Materials	-0.0017	-0.0020	-0.0017	-0.0017	0.0079	0.0076	0.0079	0.0102
S.E	-0.2421	-0.2787	-0.2421	-0.1858	0.9345	0.8862	0.9345	1.1937
Industrials	-0.0012	-0.0015	-0.0012	0.0000	0.0082	0.0078	0.0082	0.0049
S.E	-0.2004	-0.2394	-0.2004	0.0045	1.1633	1.0959	1.1633	0.6411
C Goods	-0.0032	-0.0035	-0.0032	-0.0026	0.0104	0.0100	0.0104	0.0120
S.E	-0.4849	-0.5117	-0.4849	-0.3205	1.3311	1.2523	1.3311	1.4788
Health	0.0093	0.0092	0.0093	.0176298*	0.0004	-0.0001	0.0004	0.0061
S.E	1.2826	1.2539	1.2826	2.0092	0.0444	-0.0065	0.0444	0.6958
C Servicses	-0.0083	-0.0086	-0.0083	-0.0091	.0175844*	.0172033*	.0175844*	.0169576*
S.E	-1.1581	-1.1757	-1.1581	-0.9907	2.1029	2.0255	2.1029	1.9887
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
R2	77%	77%			75%	76%		
N	184	184	184	184	184	184	184	168
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	41.65	Prob2	0	chi2 (8)	54.34	Prob2	0
Hausman	chi2(16)	1.24	Prob2	1	chi2(16)	1.58	Prob2	1

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Table 5.38: Palestine Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

PALESTINE	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-0.2298	-0.1968	-0.2298	-0.2965	-0.1078	-0.1027	-0.1078	-5.060663***
S.E.	-1.6500	-1.3646	-1.6500	-1.4798	-1.6962	-1.5554	-1.6962	-13.5848
Profitability	-.3566912**	-.3378757**	-.3566912**	.2502637**	-0.0638	-0.0603	-0.0638	-3.470663***
S.E	-3.1404	-2.8703	-3.1404	2.6384	-1.2314	-1.1194	-1.2314	-11.7562
Liquidty	0.0039	0.0036	0.0039	-.0090787**	-.0168099***	-.0169003***	-.0168099***	-.3698161***
S.E	0.8025	0.7384	0.8025	-2.9629	-7.6209	-7.4755	-7.6209	-14.5699
Risk	-0.0021	-0.0013	-0.0021	-0.0019	.0050194*	.0052247*	.0050194*	0.0004
S.E	-0.4366	-0.2601	-0.4366	-0.6514	2.2689	2.2826	2.2689	0.4622
Size	.0173218*	0.0154	.0173218*	-.0362451***	.0075197*	0.0072	.0075197*	.2782032***
S.E	2.1894	1.8838	2.1894	-5.8328	2.0826	1.9260	2.0826	13.7533
Tangibilty	.0761862**	.0719015**	.0761862**	.0699598***	.1515738***	.151386***	.1515738***	1.365177***
S.E	3.0888	2.8545	3.0888	4.1623	13.4645	13.1253	13.4645	15.7274
Tax	-1.2077	-1.0741	-1.2077	0.6550	4.564453***	4.590597***	4.564453***	-.6618907*
S.E	-1.1848	-1.0308	-1.1848	0.9759	9.8115	9.6213	9.8115	-2.2649
Dividends	0.2842	0.2655	0.2842	.3225444*	.2232754*	.2205733*	.2232754*	42.12432***
S.E	1.2135	1.0945	1.2135	2.1471	2.0892	1.9860	2.0892	13.1848
Growth	-10.18856***	-10.28096***	-10.18856***	-7.174382***	4.227153***	4.296755***	4.227153***	36.6714***
S.E	-7.5644	-7.4203	-7.5644	-7.7149	6.8765	6.7728	6.8765	16.5607
Cash Flow	.6705327***	.6673161***	.6705327***	.8047845***	-.5272842***	-.5284151***	-.5272842***	-.7843191***
S.E	7.4535	7.3234	7.4535	6.2901	-11.7372	-11.5680	-11.7372	-9.9292
Government	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Instituional	0.0108	0.0139	0.0108	0.0290	-.0367756***	-.0364889***	-.0367756***	-5.7938
S.E	0.6437	0.8110	0.6437	1.2409	-4.7898	-4.6356	-4.7898	.
Indivdual	.223967***	.2200126***	.223967***	.253936***	-.1382091***	-.1395986***	-.1382091***	-3.9890
S.E	7.7398	7.4559	7.7398	6.2351	-10.4651	-10.3318	-10.4651	.
Oil	0.0215	0.0214	0.0215	0.0406	-0.0011	-0.0012	-0.0011	-0.0001
S.E	1.3095	1.2825	1.3095	1.8399	-0.1476	-0.1513	-0.1476	-0.0308
B Materials	-0.0088	-0.0100	-0.0088	-0.0150	.0154457*	.0151436*	.0154457*	0.0023
S.E	-0.6196	-0.6997	-0.6196	-0.7720	2.3962	2.3038	2.3962	0.8266
Industrials	-0.0072	-0.0087	-0.0072	-0.0110	.0159201**	.0155985**	.0159201**	0.0022
S.E	-0.6117	-0.7216	-0.6117	-0.6843	2.9605	2.8372	2.9605	0.8889
C Goods	-0.0034	-0.0050	-0.0034	-0.0091	0.0094	0.0091	0.0094	-0.0004
S.E	-0.2620	-0.3732	-0.2620	-0.5164	1.5775	1.4839	1.5775	-0.1297
Health	0.0113	0.0103	0.0113	0.0248	0.0052	0.0049	0.0052	0.0017
S.E	0.7940	0.7135	0.7940	1.3243	0.7976	0.7395	0.7976	0.6290
C Servicses	-0.0149	-0.0162	-0.0149	-0.0260	.022284***	.0219299***	.022284***	0.0026
S.E	-1.0587	-1.1385	-1.0587	-1.3378	3.4805	3.3574	3.4805	0.9533
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	58%	58%	20%		92%	92%		
N	184	184	184	184	184	184	184	184
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	15.88	Prob2	0.0442	chi2 (8)	86.36	Prob2	0
Hausman	chi2(16)	1.46	Prob2	1	chi2(16)	0.68	Prob2	1

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Table 5.39: Palestine Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

PALESTINE	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	1.007215***	1.057004***	1.007215***	1.116862***	-.4903367**	-.4797942**	-.4903367**	-.3702834*
S.E.	4.9198	5.0009	4.9198	5.2565	-2.7644	-2.6159	-2.7644	-2.3001
Profitability	-0.1395	-0.1213	-0.1395	-0.0046	-.6394235***	-.6137936***	-.6394235***	-.4404184**
S.E	-0.8353	-0.7028	-0.8353	-0.0259	-4.4195	-4.0990	-4.4195	-3.2166
Liquidty	.014313*	0.0140	.014313*	0.0139	-.0350172**	-.0351821***	-.0350172**	-.0359963***
S.E	2.0143	1.9336	2.0143	1.9674	-5.6880	-5.6017	-5.6880	-5.6895
Risk	-0.0102	-0.0094	-0.0102	-0.0086	.0135874*	.0144677*	.0135874*	.0110926*
S.E	-1.4274	-1.2792	-1.4274	-1.2134	2.2006	2.2752	2.2006	1.9941
Size	-.0528447***	-.0557784***	-.0528447***	-.0596218***	.0390578***	.0385403***	.0390578***	.0330944***
S.E	-4.5432	-4.6497	-4.5432	-4.9183	3.8757	3.7022	3.8757	3.6260
Tangibilty	0.0388	0.0323	0.0388	0.0225	0.0291	0.0285	0.0291	-0.0005
S.E	1.0694	0.8749	1.0694	0.6021	0.9249	0.8899	0.9249	-0.0169
Tax	-1.0382	-0.7663	-1.0382	-1.1411	6.997***	6.952341***	6.997***	8.484474***
S.E	-0.6928	-0.5017	-0.6928	-0.7393	5.3889	5.2450	5.3889	6.6025
Dividends	1.53767***	1.549491***	1.53767***	1.486552***	-1.51562***	-1.594157***	-1.51562***	-2.288991***
S.E	4.4665	4.3580	4.4665	4.3122	-5.0813	-5.1667	-5.0813	-7.1043
Growth	-13.77938***	-13.972***	-13.77938***	-15.07694***	9.522216***	9.734045***	9.522216***	10.58198***
S.E	-6.9584	-6.8793	-6.9584	-7.2294	5.5500	5.5229	5.5500	5.6017
Cash Flow	-0.2539	-0.2602	-0.2539	-.2694582*	-.2575877*	-.2574751*	-.2575877*	-.9341956***
S.E	-1.9448	-1.9622	-1.9448	-2.0181	-2.0221	-1.9969	-2.0221	-4.6389
Government	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Instituional	.112456***	.1174499***	.112456***	.1230338***	.0941989***	.0944509***	.0941989***	.1119274***
S.E	4.5467	4.6608	4.5467	4.8447	4.3958	4.3192	4.3958	5.5278
Indivdual	-.0913826*	-.0992603*	-.0913826*	-.0972809*	-.0890506*	-.0885756*	-.0890506*	-0.5918
S.E	-2.1480	-2.2947	-2.1480	-2.2715	-2.4159	-2.3597	-2.4159	.
Oil	0.0022	0.0021	0.0022	0.0019	-0.0030	-0.0032	-0.0030	-0.0024
S.E	0.0929	0.0848	0.0929	0.0793	-0.1432	-0.1508	-0.1432	-0.1303
B Materials	0.0207	0.0189	0.0207	0.0261	.0743434***	.07337***	.0743434***	.0611023***
S.E	0.9974	0.8980	0.9974	1.2599	4.1323	4.0177	4.1323	3.7262
Industrials	0.0192	0.0174	0.0192	0.0249	.0859173***	.0846206***	.0859173***	.0699649***
S.E	1.1103	0.9862	1.1103	1.4348	5.7245	5.5403	5.7245	5.0287
C Goods	0.0126	0.0107	0.0126	0.0164	.0606202***	.0591053***	.0606202***	.0478544**
S.E	0.6527	0.5446	0.6527	0.8523	3.6272	3.4704	3.6272	3.1434
Health	0.0115	0.0104	0.0115	0.0160	.0649627***	.063519***	.0649627***	.0476798*
S.E	0.5498	0.4928	0.5498	0.7693	3.5914	3.4611	3.5914	2.8645
C Servicses	0.0111	0.0092	0.0111	0.0168	.0875501***	.0864129***	.0875501***	.0733848***
S.E	0.5381	0.4395	0.5381	0.8141	4.8994	4.7621	4.8994	4.5030
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	50%	50%			80%	80%		
N	184	184	184	184	184	184	184	184
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	13.48	Prob2	0.0964	chi2 (8)	7.35	Prob2	0.4998
Hausman	chi2(16)	2.12	Prob2	1	chi2(16)	1.82	Prob2	1

Table 5.40: Palestine Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

PALESTINE

Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	-.6212725***	-.3298414**	-.378996*	0.0825	-.5982674***	0.0554235
S.E.	-14.87281	-3.145242	-2.383864	123.30%	-6.437171	0.874466
Constant	.2198338***	-.6042551***	-0.055	0.011439	.8180975***	-0.3934514
S.E.	4.548435	-5.907	-0.394	0.1204898	4.605069	-1.879691
Profitability	0.005	-0.049	-.2747183*	-0.0715023	-.6052175***	-.5470476**
S.E	0.138	-0.598	-2.531	-1.056155	-3.876319	-3.101901
Liquidty	-.0128697***	0.008	-0.004	-.0253362***	-0.0033307	-.0378757***
S.E	-8.088	1.402	-0.732	-6.125806	-0.5027913	-4.694343
Risk	0.000	.0087417*	-0.001	0.0047132	-0.0025104	.0161016*
S.E	-0.087	2.444	-0.226	1.558913	-0.3501799	1.999971
Size	-.0112832***	.0341781***	0.008	0.0009958	-.0344935***	.0337426**
S.E	-4.111	5.961	1.010	0.1874468	-3.330512	2.844405
Tangibilty	.1499756***	.139511***	.0958021***	.1489361***	.0652042*	0.0042008
S.E	16.896	7.191	3.337	8.268159	2.133476	0.1153035
Tax	1.028063**	3.678757***	0.654	4.599654***	0.5044279	8.289431***
S.E	3.042	5.201	0.643	8.127798	0.4039953	5.496675
Dividends	.3454707***	-.4623305*	0.356	.3477783*	1.662543***	-1.960202***
S.E	4.354	-2.438	1.593	2.064941	5.490485	-5.371879
Growth	-1.026	9.624922***	-10.08612***	6.036927***	-8.969896***	10.12349***
S.E	-1.874	10.191	-7.278	5.826998	-4.576373	4.796005
Cash Flow	-.2092916***	-.3967616***	.4278694***	-.5720052***	-.2694582*	-.3030736*
S.E	-7.410597	-6.231582	4.238074	-12.36569	-2.018053	-2.410285
Government	0	0	0	0	0	0
S.E	0	0	0	0	0	0
Instituional	.0212344***	-.0695263***	0.0117236	-.0323393**	.0679656**	.1090238***
S.E	3.652349	-6.076966	0.7191126	-3.269915	3.088064	4.378443
Indivdual	-.0665957***	-.0881953***	.1616766***	-.1590741***	-.0682142*	-.0943604*
S.E	-7.147818	-4.955714	5.219976	-10.32704	-1.970367	-2.351061
Oil	.0108796*	-0.0096886	0.0213244	0.0028883	0.0005542	0.0055744
S.E	2.193418	-0.9688518	1.557853	0.3298742	0.0290359	0.22929
B Materials	0.0021969	0.0102467	-0.0106087	0.0114969	0.0239061	.0635447***
S.E	0.5049597	1.193719	-0.8613673	1.582633	1.434701	3.30139
Industrials	0.0067642	0.0048941	-0.0017954	.0137357*	0.0228266	.0729532***
S.E	1.777177	0.6411279	-0.164693	2.119762	1.568139	4.254777
C Goods	0.0009949	0.0120402	-0.0091271	0.0042648	0.0223856	.0501707**
S.E	0.2427654	1.478769	-0.7871566	0.6102378	1.425498	2.763114
Health	.009038*	0.0060926	0.0091745	0.0029817	0.0061305	.0524273**
S.E	2.074788	0.6957748	0.7567667	0.4063536	0.3649803	2.707932
C Servicses	0.0013051	.0169576*	-0.0145276	.0159948*	0.0249224	.0750105***
S.E	0.2984475	1.988748	-1.167101	2.20237	1.494217	3.916181
Telecom	0	0	0	0	0	0
S.E	0	0	0	0	0	0
Technology	0	0	0	0	0	0
S.E	0	0	0	0	0	0
N	168	168	168	168	168	168

255

Table 5.41: Palestine SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Profit	-0.012	-0.128	0.067	-0.191	-0.539	-0.407	0.136	-0.022	0.101	-0.077	-0.343	0.21
	0.454	0.109	0.404	0.07	<0.001	0.033	0.197	0.393	0.18	0.364	0.001	0.13
Size	-0.027	-0.016	0.447	0.185	0.07	-0.256	-0.28	-0.158	0.238	-0.338	-0.035	0.248
	0.43	0.462	<0.001	0.449	0.372	0.095	0.072	0.208	0.087	0.198	0.419	0.414
Growth	0.004	-0.058	-0.106	-0.041	-0.21	-0.05	0.22	-0.231	0.053	0.019	-0.112	-0.073
	0.484	0.403	0.368	0.375	0.077	0.408	0.149	0.256	0.357	0.465	0.043	0.42
Tang	-0.24	-0.403	-0.182	-0.265	-0.067	-0.017	-0.098	-0.577	0.057	-0.227	-0.018	-0.019
	0.047	0.017	0.032	0.202	0.417	0.475	0.35	0.009	0.373	0.42	0.471	0.494
Tax	0.508	0.574	0.334	0.365	0.37	-0.21	0.537	0.327	0.448	0.621	0.191	0.387
	<0.001	<0.001	<0.001	0.003	0.006	0.232	0.032	0.028	0.012	0.006	0.06	0.02
Risk	0.165	0.124	0.057	-0.022	-0.055	0.064	0.129	0.046	0.052	0.12	0.07	0.055
	0.148	0.079	0.373	0.392	0.432	0.242	0.195	0.23	0.303	0.38	0.342	0.414
Div	-0.292	-0.258	-0.429	0.179	0.006	0.487	-0.231	-0.148	-0.013	-0.299	-0.22	-0.245
	<0.001	0.032	<0.001	0.33	0.493	0.004	0.079	0.187	0.466	0.011	0.181	0.286
Liqud	0.01	-0.006	-0.183	0.042	0.182	-0.114	-0.011	-0.088	-0.171	0.026	-0.116	0.237
	0.455	0.476	0.015	0.441	0.383	0.387	0.459	0.185	0.22	0.483	0.283	0.14
Cash Flow	-0.048	-0.018	0.035	0.028	0.036	0.048	0.155	0.156	-0.118	-0.034	-0.005	-0.109
	0.204	0.385	0.234	0.395	0.338	0.27	0.235	0.196	0.232	0.47	0.484	0.245
Ownership												
Gov							0	0	0	0	0	0
							0.462	0.16	0.288	0.5	0.5	0.5
indv							-0.396	-0.397	-0.068	-0.266	0.478	-0.13
							0.011	0.002	0.333	0.448	0.327	0.464
Inst							-0.213	-0.135	-0.576	-0.304	-0.009	0.434
							0.185	0.194	0.188	0.404	0.498	0.014
Industry												
Oil							0	0.12	0.198	-0.014	0.113	0.02
							0	0.088	0.072	0.485	0.484	0.472
Mater							-0.003	0.007	0.002	0	-0.064	-0.022
							0.478	0.407	0.477	0	0.488	0.485
Indust							-0.097	0	-0.012	-0.029	0	0
							0.16	0	0.454	0.441	0	0
Cgoods							-0.106	0.011	0	-0.075	-0.026	-0.079
							0.207	0.448	0	0.385	0.492	0.451
Health							-0.223	-0.091	0.002	-0.044	0.143	-0.109
							0.046	0.107	0.49	0.429	0.483	0.434
Cserv							-0.116	-0.006	-0.032	0.029	0.145	0.104
							0.199	0.469	0.38	0.468	0.471	0.475
Telec							-0.096	-0.077	-0.087	-0.202	0.116	-0.082
							0.212	0.133	0.151	0.368	0.472	0.453
Techno							0	0	0	0	0	0
							0	0	0	0	0	0
N	184	184	184	184	184	184	184	184	184	184	184	184
R2	6	37	46	42	32	54	26	37	36	73	42	15
Model Fit												
(APC)	0.167	P<0.001		0.175	P<0.001		0.139	P=1.000		0.139	P=1.000	
(ARS)	0.297	P=1.000		0.428	P=0.134		0.386	P=1.000		0.433	P=1.000	
(AARS)	0.26	P=1.000		0.399	P=0.370		0.319	P=1.000		0.371	P=1.000	
(AVIF)	1.477			1.569			Inf			Inf		

Table 5.42: Palestine ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Palestine	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	13.05%	10.40%	12.96%	3.56%	5.54%	19.08%
Size	4.02%	28.68%	15.43%	3.05%	6.54%	3.62%
Growth	17.21%	14.32%	11.99%	5.83%	6.69%	11.50%
Tangibility	10.72%	10.44%	11.74%	30.54%	36.47%	48.46%
Non-Debt Tax shield	6.46%	10.47%	11.74%	13.44%	33.92%	1.51%
Volatility	15.11%	12.75%	0.00%	36.58%	1.70%	0.00%
Dividends	9.15%	7.24%	11.74%	2.64%	0.47%	0.75%
Liquidity	14.92%	5.71%	12.65%	4.14%	8.60%	15.03%
Cash Flow	9.36%	0.00%	11.74%	0.22%	0.07%	0.06%
Good prediction %	72.79%	69.39%	93.88%	72.11%	73.47%	97.28%
S.D of abs errors	0.01	0.01	0.0600	0.0002	0.0345	0.0045
RMSE	0.01	0.01	0.0668	0.0002	0.0349	0.0046
MAE	0.01	0.01	0.02954	0.00009	0.00574	0.0008
N	184	184	184	184	184	184
Adding Dummies						
Profitability	7.04%	3.09%	2.30%	3.72%	0.74%	2.57%
Size	6.36%	4.37%	12.38%	1.73%	0.36%	0.58%
Growth	10.83%	12.97%	14.27%	12.39%	4.16%	11.41%
Tangibility	0.59%	1.20%	21.58%	18.10%	24.60%	33.04%
Non-Debt Tax shield	4.80%	10.21%	4.02%	39.13%	27.24%	0.00%
Volatility	11.37%	15.10%	36.57%	0.88%	30.88%	33.29%
Dividends	9.86%	5.19%	2.01%	5.96%	1.18%	0.17%
Liquidity	7.44%	6.94%	5.30%	10.26%	7.60%	11.64%
Cash Flow	10.36%	11.99%	0.01%	3.23%	0.00%	0.03%
Ownership Dummies						
Government	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Institutional	1.20%	1.75%	0.00%	3.88%	1.77%	6.79%
Individual	9.97%	0.00%	0.00%	0.00%	0.00%	0.00%
Industry Dummies						
Oil	9.96%	11.47%	0.65%	0.70%	1.49%	0.45%
Basic Materials	0.16%	2.62%	0.01%	0.00%	0.00%	0.00%
Consumer Goods	1.69%	2.76%	0.26%	0.00%	0.00%	0.02%
Consumer Services	2.47%	3.13%	0.03%	0.00%	0.00%	0.00%
Health Care	3.07%	3.65%	0.12%	0.00%	0.00%	0.01%
Industrials	0.16%	0.00%	0.01%	0.00%	0.00%	0.00%
Technology	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Telecommunications	2.68%	3.54%	0.48%	0.00%	0.00%	0.00%
Good prediction %	78.23%	80.27%	91.84%	72.11%	85.03%	95.92%
RMSE	0.0043	0.0051	0.0064	0.0000	0.0000	0.0018
MAE	0.0011	0.0015	0.0013	0.0000	0.0000	0.0005
S.D of abs errors	0.0041	0.0049	0.0063	0.0000	0.0000	0.0017
N	184	184	184	184	184	184

The following tables answer the research question:

What is the determinants of capital structure in Qatar using Panel Data, SEM, ANN ?

The eighth country in this chapter is Qatar. First, the table of the short term debt panel data results is presented. The R^2 is low and in the range of 22% across the models. The Wald test is significant and therefore it can be concluded that there is no heteroskedasticiy and robust errors should be provided. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model. From the Table 5.43 the following conclusions could be drawn:

- Size is negative and significant with the short term debt in book value.

- Non-debt tax shield is negative and significant for the short term debt in market and book debt.

- Dividends is significantly positive for both short term debt in book and market value.

- Cash flow is significantly positive for short term debt in market value.

- The ownership structure show that the Institutional variable is negative and significant for book value of short term debt.

- The industry classification show that oil sector is negative and significant for book debt. The same apply to the health and consumer goods as well. Consumer services is positive and significant for market debt except tobit.

The second Table 5.44 show the long term debt using panel data models. The Wald test is significant for the fixed effect. The R^2 is acceptable for the book debt with 31% and lower for the market value with 22% only. The Lagrange test is not

significant for the book and significant for the market debt. The following could be concluded:

- Liquidity is negative and significant with the long term debt in book value.

- Risk is negative and significant with the long term debt in book value.

- Size is negative and significant with the long term debt in book value.

- Non-debt tax shield is negative and significant with long term debt in book value and only for the tobit model in the market leverage.

- Dividends is significantly positive for long term debt in book values.

- The ownership structure show that the Institutional variable is negative and significant for book value of short term debt. Government is only positive for long term debt in book values using tobit.

- The industry classification show that oil sector is positive and significant for market debt. Health and consumer goods are negative and significant using book debt only. Health is also positive and significant for the market value.

The third tables which is Table 5.45 shows the results for the total debt for both book value and market value in Qatar. The Wald test for the total debt for book value is not significant. The Lagrange test is not significant and therefore the random effect could be used. The Hausman test is not significant for total. The R^2 is higher than 33% for both the book and market value. From the Table 5.45 the following conclusions could be drawn:

- Profitability is negatively significant for the total debt market values.

- Risk is positively significant for the total debt in market values.

- Size is positively significant for the total debt in market values.

- Tangibility is negatively significant for the total debt in book value.

- Non-debt tax shield is negatively significant for the total debt book tobit mode.

- Dividends is negatively significant in for the total debt for market values.

- Growth is negatively significant in for the total debt in book and market values
.

- Cash flow is negatively significant for total debt for market value.

- Ownership government is negatively significant for the total debt in market values and vice versa for book values. Institutional variable is negatively significant for total debt in market value.

- industry classification variable which is the oil, industry and consumer services are positively significant using both market and book total debt.

The only interest from Table 5.46 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is not significant for all models and therefore we could not concluded that there is a target capital ratio.

Table 5.47 show the results for Qatar using the SEM-PLS approach. The model fits at the bottom of the model shows that the model fit is acceptable without the dummy variables but the average path coefficient is not significant. This could be because the sample is small. Therefore, caution should be taken in interpreting the results of the country. The R^2 is good for all the models with or without the dummies except for the long term debt in market value. As the table of the results the following could be concluded:

- Size attribute is significantly positive to total debt in both market and book values. On the other hand, it is significantly negative to long term debt in book values.

- Tangibility is significantly negative in relation to long term debt in market values.

- Non-debt tax shield is significantly negative in relation to short term debt in market values.

- Dividends is negatively significant to the total debt in market values.

- Cash flow is negatively significant in relation long and total debt variables in market values. Similarly it is also negatively significant to short term debt in book values.

- Ownership variable government is positively significant with the short term debt measure in book value. In contrast, individual variable is significantly negative to the long term and total debt in book values. It is also negatively significant to long term debt and short term debt in market value for institutional.

- industry variables of consumer goods, health services, consumer services and telecommunication all are significantly negative to total debt in book values. Only health is positively significant with the short term debt in book values.

Table 5.48 show the important variables using the ANN approach by showing variable impact factor in percentages. The good prediction is high with values of higher than 56%. From this table we could understand the following:

- Profitability variable is important for the total debt in book value and long term debt in market value.

- Size is substantially important epically for the all the book leverage variables. It is also important for the total debt in market leverage.

- Growth is important for the long term debt in book value.

- Tangibility variable is important for both the total debt in book value in addition to long term debt in market leverage.

- Non-debt tax shield is important for the long term debt in book leverage. Similarly it is important to long term and total debt in market leverage values.

- Dividends is significantly important for the short term debt in book value.

- Liquidity is only important for the total debt in book values.

Table 5.43: Qatar Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

QATAR	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.6227586***	.6435081***	.6227586***	.8310934***	0.0971	0.0659	0.0971	.2275687*
S.E.	5.5758	5.4674	5.5758	6.2935	0.7948	0.5042	0.7948	2.0983
Profitability	-0.0768	-0.0692	-0.0768	0.0692	-0.0567	-0.0697	-0.0567	-0.1475
S.E	-1.0231	-0.8927	-1.0231	0.6301	-0.6902	-0.8095	-0.6902	-1.4821
Liquidty	-0.0018	-0.0021	-0.0018	-0.0023	-0.0022	-0.0022	-0.0022	-0.0067
S.E	-1.4411	-1.6560	-1.4411	-1.7061	-1.6012	-1.5996	-1.6012	-1.7744
Risk	-0.0695	-0.0648	-0.0695	-.1788595*	0.0962	0.0768	0.0962	0.1474
S.E	-1.1797	-0.8715	-1.1797	-2.5424	1.4924	0.9286	1.4924	1.8904
Size	-.0251797***	-.0263185***	-.0251797***	-.0342647***	-0.0087	-0.0066	-0.0087	-0.0077
S.E	-4.7439	-4.3993	-4.7439	-5.5551	-1.5034	-0.9856	-1.5034	-1.1221
Tangibilty	0.0069	0.0034	0.0069	0.0261	-0.0356	-0.0290	-0.0356	-0.0011
S.E	0.1732	0.0830	0.1732	0.5480	-0.8179	-0.6418	-0.8179	-0.0211
Tax	-.2946489***	-.3003155**	-.2946489***	-.3785265***	-.2784722**	-.2653756**	-.2784722**	-.5649934***
S.E	-3.3145	-3.3096	-3.3145	-3.7748	-2.8632	-2.6320	-2.8632	-3.7274
Dividends	.7308897***	.7526384***	.7308897***	.7145871**	.5109507*	.4934613*	.5109507*	.7470434**
S.E	3.6907	3.7627	3.6907	3.0745	2.3582	2.2202	2.3582	2.7995
Growth	-0.3715	-0.5542	-0.3715	-0.4578	-0.0466	-0.0972	-0.0466	-0.6620
S.E	-0.6624	-0.9475	-0.6624	-0.7088	-0.0759	-0.1496	-0.0759	-0.7714
Cash Flow	-0.0018	-0.0016	-0.0018	-0.0011	.0071305***	.0070498***	.0071305***	.0082133***
S.E	-0.8850	-0.7906	-0.8850	-0.4555	3.6432	3.5322	3.6432	3.5605
Government	0.0468	0.0492	0.0468	0.0606	0.0400	0.0345	0.0400	0.0351
S.E	1.5070	1.5344	1.5070	1.7207	1.1786	0.9686	1.1786	0.9331
Instituional	-.074698**	-.0726032*	-.074698**	-.1004425**	0.0515	0.0473	0.0515	0.0470
S.E	-2.6979	-2.5458	-2.6979	-3.2130	1.7004	1.4940	1.7004	1.4007
Indivdual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
Oil	-.0947336**	-.0952416**	-.0947336**	-.1315642**	0.0498	0.0484	0.0498	-0.0318
S.E	-2.7325	-2.6891	-2.7325	-3.1397	1.3118	1.2290	1.3118	-0.7560
B Materials	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
Industrials	-0.0342	-0.0345	-0.0342	-0.0474	0.0500	0.0505	0.0500	-0.0270
S.E	-1.1285	-1.1183	-1.1285	-1.2966	1.5086	1.4740	1.5086	-0.7091
C Goods	-.137058***	-.1375102***	-.137058***	-.1625499***	-0.0101	-0.0089	-0.0101	-.0988176*
S.E	-4.2590	-4.2229	-4.2590	-4.3201	-0.2876	-0.2464	-0.2876	-2.1013
Health	-.1291618**	-.1315597**	-.1291618**	-.1731612**	0.0760	0.0796	0.0760	0.0000
S.E	-2.8504	-2.8546	-2.8504	-3.2398	1.5335	1.5541	1.5335	0.0000
C Servicses	-0.0070	-0.0060	-0.0070	0.0095	.1861318***	.1817672***	.1861318***	0.1012
S.E	-0.1644	-0.1389	-0.1644	0.1959	4.0078	3.7893	4.0078	1.7156
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0882
S.E	.	.	.	.	.	.	.	-1.6008
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
R2	39%	41%			23%	22%		
N	152	152	152	152	152	152	152	136
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	395.16	Prob2	0	chi2 (8)	644.75	Prob2	0
Hausman	chi2(15)	3.87	Prob2	0.9981	chi2(15)	0.84	Prob2	1

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Table 5.44: Qatar Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care, industrials, technology and telecommunications.

QATAR	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.7865709***	.9019512***	.7865709***	1.036153***	0.1411	0.1960	0.1411	0.1860
S.E.	4.8983	5.3981	4.8983	5.1870	0.9917	1.3133	0.9917	1.0403
Profitability	-0.0829	-0.0166	-0.0829	0.0692	-0.0694	-0.0413	-0.0694	-0.1392
S.E	-0.7688	-0.1508	-0.7688	0.6301	-0.7257	-0.4206	-0.7257	-1.1738
Liquidty	-.0054859**	-.0055972**	-.0054859**	-0.0023	-0.0017	-0.0014	-0.0017	-0.0033
S.E	-3.0877	-3.1313	-3.0877	-1.7061	-1.0781	-0.9012	-1.0781	-1.4120
Risk	-.2225963**	-0.0846	-.2225963**	-.1788595*	-0.0736	-0.0374	-0.0736	-0.1436
S.E	-2.6267	-0.8014	-2.6267	-2.5424	-0.9798	-0.3970	-0.9798	-1.4960
Size	-.0276055***	-.0371209***	-.0276055***	-.0342647***	-0.0057	-0.0094	-0.0057	-0.0080
S.E	-3.6174	-4.3709	-3.6174	-5.5551	-0.8452	-1.2409	-0.8452	-0.9462
Tangibilty	0.0335	0.0279	0.0335	0.0261	0.0217	0.0275	0.0217	0.0780
S.E	0.5859	0.4837	0.5859	0.5480	0.4280	0.5339	0.4280	1.2222
Tax	-.3614717**	-.4120981**	-.3614717**	-.3785265***	-0.1579	-0.1869	-0.1579	-.548781**
S.E	-2.8282	-3.1991	-2.8282	-3.7748	-1.3944	-1.6243	-1.3944	-2.8069
Dividends	-0.1026	-0.0883	-0.1026	.7145871**	0.3104	0.3125	0.3104	0.4343
S.E	-0.3605	-0.3109	-0.3605	3.0745	1.2304	1.2323	1.2304	1.3739
Growth	-1.4697	-1.2138	-1.4697	-0.4578	0.0185	0.2640	0.0185	-0.5522
S.E	-1.8228	-1.4618	-1.8228	-0.7088	0.0259	0.3560	0.0259	-0.5262
Cash Flow	-0.0048	-0.0048	-0.0048	-0.0032	0.0016	0.0014	0.0016	0.0036
S.E	-1.7363	-1.7297	-1.7363	-0.9464	0.7008	0.6348	0.7008	1.3057
Government	0.0649	0.0865	0.0649	.1089214*	-0.0022	0.0025	-0.0022	-0.0460
S.E	1.4544	1.9013	1.4544	2.0153	-0.0564	0.0615	-0.0564	-0.9536
Instituional	-.0905157*	-0.0738	-.0905157*	-.0956451*	0.0207	0.0235	0.0207	0.0020
S.E	-2.2738	-1.8222	-2.2738	-2.0151	0.5864	0.6490	0.5864	0.0464
Indivdual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Oil	-0.0314	-0.0216	-0.0314	-0.0533	.1021902*	.1001014*	.1021902*	.1469746**
S.E	-0.6294	-0.4293	-0.6294	-0.8408	2.3136	2.2290	2.3136	2.6719
B Materials	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Industrials	0.0105	0.0118	0.0105	0.0391	0.0702	0.0649	0.0702	.1037274*
S.E	0.2420	0.2702	0.2420	0.7121	1.8186	1.6603	1.8186	2.1035
C Goods	-.0953933*	-.0956018*	-.0953933*	-0.0967	0.0173	0.0135	0.0173	0.0037
S.E	-2.0618	-2.0681	-2.0618	-1.6766	0.4223	0.3264	0.4223	0.0679
Health	-.1684915*	-.1888617**	-.1684915**	-.1814066*	.1209444*	0.1054	.1209444*	0.1272
S.E	-2.5863	-2.8866	-2.5863	-2.2699	2.0950	1.8045	2.0950	1.7694
C Servicses	0.0268	0.0454	0.0268	0.0933	0.0573	0.0603	0.0573	0.1205
S.E	0.4392	0.7401	0.4392	1.2421	1.0596	1.1018	1.0596	1.7722
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	31%	33%			22%	23%		
N	152	152	152	152	152	152	152	152
Lagrange	chibar2(01)	0	Prob >chibar2	1	chi2 (8)	17.25	Prob2	0.0277
Wald	chi2 (8)	88.84	Prob2	0	chi2 (8)	20.54	Prob2	0.0085
Hausman	chi2(15)	6.1	Prob2	0.9781	chi2(15)	8.44	Prob2	0.905

Table 5.45: Qatar Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

QATAR	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-0.0113	0.0147	-0.0113	0.0272	-.445201**	-.3630681*	-.445201**	-.4168535*
S.E.	-0.0829	0.1010	-0.0829	0.1915	-2.7842	-2.1922	-2.7842	-2.5033
Profitability	-0.0493	-0.0265	-0.0493	-0.0405	-.3096174**	-.2500148*	-.3096174**	-.3714998**
S.E	-0.5397	-0.2767	-0.5397	-0.4282	-2.8824	-2.2920	-2.8824	-3.3186
Liquidty	-0.0009	-0.0011	-0.0009	-0.0012	-0.0002	-0.0002	-0.0002	-0.0007
S.E	-0.6014	-0.7030	-0.6014	-0.7597	-0.1178	-0.1344	-0.1178	-0.3624
Risk	0.0383	0.1046	0.0383	0.0222	.2046476*	.358497***	.2046476*	.2520846**
S.E	0.5334	1.1397	0.5334	0.2942	2.4252	3.4250	2.4252	2.8371
Size	0.0030	-0.0001	0.0030	0.0009	.0448059***	.036532***	.0448059***	.0429091***
S.E	0.4577	-0.0143	0.4577	0.1415	5.8963	4.3397	5.8963	5.4236
Tangibilty	-.1395696**	-.1446753**	-.1395696**	-.1433659**	-0.0848	-0.0922	-0.0848	-0.0830
S.E	-2.8854	-2.8852	-2.8854	-2.8089	-1.4911	-1.6129	-1.4911	-1.4237
Tax	-0.1731	-0.1799	-0.1731	-.4502713**	0.0443	0.0114	0.0443	0.1403
S.E	-1.6002	-1.6064	-1.6002	-2.7767	0.3481	0.0891	0.3481	0.9971
Dividends	-0.2772	-0.2799	-0.2772	-0.2923	-2.005741***	-2.013795***	-2.005741***	-2.07424***
S.E	-1.1502	-1.1337	-1.1502	-1.1690	-7.0745	-7.1548	-7.0745	-7.0336
Growth	-1.6942*	-1.745957*	-1.6942*	-2.31124**	2.691039**	2.922199***	2.691039***	2.91399***
S.E	-2.4820	-2.4184	-2.4820	-2.9739	3.3517	3.5503	3.3517	3.5362
Cash Flow	-0.0013	-0.0014	-0.0013	-0.0005	-.0108597***	-.0106982***	-.0108597***	-.0222209***
S.E	-0.5718	-0.5852	-0.5718	-0.1972	-3.4003	-3.4279	-3.4003	-3.8674
Government	.1113705**	.1208816**	.1113705**	.1158909**	-.2519908***	-.23001***	-.2519908***	-.2592865***
S.E	2.9492	3.0558	2.9492	2.9912	-5.6731	-5.1001	-5.6731	-5.6934
Instituional	0.0508	0.0590	0.0508	0.0549	-.2813005***	-.2633428***	-.2813005***	-.293538***
S.E	1.5067	1.6774	1.5067	1.5796	-7.0965	-6.5622	-7.0965	-7.2003
Indivdual	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Oil	.1703912***	.1786021***	.1703912***	.1834012***	.1179938*	.1336984**	.1179938*	.126785*
S.E	4.0380	4.0857	4.0380	4.1766	2.3773	2.6827	2.3773	2.4943
B Materials	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Industrials	.1258107***	.1308329***	.1258107***	.136375***	.1067132*	.1134677**	.1067132*	.1132252*
S.E	3.4137	3.4393	3.4137	3.5317	2.4617	2.6163	2.4617	2.5460
C Goods	0.0700	0.0738	0.0700	0.0770	-0.0271	-0.0225	-0.0271	-0.0574
S.E	1.7874	1.8368	1.7874	1.8749	-0.5882	-0.4914	-0.5882	-1.2022
Health	0.0757	0.0745	0.0757	0.0833	0.0298	0.0187	0.0298	-0.0012
S.E	1.3726	1.3095	1.3726	1.4384	0.4601	0.2876	0.4601	-0.0174
C Services	.1287659*	.1375874*	.1287659*	.1594643**	-.1391814*	-0.1188	-.1391814*	-.2383663**
S.E	2.4923	2.5822	2.4923	2.9665	-2.2903	-1.9564	-2.2903	-3.2771
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	32%	33%	0%		65%	67%	0%	
N	152	152	152	152	152	152	152	136
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	8.33	Prob2	0.402	chi2 (8)	11.37	Prob2	0.1817
Hausman	chi2(15)	1.47	Prob2	1	chi2(15)	6.59	Prob2	0.9681

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Table 5.46: Qatar Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

QATAR

Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	-0.1640631	-0.0822833	-.2107067*	-0.1752207	-0.1728459	-0.1003153
S.E.	-1.867701	-0.9026862	-2.475583	-1.782622	-1.811562	-1.176557
Constant	.5679572***	0.143	.7715937***	.3407986**	0.0967571	-0.2767118
S.E.	5.314661	1.296	5.700	2.852493	0.8302613	-1.593055
Profitability	-0.035	-0.088	-0.096	-0.1053429	-0.1390226	-.2683717*
S.E	-0.372	-0.895	-0.806	-1.003886	-1.329183	-2.124926
Liquidity	-0.002	-0.002	-.0058016**	-0.0019512	-0.0016342	-0.0004169
S.E	-1.704	-1.572	-3.219	-1.211484	-1.017356	-0.218987
Risk	-0.056	0.100	-0.021	0.0246053	0.1763542	.3347691**
S.E	-0.628	1.059	-0.184	0.2455779	1.813516	2.795972
Size	-.0294534***	-0.006	-.0419134***	-0.0133486	-0.0007299	.0349525***
S.E	-4.280	-0.893	-4.803	-1.705966	-0.0968899	3.476685
Tangibility	-0.005	-0.039	0.053	0.0168842	-.1492582**	-0.0822066
S.E	-0.098	-0.798	0.902	0.3250029	-2.936132	-1.319953
Tax	-.3147911**	-.2702367*	-.4901597***	-.2298531*	-0.1705611	0.0537458
S.E	-3.087	-2.529	-3.765	-1.995641	-1.504178	0.3876086
Dividends	1.049646***	.516417*	0.171	0.4049771	-0.3427194	-2.093451***
S.E	4.049	2.057	0.537	1.499222	-1.250486	-6.182336
Growth	-0.418	-0.077	-1.107	0.2193974	-1.325129	3.081435***
S.E	-0.600	-0.107	-1.273	0.2851143	-1.623922	3.325225
Cash Flow	-0.0017457	.006734**	-0.0043558	0.0003626	-0.0004708	-.0113225***
S.E	-0.7943649	3.233865	-1.565276	0.1540537	-0.1972237	-3.657408
Government	0.0475577	0.0351014	0.0890055	0.0310146	.1285786**	-.2307765***
S.E	1.322788	0.9331175	1.948992	0.7295597	3.251494	-4.736966
Instituional	-.0666204*	0.0469663	-0.0598848	0.0400886	.0718314*	-.2696632***
S.E	-2.055591	1.40066	-1.462997	1.100784	2.033947	-6.167828
Indivdual	0	0	0	0	0	0
S.E	0	0	0	0	0	0
Oil	0.0320109	-0.0317714	.1883693***	0.0112524	.1201176**	0.0984345
S.E	0.7988024	-0.7559792	3.711523	0.2453023	2.71908	1.780108
B Materials	0	0	0	0	0	0
S.E	0	0	0	0	0	0
Industrials	.092294*	-0.0270382	.2180175***	-0.0124659	0.0691924	0.0838234
S.E	2.545496	-0.7091208	4.736168	-0.2816671	1.719773	1.677238
C Goods	-0.0024143	-.0988176*	0.0506662	-.1304884**	-0.057407	-0.0620586
S.E	-0.0536683	-2.101299	0.8901872	-2.596799	-1.162085	-1.01106
Health	0	0	0	0	0	0
S.E	0	0	0	0	0	0
C Servicses	.116186*	0.1012442	.2595423***	-0.0214405	0.0552626	-0.1492121
S.E	2.060716	1.715556	3.637735	-0.3349035	0.8747291	-1.955645
Telecom	.1306435*	-0.0881862	.1916969**	-0.0950513	-0.0906913	-0.0167814
S.E	2.511561	-1.600788	2.907037	-1.602441	-1.590057	-0.235589
Technology	0	0	0	0	0	0
S.E	0	0	0	0	0	0
N	136	136	136	136	136	136

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Table 5.47: Qatar SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Profit	0.163	0.062	-0.194	0.036	0.136	0.045	0.19	0.14	-0.126	-0.12	-0.032	-0.167
	0.019	0.22	0.007	0.328	0.043	0.289	0.008	0.038	0.057	0.066	0.345	0.017
Size	-0.151	-0.24	0.425	-0.143	-0.333	0.365	-0.074	-0.13	0.274	-0.041	-0.29	0.277
	0.028	0.001	<0.001	0.035	<0.001	<0.001	0.177	0.05	<0.001	0.307	<0.001	<0.001
Growth	-0.025	-0.035	-0.01	0.095	0.19	-0.131	0.049	0.008	-0.007	0.007	-0.146	0.101
	0.378	0.333	0.451	0.116	0.008	0.05	0.269	0.459	0.466	0.468	0.033	0.103
Tang	0.104	-0.357	0.014	-0.052	-0.139	-0.2	0.037	-0.315	-0.003	0.059	-0.208	-0.033
	0.096	<0.001	0.433	0.261	0.039	0.005	0.323	<0.001	0.486	0.233	0.004	0.343
Tax	-0.263	0.018	-0.074	-0.057	0.134	0.065	-0.251	-0.005	-0.063	-0.302	0.121	-0.111
	<0.001	0.414	0.177	0.238	0.046	0.207	<0.001	0.476	0.217	<0.001	0.064	0.081
Risk	-0.049	-0.207	0.057	-0.086	-0.016	0.13	-0.007	-0.222	0.007	0.005	-0.114	0.132
	0.271	0.004	0.239	0.141	0.421	0.05	0.464	0.002	0.467	0.476	0.076	0.048
Div	-0.017	0.059	-0.355	0.05	-0.029	0.157	-0.072	0.069	-0.325	-0.069	-0.175	-0.341
	0.417	0.231	<0.001	0.268	0.358	0.024	0.183	0.194	<0.001	0.194	0.013	<0.001
Liqud	-0.096	-0.087	-0.021	0.123	-0.062	0.067	-0.156	-0.104	0.038	-0.062	-0.012	-0.198
	0.115	0.139	0.399	0.061	0.219	0.203	0.024	0.095	0.318	0.218	0.442	0.006
Cash Flow	0.163	-0.362	-0.347	-0.46	-0.192	0.094	0.172	-0.351	-0.384	-0.283	0	-0.074
	0.02	<0.001	<0.001	<0.001	0.007	0.121	0.015	<0.001	<0.001	<0.001	0.5	0.178
Ownership												
Gov							-0.075	-0.169	-0.042	0.247	-0.006	-0.104
							0.173	0.016	0.3	<0.001	0.472	0.097
indv							-0.011	-0.033	0.171	0.094	-0.259	0.338
							0.448	0.339	0.015	0.12	<0.001	<0.001
Inst							0.2	0.234	-0.025	0.25	-0.416	-0.187
							0.005	0.001	0.377	<0.001	<0.001	0.009
Industry												
Oil							0	0	0	0	0	0
							0	0	0	0	0	0
Mater							0	0	0	0.177	0.01	-0.128
							0	0	0	0.012	0.453	0.053
Indust							0	0	0	0	0	0
							0	0	0	0	0	0
Cgoods							0	0	0	0.086	-0.036	-0.285
							0	0	0	0.141	0.326	<0.001
Health							0	0	0	0.248	-0.094	-0.297
							0	0	0	<0.001	0.119	<0.001
Cserv							0	0	0	0.136	-0.066	-0.267
							0	0	0	0.043	0.205	<0.001
Telec							0	0	0	-0.023	0.194	-0.414
							0	0	0	0.389	0.007	<0.001
Techno							0	0	0	0	0	0
							0.5	0.5	0.5	0.5	0.5	0.5
N	152	152	152	152	152	152	152	152	152	152	152	152
R2	34	13	27	16	36	55	24	43	56	25	61	41
Model Fit												
(APC)	0.140,	P=0.019		0.140,	P=0.019		0.116,	P=0.036		=		
(ARS)	0.301,	P<0.001		0.301,	P<0.001		0.411,	P<0.001		=		
(AARS)	0.257,	P<0.001		0.257,	P<0.001		0.356,	P<0.001		=		
(AVIF)	1.272			1.272			1.89			Inf		

Table 5.48: Qatar ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Qatar	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	10.09%	6.05%	21.12%	9.90%	19.64%	8.43%
Size	43.97%	47.31%	26.20%	10.56%	0.03%	18.31%
Growth	0.01%	0.20%	0.32%	11.24%	17.25%	13.51%
Tangibility	0.13%	0.06%	19.83%	12.52%	24.65%	11.98%
Non-Debt Tax shield	2.66%	17.95%	4.15%	9.27%	14.81%	15.87%
Volatility	10.81%	6.48%	0.10%	12.88%	3.77%	7.41%
Dividends	30.50%	5.90%	0.20%	13.13%	9.36%	13.09%
Liquidity	0.54%	10.79%	15.68%	9.30%	7.79%	2.37%
Cash Flow	1.30%	5.26%	12.41%	11.21%	2.70%	9.03%
Good prediction %	62.30%	56.56%	62.30%	100.00%	63.11%	86.07%
S.D of abs errors	0.09	0.11	0.0540	0.0308	0.0705	0.1140
RMSE	0.11	0.14	0.0796	0.0444	0.0821	0.1379
MAE	0.07	0.08	0.05850	0.03197	0.04214	0.0776
N	152	152	152	152	152	152
Adding Dummies						
Profitability	19.92%	0.47%	13.09%	5.84%	4.86%	18.36%
Size	30.39%	34.49%	24.57%	7.17%	15.46%	43.69%
Growth	0.04%	0.05%	0.01%	7.83%	25.98%	7.93%
Tangibility	0.00%	0.01%	0.75%	7.06%	18.74%	6.73%
Non-Debt Tax shield	1.11%	6.38%	1.13%	0.00%	1.60%	0.72%
Volatility	17.30%	7.84%	13.29%	0.01%	5.73%	3.85%
Dividends	0.18%	25.83%	0.21%	7.84%	1.08%	0.12%
Liquidity	18.67%	0.03%	0.11%	5.55%	15.82%	3.81%
Cash Flow	0.02%	0.28%	0.29%	7.85%	1.84%	0.05%
Ownership Dummies						
Government	0.00%	0.13%	20.49%	5.65%	0.25%	0.00%
Institutional	10.78%	1.37%	0.02%	5.66%	4.18%	14.01%
Individual	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Industry Dummies						
Oil	0.06%	1.27%	0.16%	5.65%	0.11%	0.01%
Basic Materials	0.06%	1.27%	0.16%	5.65%	0.11%	0.01%
Consumer Goods	0.01%	10.08%	20.77%	5.65%	2.34%	0.23%
Consumer Services	0.00%	0.07%	0.18%	5.65%	0.12%	0.00%
Health Care	1.43%	10.36%	0.09%	5.65%	0.17%	0.01%
Industrials	0.01%	0.05%	4.59%	5.65%	0.00%	0.00%
Technology	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Telecommunications	0.00%	0.02%	0.09%	5.65%	1.62%	0.48%
Good prediction %	72.95%	54.10%	63.11%	71.31%	59.84%	86.89%
RMSE	0.0207	0.0557	0.0743	0.0001	0.0289	0.0095
MAE	0.0062	0.0293	0.0434	0.0000	0.0142	0.0039
S.D of abs errors	0.0198	0.0474	0.0603	0.0001	0.0251	0.0086
N	152	152	152	152	152	152

The following tables answer the research question:

What is the determinants of capital structure in Saudi Arabia using Panel Data, SEM, ANN ?

The ninth country in this chapter is Saudi Arabia which is one of the largest countries in the sample of the MENA countries. First, the table of the short term debt panel data results is presented. The R^2 is low and in the range of 14% across the models of book debt and In the range of 25% in the market debt. The Wald test is not significant and therefore it can be concluded that there is no heteroskedasticiy. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model. From the Table 5.49 the following conclusions could be drawn:

- Profitability is negatively significant with the short term debt in market value.

- Liquidity is negatively significant with the short term debt in book.

- Size is negatively significant with the short term debt in book using tobit model

- Tangibility is positive and significant for the short term debt in market value.

- Non-debt tax shield is positively significant for the short term debt in market value and vice versa for the book values.

- Growth is positive and significant in the short term debt of book value.

- Cash flow is significantly positive for short term debt in book value using tobit.

- The ownership structure show that the government variable is positive and significant for both book value of short term debt. On the other hand, individual variable also significantly positive for all the models. The institutional is positive for the book value and negative for the market value and significant.

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- The industry classification show that only the oil sector is negative and significant for both and the same apply for the consumer services. Basic materials is positive and significant for the book value only. Consumer goods is positive for the market value short term debt and the industrials is positive with book value using only tobit model.

The second Table 5.50 show the long term debt using panel data models. The Wald test is not significant for the fixed effect. The R^2 is acceptable for the book debt with 13% and higher for the market value with 21% only. The Lagrange test is not significant and the following could be concluded:

- Profitability is negatively significant for the long term debt in book values.

- Liquidity is negatively significant for the long term debt in market values.

- Risk is positive using the fixed effect for book and negative for market using tobit.

- Size is negatively significant for the long term debt in book values using the tobit model.

- Tangibility is negatively significant in for the long term debt in book values except using the tobit model and vice versa for the market debt.

- Non-debt tax shield is positively significant for the long term debt in market values and vice versa for the book values.

- Dividends is positively significant for the long term debt in market values.

- Cash is positive and significant in for the long term debt in book.

- Ownership individual is negatively significant for the long term debt in book values and positive for the market values. Institutional variable is significant

and negative for the long term debt in book value. Government is negative with both measures.

- industry classification variable oil is negative with both measures. Basic materials, industrials, consumer goods, health, consumer services telecom are all significant for book values.

The third tables which is Table 5.51 shows the results for the total debt for both book value and market value in Saudi Arabia. The Wald test is not significant. The Lagrange test is not significant and therefore the random effect could be used. The Hausman test is not significant as well. The R^2 is higher than 25% for the market value and below 10% for book. From the Table 5.51 the following conclusions could be drawn:

- Profitability is negatively significant for the total debt in book and market values.

- Liquidity is positive and significant for the total debt in book and negative for market values.

- Size is positively significant for the total debt in book and market values.

- Non-debt tax shield is positive and significant for the total debt book.

- Dividends is negatively significant in for the total debt in market values and vice versa for the book value.

- Growth is positive and significant in for the total debt in market values.

- Cash flow is negatively significant for total debt for book value and market value.

- Ownership government, Institutional and individual positive with TDBVA.

- industry classification variable which are consumer goods, health and consumer services are negative with TDMVE and health is positively significant with TDBVA.

The only interest from Table 5.52 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is positively significant for the long term debt of book and market value. It is also positive and significant for the STDBVA. Which, indicate that firms in this Jordan might adjust their capital structure for both the long term debt.

Table 5.53 show the results for Saudi Arabia using the SEM-PLS approach. The model fits at the bottom of the model shows that the model fit is good with or without the dummy variables. However, the use of dummies increase the average variable inflation factor to infinity and therefore the results of the ownership and industry are handled with caution. The R^2 is good for all the models with or without the dummies except for the 3 market leverage measures.As the table of the results the following could be concluded:

- Profitability is negatively significant to both the short term and total debt in market values.

- Size attribute is significantly positive to total debt in both market and book values as well as the short term debt in book value. On the other hand, it is significantly negative to long term debt in book values.

- Growth is significantly positive with short and long term debt market leverage.

- Tangibility is significantly negative in relation to short term debt in market values.

- Non-debt tax shield is significantly positive to short term and long term debt

in market value as well as total debt in book values. It is also significant negatively in relation to long term debt in book values.

- Risk is negatively significant to the long term debt in market value.

- Dividends variable is negatively significant to the long term debt in market value.

- Cash flow is negatively significant to the long term debt in book value.

- Ownership variable individual variable is significantly positive to the short term debt in book and market leverage. It is also negatively significant to long term debt and total debt in book values.

- industry variables of oil, consumer services and telecommunication are all negatively significant to total debt in market values. On the other hand, Health is significantly positive to the long term and total debt in market value. Furthermore, consumer services is negatively significant to the total debt in book values. In addition, technology is negatively significant in relation to the total debt in market values.

As Table 5.54 shows the importance of the variables using the ANN approach. The good prediction is high with values higher than 37%. For all dependent variables of leverage. From this table we could draw the following conclusions:

- Profitability is important for the long term debt book leverage as well as the total debt market leverage.

- Size variable is significantly important for both the short term debt and long term debt in book values. Similarly, it is important for both the long term and total debt in market values.

- Non-debt tax shield is interestingly largely important for both the short term and long term debt market leverage. Likewise, it is important for the total debt in book values.

- Liquidity variable is important for the total debt in both market and book values.

- Industry classification where a firm is in the basic materials is slightly important in comparison to firms in other industries for short term debt in book values.

Table 5.49: Saudi Arabia Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

SAUDI ARABIA	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	0.0296	0.0302	0.0296	0.0137	0.0517	0.0538	0.0517	0.1437
S.E.	0.3467	0.3522	0.3467	0.1114	0.6029	0.6261	0.6029	1.6177
Profitability	-0.1120	-0.0913	-0.1120	-0.1087	-.2329719**	-.2105855**	-.2329719**	-.287447**
S.E	-1.4725	-1.1708	-1.4725	-1.0231	-3.0516	-2.6986	-3.0516	-2.9506
Liquidty	-.0025746*	-0.0026	-.0025746*	-0.0035	-0.0020	-0.0019	-0.0020	-0.0027
S.E	-1.9666	-1.9501	-1.9666	-1.9196	-1.4901	-1.4348	-1.4901	-1.4967
Risk	-0.0172	0.0038	-0.0172	-0.0081	-0.0429	-0.0236	-0.0429	-0.0170
S.E	-0.7111	0.1338	-0.7111	-0.2363	-1.7671	-0.8217	-1.7671	-0.5508
Size	-0.0056	-0.0060	-0.0056	-.0113374*	-0.0020	-0.0024	-0.0020	0.0023
S.E	-1.6389	-1.7274	-1.6389	-2.3422	-0.5902	-0.7027	-0.5902	0.4949
Tangibilty	0.0124	0.0094	0.0124	0.0423	.090135***	.0866345***	.090135***	.1988267***
S.E	0.5150	0.3867	0.5150	1.2770	3.7347	3.5780	3.7347	6.2902
Tax	-.1175928**	-.1168712**	-.1175928**	-.2317151***	.468759***	.4684498***	.468759***	.5223258***
S.E	-2.7282	-2.7036	-2.7282	-3.4163	10.8328	10.8287	10.8328	9.8774
Dividends	0.1680	0.1543	0.1680	0.0482	-0.0882	-0.1045	-0.0882	-0.1188
S.E	1.4830	1.3473	1.4830	0.3047	-0.7753	-0.9116	-0.7753	-0.8188
Growth	1.371947*	1.376031*	1.371947*	1.80622*	-0.1633	-0.2204	-0.1633	-0.1998
S.E	2.1701	2.1372	2.1701	2.0598	-0.2574	-0.3420	-0.2574	-0.2430
Cash Flow	0.0014	0.0014	0.0014	.0021167*	-0.0002	-0.0002	-0.0002	0.0003
S.E	1.7808	1.7281	1.7808	2.0182	-0.2446	-0.2857	-0.2446	0.3024
Government	.0738035***	.0726785***	.0738035***	.0819968**	-0.0134	-0.0144	-0.0134	-0.0166
S.E	4.0423	3.9660	4.0423	3.2188	-0.7320	-0.7854	-0.7320	-0.9036
Instituional	.0625291***	.0613197***	.0625291***	.081453***	-.041325**	-.0423368**	-.041325**	-.0435582**
S.E	4.1492	4.0522	4.1492	3.9273	-2.7314	-2.7957	-2.7314	-2.8496
Indivdual	.0413999**	.0401507**	.0413999**	.068415***	.0466233***	.0454296***	.0466233***	.0435004**
S.E	3.0851	2.9784	3.0851	3.6838	3.4606	3.3675	3.4606	3.1923
Oil	-.1166799**	-.1148066**	-.1166799**	-.2300102***	-.1040208**	-.1022866**	-.1040208**	-.0994864**
S.E	-3.0259	-2.9686	-3.0259	-3.7741	-2.6870	-2.6429	-2.6870	-2.5783
B Materials	.1822771**	.1806179**	.1822771**	.2651853**	0.0712	0.0696	0.0712	0.0663
S.E	3.2264	3.1881	3.2264	3.2096	1.2560	1.2282	1.2560	1.1722
Industrials	0.1058	0.1040	0.1058	.1641837*	0.0752	0.0735	0.0752	0.0719
S.E	1.8925	1.8548	1.8925	2.0006	1.3396	1.3090	1.3396	1.2837
C Goods	0.0830	0.0827	0.0830	0.1041	.113912*	.113427*	.113912*	.1119692*
S.E	1.4915	1.4812	1.4915	1.2719	2.0383	2.0309	2.0383	2.0101
Health	0.1013	0.0968	0.1013	0.0984	0.0470	0.0431	0.0470	0.0339
S.E	1.6642	1.5825	1.6642	1.0998	0.7700	0.7039	0.7700	0.5542
C Servicses	.208848***	.2077557***	.208848***	.2938242***	.1237734*	.1228278*	.1237734*	.1224905*
S.E	3.6836	3.6542	3.6836	3.5390	2.1745	2.1588	2.1745	2.1624
Telecom	0.0857	0.0855	0.0857	.1737148*	0.0688	0.0685	0.0688	0.0614
S.E	1.4159	1.4089	1.4159	1.9830	1.1322	1.1285	1.1322	1.0143
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
R2	14%	14%			25%	24%		
N	856	856	856	856	856	856	856	840
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	5.29	Prob2	0.7258	chi2 (8)	13.13	Prob2	0.1075
Hausman	chi2(18)	2.16	Prob2	1	chi2(18)	1.07	Prob2	1

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Table 5.50: Saudi Arabia Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

SAUDI ARABIA	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	0.0618	0.0681	0.0618	-1.6422	0.0462	0.0457	0.0462	-0.0205
S.E.	0.5438	0.5989	0.5438	.	0.4944	0.4886	0.4944	-0.1464
Profitability	-.3398868***	-.2745225**	-.3398868***	-0.1087	-.2761549***	-.2605234**	-.2761549***	-.3072501*
S.E	-3.3561	-2.6579	-3.3561	-1.0231	-3.3192	-3.0635	-3.3192	-2.5415
Liquidty	-0.0029	-0.0029	-0.0029	-0.0035	-.0053937***	-.0053798***	-.0053937***	-.0148311***
S.E	-1.6434	-1.6672	-1.6434	-1.9196	-3.7656	-3.7463	-3.7656	-3.8204
Risk	0.0464	.1104643**	0.0464	-0.0081	-0.0497	-0.0346	-0.0497	-.0874437*
S.E	1.4408	2.9047	1.4408	-0.2363	-1.8816	-1.1049	-1.8816	-2.1041
Size	-0.0037	-0.0050	-0.0037	-.0113374*	-0.0026	-0.0028	-0.0026	0.0008
S.E	-0.8073	-1.0919	-0.8073	-2.3422	-0.6952	-0.7428	-0.6952	0.1259
Tangibilty	-.0985238**	-.1063023***	-.0985238**	0.0423	.0900008***	.0877348***	.0900008***	.2285818***
S.E	-3.0773	-3.3170	-3.0773	1.2770	3.4218	3.3250	3.4218	5.9632
Tax	-.1425411*	-.1387761*	-.1425411*	-.2317151***	.4781645***	.4785468***	.4781645***	.5808576***
S.E	-2.4832	-2.4237	-2.4832	-3.4163	10.1397	10.1510	10.1397	9.1935
Dividends	0.1170	0.0728	0.1170	0.0482	.3549984**	.3482748**	.3549984**	.4060642*
S.E	0.7753	0.4796	0.7753	0.3047	2.8638	2.7887	2.8638	2.3438
Growth	0.5146	0.6217	0.5146	1.80622*	0.4658	0.4741	0.4658	0.5873
S.E	0.6112	0.7290	0.6112	2.0598	0.6734	0.6752	0.6734	0.5688
Cash Flow	.0022687*	.0022214*	.0022687*	0.0028	-0.0005	-0.0005	-0.0005	0.0006
S.E	2.1891	2.1435	2.1891	1.9125	-0.5574	-0.6021	-0.5574	0.5570
Government	-.0704739**	-.0733823**	-.0704739**	-0.1168	-.0435207*	-.0446044*	-.0435207*	-.06102*
S.E	-2.8983	-3.0232	-2.8983	.	-2.1787	-2.2319	-2.1787	-1.9969
Instituional	-.0797029***	-.0834748***	-.0797029***	-0.0603	-0.0212	-0.0221	-0.0212	-0.0027
S.E	-3.9712	-4.1647	-3.9712	.	-1.2833	-1.3406	-1.2833	-0.1141
Indivdual	-.0774201***	-.0812668***	-.0774201***	-0.0723	.0347894*	.0338431*	.0347894*	.0799323***
S.E	-4.3319	-4.5513	-4.3319	.	2.3695	2.3020	2.3695	3.7509
Oil	-.1320147*	-.1259775*	-.1320147*	-0.3666	-.1784248***	-.1769281***	-.1784248***	-1.5260
S.E	-2.5707	-2.4593	-2.5707	.	-4.2293	-4.1949	-4.2293	.
B Materials	.1917839*	.1854209*	.1917839*	1.8017	.1693234**	.1676155**	.1693234**	0.1369
S.E	2.5490	2.4709	2.5490	.	2.7394	2.7129	2.7394	1.6657
Industrials	.2203357**	.2135513**	.2203357**	1.8275	0.0704	0.0685	0.0704	-0.0205
S.E	2.9582	2.8746	2.9582	.	1.1500	1.1198	1.1500	-0.2517
C Goods	.1898608*	.187504*	.1898608*	1.7715	0.1034	0.1028	0.1034	-0.0080
S.E	2.5610	2.5365	2.5610	.	1.6978	1.6887	1.6978	-0.0987
Health	.1914672*	.1755283*	.1914672*	1.6832	0.0677	0.0639	0.0677	-0.0844
S.E	2.3622	2.1674	2.3622	.	1.0161	0.9581	1.0161	-0.9181
C Servicses	.3222954***	.3173705***	.3222954***	1.9704	0.1205	0.1192	0.1205	0.0626
S.E	4.2684	4.2144	4.2684	.	1.9422	1.9220	1.9422	0.7588
Telecom	.2079983*	.2067188*	.2079983**	1.8120	0.0761	0.0753	0.0761	0.0231
S.E	2.5810	2.5729	2.5810	.	1.1488	1.1387	1.1488	0.2594
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	13%	14%			21%	21%		
N	856	856	856	856	856	856	856	856
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	4.96	Prob2	0.7615	chi2 (8)	13.22	Prob2	0.1045
Hausman	chi2(18)	8.37	Prob2	0.9726	chi2(18)	-1.38 chi2<0		

Table 5.51: Saudi Arabia Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

SAUDI ARABIA	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	0.0218	0.0211	0.0218	-0.0315	-.6166219***	-.6100525***	-.6166219***	-.7829687***
S.E.	0.2349	0.2262	0.2349	-0.2974	-8.7265	-8.7377	-8.7265	-9.7094
Profitability	-.2602362**	-.2556194**	-.2602362**	-.2974485**	-.7133631***	-.6614923***	-.7133631***	-.8152171***
S.E	-3.1457	-3.0120	-3.1457	-3.1325	-11.3291	-10.4308	-11.3291	-11.1654
Liquidty	.0030148*	.0031238*	.0030148*	.0032283*	-0.0009	-0.0009	-0.0009	-.0029224*
S.E	2.1167	2.1797	2.1167	2.0125	-0.8660	-0.8660	-0.7891	-2.2940
Risk	-0.0040	0.0016	-0.0040	-0.0002	.0569298**	.1047259***	.0569298**	.0638784**
S.E	-0.1533	0.0521	-0.1533	-0.0079	2.8458	4.4851	2.8458	2.8059
Size	.0103189**	.010229**	.0103189**	.0128776**	.0477679***	.0467216***	.0477679***	.0560075***
S.E	2.7741	2.7183	2.7741	3.0020	16.8717	16.6154	16.8717	17.0362
Tangibilty	0.0439	0.0443	0.0439	0.0571	0.0006	-0.0073	0.0006	0.0114
S.E	1.6771	1.6818	1.6771	1.9274	0.0321	-0.3720	0.0321	0.5075
Tax	.1241224**	.1250888**	.1241224**	.1435246**	-0.0330	-0.0325	-0.0330	-0.0829
S.E	2.6471	2.6588	2.6471	2.7239	-0.9259	-0.9257	-0.9259	-1.8744
Dividends	.3270565**	.3257356**	.3270565**	.3734547**	-.4226477***	-.4576875***	-.4226477***	-.4525269***
S.E	2.6534	2.6135	2.6534	2.6590	-4.5050	-4.9143	-4.5050	-4.1349
Growth	1.2173	1.1457	1.2173	1.3302	2.764728***	2.865644***	2.764728***	3.493561***
S.E	1.7699	1.6350	1.7699	1.6934	5.2815	5.4727	5.2815	5.8657
Cash Flow	-.0024482**	-.002463**	-.0024482**	-.0030544**	-.0024093***	-.0024945***	-.0024093***	-.0027061***
S.E	-2.9780	-2.9848	-2.9780	-3.1130	-3.5983	-3.7671	-3.5983	-3.6400
Government	.064697**	.0644231**	.064697**	.0610107**	-0.0160	-0.0183	-0.0160	-.0342084*
S.E	3.2573	3.2301	3.2573	2.7048	-1.0574	-1.2300	-1.0574	-1.9833
Instituional	.0633055***	.0631232***	.0633055***	.0625426***	-0.0133	-0.0162	-0.0133	-0.0113
S.E	3.8614	3.8328	3.8614	3.3472	-1.0655	-1.3127	-1.0655	-0.8001
Indivdual	.0500626***	.0497677***	.0500626***	.0521118**	-0.0078	-0.0108	-0.0078	-0.0064
S.E	3.4292	3.3921	3.4292	3.1214	-0.7010	-0.9808	-0.7010	-0.5040
Oil	0.0430	0.0436	0.0430	0.0550	-0.0105	-0.0060	-0.0105	-0.0777
S.E	1.0253	1.0366	1.0253	1.1687	-0.3273	-0.1912	-0.3273	-1.9492
B Materials	-0.0673	-0.0675	-0.0673	-0.0797	0.0035	-0.0015	0.0035	0.0172
S.E	-1.0954	-1.0947	-1.0954	-1.1541	0.0740	-0.0325	0.0740	0.3304
Industrials	-0.0720	-0.0722	-0.0720	-0.0834	-0.0628	-0.0682	-0.0628	-0.0615
S.E	-1.1841	-1.1830	-1.1841	-1.2188	-1.3571	-1.4951	-1.3571	-1.1946
C Goods	-0.1045	-0.1043	-0.1045	-0.1203	-.130477**	-.1324724**	-.130477**	-.1237577*
S.E	-1.7256	-1.7178	-1.7256	-1.7658	-2.8308	-2.9187	-2.8308	-2.4135
Health	-.1483407*	-.1487515*	-.1483407*	-.162064*	-.1719293***	-.1842904***	-.1719293***	-.1596447**
S.E	-2.2404	-2.2353	-2.2404	-2.1713	-3.4116	-3.7061	-3.4116	-2.8407
C Servicses	-.1279726*	-.1278006*	-.1279726*	-.1508461*	-.1413057**	-.1452316**	-.1413057**	-.1410287**
S.E	-2.0748	-2.0654	-2.0748	-2.1697	-3.0099	-3.1410	-3.0099	-2.6931
Telecom	-0.0822	-0.0817	-0.0822	-0.0974	-0.0925	-0.0940	-0.0925	-0.0940
S.E	-1.2492	-1.2372	-1.2492	-1.3142	-1.8451	-1.9054	-1.8451	-1.6871
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	10%	10%	0%		52%	53%	0%	
N	856	856	856	856	856	856	856	856
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	4.32	Prob2	0.8271	chi2 (8)	8.48	Prob2	0.3876
Hausman	chi2(18)	0.89	Prob2	1	chi2(18)	14.95	Prob2	0.6657

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Table 5.52: Saudi Arabia Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

SAUDI ARABIA

Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	.1277014***	0.0318482	-0.049943	0.0165961	.1494512***	.0644167*
S.E.	3.580947	0.9831692	-1.335193	0.513868	3.312105	2.520354
Constant	0.0199319	0.048	0.077	0.046533	0.1309837	-.5875614***
S.E.	0.2286846	0.560	0.666	0.4972466	1.292591	-8.448999
Profitability	-0.088	-.2019796*	-.2662012*	-.2537893**	-.1934848*	-.6349897***
S.E	-1.102	-2.568	-2.498	-2.956133	-2.123726	-9.848264
Liquidty	-.0027301*	-0.002	-0.003	-.0053684***	.0044575**	-0.0006227
S.E	-2.042	-1.408	-1.640	-3.741605	2.955639	-0.5866263
Risk	0.005	-0.022	.1095928**	-0.0330379	-0.0033808	.0981364***
S.E	0.186	-0.757	2.807	-1.045878	-0.1056776	4.190992
Size	-0.006	-0.002	-0.005	-0.0028589	0.0028693	.0452912***
S.E	-1.569	-0.635	-1.163	-0.7593658	0.6494261	16.04397
Tangibilty	-0.018	.0922528***	-.1020954**	.0885647***	0.0298111	-0.0151292
S.E	-0.687	3.768	-3.046	3.317735	1.097329	-0.7673597
Tax	-.1240553**	.4675307***	-0.108	.4789344***	.1389682**	-0.0303925
S.E	-2.825	10.858	-1.739	10.16392	2.900687	-0.8768847
Dividends	0.175	-0.117	0.086	.3476936**	.416614**	-.4684079***
S.E	1.491	-1.015	0.549	2.734474	3.225698	-5.030417
Growth	1.483101*	-0.249	0.587	0.451505	0.6767209	2.905984***
S.E	2.265	-0.386	0.675	0.6408586	0.9345516	5.616205
Cash Flow	0.001383	-0.0002018	.0022094*	-0.0005025	-.0030544**	-.0024357***
S.E	1.74765	-0.2611168	2.094898	-0.6001869	-3.11301	-3.660821
Government	.0711614***	-0.0165528	-.0751655**	-.0471178*	.0698451***	-0.0167375
S.E	3.815995	-0.9035575	-3.028654	-2.312753	3.435694	-1.13656
Instituional	.0647604***	-.0435582**	-.082994***	-0.0231667	.0663755***	-0.0149738
S.E	4.171744	-2.849569	-4.022501	-1.39077	3.923686	-1.220201
Indivdual	.034644*	.0435004**	-.0789751***	.0325674**	.0530239***	-0.0079808
S.E	2.468721	3.192286	-4.27614	2.187112	3.507354	-0.7279969
Oil	-.1203991**	-.0994864**	-.12966*	-.1761727***	0.0439888	0.00348
S.E	-3.067818	-2.578349	-2.483587	-4.184075	1.02928	0.1114774
B Materials	.1804123**	0.066293	.1866437*	.1664043**	-0.0800866	-0.0057723
S.E	3.132227	1.172155	2.438062	2.691164	-1.269321	-0.1265776
Industrials	0.099036	0.0719079	.2159759**	0.0672092	-0.0838486	-0.0743874
S.E	1.736398	1.283707	2.850881	1.09854	-1.343981	-1.646607
C Goods	0.0786343	.1119692*	.1894049*	0.1011473	-0.1046698	-.1400067**
S.E	1.386298	2.010149	2.513584	1.662457	-1.693214	-3.113161
Health	0.1025832	0.0339014	.1731358*	0.0612891	-.1444297*	-.1898789***
S.E	1.649689	0.5541538	2.092764	0.9182902	-2.130437	-3.854113
C Servicses	.1974349***	.1224905*	.3176792***	0.1184436	-.1318831*	-.152503***
S.E	3.41813	2.162351	4.143807	1.913409	-2.096929	-3.33849
Telecom	0.0815426	0.0614442	.2072694*	0.0741775	-0.0865654	-.1003622*
S.E	1.323144	1.014256	2.531318	1.121828	-1.287672	-2.056332
Technology	0	0	0	0	0	0
S.E	0	0	0	0	0	0
N	840	840	840	840	840	840

Table 5.53: Saudi Arabia SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Profit	-0.125	-0.034	-0.316	0.051	-0.018	0.024	-0.131	-0.009	-0.297	-0.143	-0.078	-0.287
	<0.001	0.158	<0.001	0.067	0.303	0.24	<0.001	0.397	<0.001	0.125	0.088	<0.001
Size	-0.075	-0.035	0.554	0.133	-0.143	0.244	0.03	0.011	0.448	0.006	0.161	0.423
	0.013	0.155	<0.001	<0.001	<0.001	<0.001	0.193	0.379	<0.001	0.447	0.232	<0.001
Growth	0.176	0.127	-0.004	0.005	0.048	-0.046	-0.005	0.024	0.092	0.071	-0.008	0.013
	<0.001	<0.001	0.454	0.437	0.077	0.089	0.437	0.241	0.004	0.289	0.46	0.427
Tang	-0.111	-0.088	-0.07	0.101	-0.041	-0.031	0.129	0.089	-0.081	-0.093	0.016	-0.091
	<0.001	0.005	0.02	0.001	0.115	0.178	<0.001	0.005	0.009	0.278	0.32	<0.001
Tax	0.343	0.351	-0.014	-0.071	-0.147	0.121	0.368	0.354	-0.013	0.377	-0.163	-0.014
	<0.001	<0.001	0.341	0.018	<0.001	<0.001	<0.001	<0.001	0.356	<0.001	<0.001	0.397
Risk	-0.071	-0.118	0.037	0.105	-0.048	-0.043	-0.073	-0.127	0.027	-0.091	0.033	0.067
	0.019	<0.001	0.14	<0.001	0.081	0.106	0.016	<0.001	0.218	0.078	0.251	0.004
Div	-0.003	0.15	-0.259	-0.068	-0.049	0.051	0.008	0.136	-0.257	0.022	-0.03	-0.257
	0.464	<0.001	<0.001	0.022	0.077	0.067	0.402	<0.001	<0.001	0.318	0.217	<0.001
Liqud	-0.067	-0.103	0.073	-0.061	-0.088	0.084	-0.026	-0.124	-0.113	-0.043	0.024	-0.095
	0.025	0.001	0.016	0.038	0.005	0.007	0.227	<0.001	<0.001	0.041	0.263	0.253
Cash Flow	-0.025	-0.052	-0.005	-0.082	0.112	-0.067	0.01	-0.032	0.007	-0.003	0.071	-0.07
	0.231	0.065	0.437	0.008	<0.001	0.025	0.388	0.171	0.418	0.462	0.222	0.112
Ownership												
Gov							0.093	-0.091	0.044	0.084	-0.062	0.048
							0.003	0.004	0.097	0.132	0.16	0.075
indv							0.183	0.104	-0.087	0.194	-0.149	-0.099
							<0.001	0.001	0.005	<0.001	<0.001	<0.001
Inst							-0.041	0.039	-0.023	-0.05	-0.11	-0.019
							0.114	0.127	0.25	0.033	0.002	0.292
Industry												
Oil							0.062	0.03	-0.193	-0.063	-0.051	-0.016
							0.034	<0.001	0.002	0.022	0.301	
Mater							-0.016	-0.027	0.054	-0.034	-0.082	0.109
							0.32	0.212	0.057	0.175	0.059	0.025
Indust							0	0	0	0	0	0
							0	0	0	0	0	0
Cgoods							-0.052	-0.024	-0.028	0.062	-0.078	-0.194
							0.063	0.237	0.203	0.049	0.06	<0.001
Health							-0.045	0.166	0.109	-0.029	-0.056	-0.092
							0.094	<0.001	<0.001	0.12	0.104	0.002
Cserv							0.071	0.069	-0.114	0.069	0.159	-0.119
							0.018	0.021	<0.001	0.052	0.002	0.01
Telec							-0.013	0.007	-0.105	-0.047	-0.038	-0.034
							0.355	0.413	<0.001	0.001	0.196	0.167
Techno							-0.062	-0.118	-0.018	-0.001	-0.078	0.037
							0.034	<0.001	0.302	0.484	0.006	0.148
N	856	856	856	856	856	856	856	856	856	856	856	856
R2	3	8	12	25	19	46	30	24	49	27	11	48
Model Fit												
(APC)	0.088	P<0.001		0.088	P<0.001		0.088	P<0.001		0.088	P<0.001	
(ARS)	0.194	P<0.001		0.194	P<0.001		0.287	P<0.001		0.287	P<0.001	
(AARS)	0.186	P<0.001		0.186	P<0.001		0.271	P<0.001		0.271	P<0.001	
(AVIF)	1.238			1.238			Inf			Inf		

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Table 5.54: Saudi Arabia ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Saudi Arabia	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	12.40%	20.43%	9.12%	11.55%	9.97%	17.60%
Size	33.72%	31.54%	13.58%	14.13%	21.89%	19.88%
Growth	3.74%	3.72%	0.58%	5.30%	0.54%	2.81%
Tangibility	5.00%	10.06%	13.66%	11.12%	12.69%	5.58%
Non-Debt Tax shield	7.53%	6.23%	23.14%	38.03%	34.71%	8.20%
Volatility	5.68%	9.84%	6.82%	1.03%	5.87%	3.35%
Dividends	7.95%	0.09%	3.10%	7.20%	0.47%	8.93%
Liquidity	10.73%	10.86%	17.98%	6.48%	9.13%	22.03%
Cash Flow	13.25%	7.23%	12.03%	5.16%	4.73%	11.63%
Good prediction %	37.81%	49.20%	64.67%	43.36%	58.10%	62.04%
S.D of abs errors	0.10	0.16	0.0737	0.0903	0.1305	0.0695
RMSE	0.13	0.19	0.1074	0.1030	0.1480	0.0959
MAE	0.08	0.10	0.07808	0.04946	0.06980	0.0660
N	856	856	856	856	856	856
Adding Dummies						
Profitability	17.30%	16.32%	4.87%	12.00%	11.35%	12.34%
Size	15.73%	10.08%	15.48%	12.80%	15.07%	14.09%
Growth	0.00%	2.24%	0.07%	0.36%	7.95%	0.92%
Tangibility	22.19%	4.39%	11.75%	13.36%	14.39%	7.22%
Non-Debt Tax shield	1.91%	3.96%	11.06%	29.21%	25.76%	6.87%
Volatility	8.62%	12.07%	0.53%	5.03%	0.08%	3.22%
Dividends	0.15%	4.20%	1.45%	0.33%	1.45%	2.49%
Liquidity	0.91%	9.09%	15.15%	7.95%	0.94%	18.33%
Cash Flow	1.63%	10.19%	14.82%	2.27%	2.57%	8.81%
Ownership Dummies						
Government	2.14%	2.17%	4.71%	0.67%	0.14%	1.16%
Institutional	7.72%	0.96%	6.92%	4.58%	3.14%	2.46%
Individual	0.76%	3.64%	0.68%	0.55%	1.39%	0.72%
Industry Dummies						
Oil	0.74%	3.27%	2.61%	2.81%	3.79%	4.79%
Basic Materials	9.72%	1.03%	0.83%	0.03%	3.39%	0.96%
Consumer Goods	7.00%	1.49%	0.02%	1.30%	1.94%	1.05%
Consumer Services	1.58%	1.17%	0.71%	3.28%	0.00%	1.50%
Health Care	1.05%	4.37%	3.35%	1.41%	2.74%	4.01%
Industrials	0.00%	0.00%	0.95%	0.16%	0.34%	0.01%
Technology	0.18%	3.62%	2.73%	0.59%	1.82%	5.02%
Telecommunications	0.69%	5.75%	1.32%	1.31%	1.74%	4.05%
Good prediction %	71.24%	53.43%	75.04%	66.57%	60.73%	73.28%
RMSE	0.0166	0.0332	0.0348	0.0296	0.0317	0.0301
MAE	0.0058	0.0130	0.0181	0.0103	0.0099	0.0152
S.D of abs errors	0.0156	0.0306	0.0297	0.0277	0.0302	0.0260
N	856	856	856	856	856	856

The following tables answer the research question:

What is the determinants of capital structure in Tunisia using Panel Data, SEM, ANN ?

The tenth country in this chapter is Tunisia First, the table of the short term debt panel data results is presented. The R^2 is low and in the range of 28% across the models. The Wald test is not significant and therefore it can be concluded that there is no heteroskedasticiy. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model. From the Table 5.55 the following conclusions could be drawn:

- Profitability is negatively significant with the short term debt in book value.

- Liquidity is negatively significant with the short term debt in market value.

- Risk is positive with STDMVE.

- Size is positively significant with the short term debt in book value.

- Tangibility is negatively for the short term debt in market value.

- Non-debt tax shield is positively significant for the short term debt in market value.

- Dividends is significantly negative for both short term debt in book and market value.

- Cash flow is significantly negative for short term debt in book value.

- The ownership structure show that the individual is positive with STDMVE, while institutional is positive with STDBVA.

- The industry classification show that basic materials, industrials, consumer goods and telecommunication are negative with STDBVA. On the other hand,

consumer services and consumer goods and industrials are positive with STDMVE.

The second Table 5.56 show the long term debt using panel data models. The Wald test is not significant for the fixed effect. The R^2 is high for the book debt with 39% and for the market value with 32% only. The Lagrange test is not significant and the following could be concluded:

- Profitability is positive and significant for the long term debt in book values and market values.

- Liquidity is negatively significant for the long term debt in market values using tobit.

- Size is positively significant for the long term debt in book values and vice versa for the market leverage.

- Tangibility is positive and significant in for both.

- Dividends is negatively significant for the long term debt in market values.

- Growth is negatively significant in for the long term debt in book values.

- Ownership individual and intuitional are positive with LTDBVA. On the other hand, government is negative with LTDMVE

- industry classification variable basic materials and industrials are negative with LTDBVA using Random and tobit. Consumer services is positive with LTDMVE.

The third tables which is Table 5.57 shows the results for the total debt for both book value and market value in Tunisia. The Wald test for the total debt for booth values is not significant. The Lagrange test is not significant and therefore the

random effect could be used. The Hausman test is not significant for total debt and significant for the total market value and therefore would indicate that it is possible to use the Random effect. The R^2 is higher than 29% for both the book and market value. From the Table 5.57 the following conclusions could be drawn:

- Profitability is positive and significant for the total debt in book and market values.

- Liquidity is negatively significant for the total debt in market values.

- Size is positively significant for the total debt in market values.

- Non-debt tax shield is positive and significant for TDMVE.

- Dividends is negatively significant in for the total debt in book and market values.

- Ownership government is negatively significant for the total debt in book and market values. Institutional variable is positive and significant for total debt in book values and institutional is the same.

- industry classification variable which are basic materials, industrials, consumer goods and telecom. Industrials and consumer goods and consumer services are positive with TDMVE.

The only interest from Table 5.58 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is negatively significant for the long term debt of book value. Which, indicate that firms in this Jordan might adjust their capital structure for both the long term debt.

Table 5.59 show the results of SEM-PLS approach for Tunisia. The model fits at the bottom of the model shows that the model fit is acceptable with or without

the dummy variables. However, the use of dummies increase the average variable inflation factor to infinity and therefore the results of the ownership and industry are handled with caution. The R^2 is good for all the models with or without the dummies except for the 3 market leverage measures. As the table of the results the following could be concluded:

- Size attribute is significantly positive to long term debt in market value and short term debt in book values.

- Non-debt tax shield is significantly positive to short term and total debt in market value.

- Risk is negatively significant to the short term debt in market value.

- Dividends variable is negatively significant to the all the measures in both book and market except for long term debt in book values.

- Liquidity is negatively significant to the three market value measures.

- Ownership variable individual variable is significantly positive to the short term and long term debt in book values. It is also negatively significant to the three market value variables as well as the total debt in market value. On the other hand, institutional variable is positively significant to the short term debt and total debt in market values. Also, it is negatively significant with the long term debt in market value and the total debt in book values.

- industry variable of basic materials have a negative significant with the short term and total debt in both market and book values. Consumer goods also have a negative significant relation to both short term debts in market and book values. Health care variable is also significant for the short and total debt in the book and market values. As well as, the telecommunication industry

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variable is negatively significant with all the debt variables except for the long term debt in book values.

Moreover, Table 5.60 show the importance of the variables using the ANN approach. The good prediction is high with values of higher than 69%. From this table we could conclude the following:

- Size is exceptionally important through all of the six measures of leverage.

- Tangibility variables are important for the 3 measures of market value as well as the short term debt in book values.

- Volatility is exceptionally important for the long term debt in book values.

- Liquidity is important for short term debt in both market and book values. Likewise, it is important for the long term debt in both market and book values.

- Industry variables of health care, technology and telecommunication are important in relation to the short term debt in book value.

Table 5.55: Tunisia Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

TUNISIA	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-.2750892**	-.2722159**	-.3305779***	-.3549605***	-0.0203	-0.0177	0.0502	0.0285
S.E.	-2.8635	-2.8069	-3.7336	-3.6863	-0.2484	-0.2139	0.6660	0.3759
Profitability	-0.0807	-0.0779	-0.0807	-0.1231	.171763**	.1723592**	.171763**	.1735898**
S.E	-1.0833	-1.0337	-1.0833	-1.5193	2.7062	2.6843	2.7062	2.7069
Liquidty	-0.0058	-0.0056	-0.0058	-0.0080	-.0253394***	-.025273**	-.0253394***	-.0352762***
S.E	-1.2218	-1.1753	-1.2218	-1.5696	-6.2808	-6.1942	-6.2808	-7.6341
Risk	-0.0417	-0.0415	-0.0417	-0.0689	.1851988***	.1845907***	.1851988***	.1845576***
S.E	-1.2555	-1.2377	-1.2555	-1.6465	6.5492	6.4549	6.5492	6.4504
Size	.0286489***	.028454***	.0286489***	.0297827***	0.0043	0.0042	0.0043	0.0069
S.E	5.8485	5.7534	5.8485	5.6117	1.0379	0.9941	1.0379	1.6212
Tangibilty	0.0574	0.0575	0.0574	0.0479	-.1448955***	-.1447874***	-.1448955***	-.1717363***
S.E	1.3702	1.3608	1.3702	1.0444	-4.0574	-4.0204	-4.0574	-4.7118
Tax	0.0855	0.0782	0.0855	0.2044	.7540948***	.7515588***	.7540948***	.7759723***
S.E	0.5519	0.4984	0.5519	1.2186	5.7150	5.6216	5.7150	5.8346
Dividends	-.4898217*	-0.4840	-.4898217*	-0.3969	-.7295555***	-.7333988***	-.7295555***	-.8257257***
S.E	-2.0011	-1.9450	-2.0011	-1.4993	-3.4978	-3.4587	-3.4978	-3.8831
Growth	0.5578	0.5703	0.5578	0.9764	0.2042	0.2159	0.2042	0.6382
S.E	0.9607	0.9704	0.9607	1.5194	0.4127	0.4310	0.4127	1.2587
Cash Flow	-.337395**	-.3372095**	-.337395**	-.5585932***	-0.0436	-0.0429	-0.0436	-0.0483
S.E	-3.1402	-3.1124	-3.1402	-4.3855	-0.4825	-0.4709	-0.4825	-0.5155
Government	-0.0373	-0.0377	-0.0373	-0.0221	-0.0335	-0.0338	-0.0335	-0.0364
S.E	-1.0088	-1.0133	-1.0088	-0.5565	-1.0652	-1.0649	-1.0652	-1.1556
Instituional	.0654368***	.0653255***	.0654368***	.0650622***	0.0269	0.0269	0.0269	.0328027*
S.E	3.8100	3.7732	3.8100	3.4613	1.8410	1.8229	1.8410	2.0604
Indivdual	0.0211	0.0205	0.0211	0.0377	.0536978**	.0534639**	.0536978**	.0526319**
S.E	0.9680	0.9348	0.9680	1.6066	2.8954	2.8573	2.8954	2.8519
Oil	-0.0499	-0.0497	-0.0499	-0.0561	0.0296	0.0295	0.0296	0.0300
S.E	-1.4669	-1.4488	-1.4669	-1.5326	1.0209	1.0090	1.0209	1.0387
B Materials	-.1226371**	-.1226843**	-0.0671	-0.0484	0.0282	0.0283	-0.0424	0.0396
S.E	-2.9158	-2.8940	-1.7211	-1.1471	0.7874	0.7824	-1.2742	1.0693
Industrials	-.0968137*	-.0967563*	-0.0413	-0.0401	.1179055***	.1178328***	0.0473	.132951***
S.E	-2.5681	-2.5462	-1.3088	-1.1694	3.6705	3.6386	1.7592	3.9436
C Goods	-.1228943**	-.1224349**	-.0674056*	-.0710094*	.0758432*	.0760461*	0.0053	.0901668**
S.E	-3.1428	-3.1058	-2.0819	-2.0181	2.2762	2.2637	0.1909	2.6659
Health	0.0000	0.0000	0.0555	0.0719	0.0000	0.0000	-0.0706	0.0621
S.E	.	.	1.1800	1.4180	.	.	-1.7614	1.2013
C Servicses	-0.0104	-0.0101	0.0451	0.0532	.1100806**	.1101535**	0.0395	.1278687***
S.E	-0.2569	-0.2470	1.3339	1.4567	3.1836	3.1595	1.3724	3.7985
Telecom	-.1786224***	-.1779588***	-.1231338*	-0.1034	-0.0126	-0.0123	-.0832052*	0.0000
S.E	-3.5337	-3.4923	-2.5122	-1.9571	-0.2932	-0.2829	-1.9923	0.0000
Technology	-0.0555	-0.0555	0.0000	0.0000	0.0706	0.0703	0.0000	.0834549*
S.E	-1.1800	-1.1698	.	.	1.7614	1.7408	.	2.0055
R2	28%	28%			38%	38%		
N	432	432	432	432	432	432	432	416
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	0.68	Prob2	0.9996	chi2 (8)	1.7	Prob2	0.9889
Hausman	chi2(17)	0.07	Prob2	1	chi2(17)	-0.29 chi2<0		

Table 5.56: Tunisia Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

TUNISIA	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.2434198**	.2420632**	.3109524***	.2417607**	-.2310687**	-.232865**	-.207162**	-.2636909***
S.E.	3.2522	3.2217	4.5076	3.1740	-3.0536	-3.0490	-2.9704	-3.5418
Profitability	.2115372***	.2222163***	.2115372***	-0.1231	.135482*	.1338342*	.135482*	.1521115*
S.E	3.6451	3.8067	3.6451	-1.5193	2.3092	2.2555	2.3092	2.4534
Liquidty	0.0006	0.0011	0.0006	-0.0080	-0.0060	-0.0061	-0.0060	-.0143392**
S.E	0.1544	0.2880	0.1544	-1.5696	-1.5963	-1.6170	-1.5963	-3.2517
Risk	.1420508***	.1455714***	.1420508***	-0.0689	.0918898***	.0918166***	.0918898***	.0945963***
S.E	5.4940	5.5992	5.4940	-1.6465	3.5153	3.4743	3.5153	3.4128
Size	-.0101831**	-.0103088**	-.0101831**	.0297827***	.0138462***	.0139706***	.0138462***	.0178753***
S.E	-2.6682	-2.6905	-2.6682	5.6117	3.5885	3.5870	3.5885	4.2913
Tangibilty	-.2288349***	-.2289009***	-.2288349***	0.0479	.1963487***	.1967359***	.1963487***	.1837916***
S.E	-7.0082	-6.9913	-7.0082	1.0444	5.9479	5.9114	5.9479	5.2100
Tax	-0.0876	-0.1041	-0.0876	0.2044	-0.0186	-0.0133	-0.0186	0.0081
S.E	-0.7262	-0.8562	-0.7262	1.2186	-0.1529	-0.1074	-0.1529	0.0630
Dividends	-0.2637	-0.2226	-0.2637	-0.3969	-.8068727***	-.8124368***	-.8068727***	-.8915347***
S.E	-1.3826	-1.1547	-1.3826	-1.4993	-4.1848	-4.1460	-4.1848	-4.3158
Growth	-2.037054***	-2.056753***	-2.037054***	0.9764	-0.2164	-0.2222	-0.2164	0.2505
S.E	-4.5034	-4.5171	-4.5034	1.5194	-0.4732	-0.4800	-0.4732	0.5115
Cash Flow	-.2921525***	-.2948525***	-.2921525***	-.3986093***	.1976833*	.1969123*	.1976833*	0.1693
S.E	-3.4207	-3.4399	-3.4207	-3.9017	2.3476	2.3192	2.3476	1.8173
Government	-0.0366	-0.0375	-0.0366	-.0983702**	-.0707562*	-.0703893*	-.0707562*	-.093609**
S.E	-1.2708	-1.3011	-1.2708	-2.6234	-2.4318	-2.4000	-2.4318	-2.8466
Instituional	.0852701***	.0850222**	.0852701***	.1017934***	-.0342581*	-.0342557*	-.0342581*	-.0405247**
S.E	6.3724	6.3387	6.3724	6.7787	-2.5323	-2.5124	-2.5323	-2.8076
Indivdual	.0523082**	.0509938**	.0523082**	.0673695***	-0.0298	-0.0294	-0.0298	-.0403616*
S.E	3.0847	2.9977	3.0847	3.5535	-1.7359	-1.6994	-1.7359	-2.2041
Oil	-0.0308	-0.0293	-0.0308	-0.0352	0.0337	0.0335	0.0337	0.0393
S.E	-1.1623	-1.1041	-1.1623	-1.2167	1.2571	1.2396	1.2571	1.3385
B Materials	-0.0133	-0.0137	-.0807909**	-.0695621*	0.0027	0.0028	-0.0212	-0.0381
S.E	-0.4046	-0.4158	-2.6579	-2.0757	0.0817	0.0828	-0.6899	-1.1607
Industrials	-0.0122	-0.0115	-.0797083**	-.0831935**	0.0529	0.0528	0.0290	0.0259
S.E	-0.4145	-0.3894	-3.2402	-3.0299	1.7812	1.7636	1.1654	0.9917
C Goods	0.0582	0.0592	-0.0093	-0.0105	0.0329	0.0324	0.0090	0.0097
S.E	1.9112	1.9380	-0.3689	-0.3758	1.0669	1.0445	0.3511	0.3646
Health	0.0000	0.0000	-0.0675	-0.0631	0.0000	0.0000	-0.0239	-0.0189
S.E	.	.	-1.8432	-1.5691	.	.	-0.6454	-0.4840
C Servicses	.0779527*	.0792547*	0.0104	0.0245	.1239601***	.1237064***	.1000534***	.1006171***
S.E	2.4656	2.5005	0.3959	0.8436	3.8781	3.8396	3.7602	3.6034
Telecom	0.0089	0.0101	-0.0587	-0.0711	-0.0169	-0.0173	-0.0408	-0.0740
S.E	0.2255	0.2555	-1.5359	-1.6984	-0.4237	-0.4309	-1.0562	-1.7588
Technology	0.0675	0.0690	0.0000	0.0000	0.0239	0.0237	0.0000	0.0000
S.E	1.8432	1.8784	.	.	0.6454	0.6357	.	.
R2	39%	39%			32%	32%		
N	432	432	432	432	432	432	432	432
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	12.86	Prob2	0.1167	chi2 (8)	1.38	Prob2	0.9945
Hausman	chi2(17)	3.89	Prob2	0.9996	chi2(17)	0.15	Prob2	1

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Table 5.57: Tunisia Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

TUNISIA	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	0.1795	0.1809	0.1611	0.1623	-.2561084*	-.2561137*	-0.1610	-0.2063
S.E.	1.6229	1.6223	1.5801	1.5764	-2.1284	-2.1080	-1.4519	-1.8563
Profitability	.2410376**	.2505602**	.2410376**	.2458548**	.2933657**	.292138**	.2933657**	.3070575**
S.E	2.8103	2.8924	2.8103	2.8304	3.1444	3.0949	3.1444	3.2873
Liquidty	-0.0066	-0.0062	-0.0066	-0.0111	-.0306267***	-.0306995***	-.0306267***	-.0438902***
S.E	-1.2129	-1.1253	-1.2129	-1.9431	-5.1642	-5.1182	-5.1642	-6.5865
Risk	.1174765**	.1201811**	.1174765**	.1218048**	.2740747***	.2737146***	.2740747***	.2719598***
S.E	3.0742	3.1150	3.0742	3.1541	6.5933	6.5108	6.5933	6.5220
Size	0.0061	0.0059	0.0061	0.0066	.0184546**	.0184724**	.0184546**	.0224823***
S.E	1.0851	1.0353	1.0851	1.1548	3.0077	2.9814	3.0077	3.6321
Tangibilty	-0.0336	-0.0334	-0.0336	-0.0589	0.0524	0.0530	0.0524	0.0302
S.E	-0.6971	-0.6864	-0.6971	-1.1968	0.9985	1.0015	0.9985	0.5723
Tax	-0.2248	-0.2438	-0.2248	-0.2379	.7386495***	.7436873***	.7386495***	.7659203***
S.E	-1.2609	-1.3515	-1.2609	-1.3208	3.8081	3.7839	3.8081	3.9521
Dividends	-.5775408*	-0.5468	-.5775408*	-.5727115*	-1.51846***	-1.524987***	-1.51846***	-1.634306***
S.E	-2.0490	-1.9113	-2.0490	-2.0036	-4.9525	-4.8921	-4.9525	-5.2878
Growth	-0.4330	-0.4338	-0.4330	-0.3306	0.0547	0.0559	0.0547	0.6249
S.E	-0.6476	-0.6420	-0.6476	-0.4881	0.0751	0.0759	0.0751	0.8467
Cash Flow	-0.1263	-0.1266	-0.1263	-0.0867	0.1346	0.1349	0.1346	0.1565
S.E	-0.9733	-0.9678	-0.9733	-0.6456	0.9934	0.9872	0.9934	1.1278
Government	-.1169229**	-.1178388**	-.1169229**	-.1928634***	-.1029194*	-.1028241*	-.1029194*	-.1468754**
S.E	-2.7488	-2.7521	-2.7488	-3.9741	-2.2243	-2.2039	-2.2243	-2.9347
Instituional	.1082821***	.1080007***	.1082821***	.1090445***	-0.0073	-0.0074	-0.0073	-0.0026
S.E	5.4752	5.4258	5.4752	5.4272	-0.3405	-0.3409	-0.3405	-0.1216
Indivdual	-0.0256	-0.0269	-0.0256	-0.0191	0.0183	0.0185	0.0183	0.0086
S.E	-1.0229	-1.0670	-1.0229	-0.7497	0.6723	0.6732	0.6723	0.3116
Oil	.0879353*	.0890666*	.0879353*	.0840236*	0.0622	0.0620	0.0622	0.0663
S.E	2.2448	2.2585	2.2448	2.1215	1.4606	1.4426	1.4606	1.5506
B Materials	-.182883***	-.1832153***	-.1644511***	-.158787***	0.0293	0.0294	-0.0658	-0.0633
S.E	-3.7762	-3.7590	-3.6606	-3.4978	0.5562	0.5531	-1.3462	-1.2918
Industrials	-.1131462**	-.1127234*	-.0947143**	-.0991062**	.169284***	.1691351***	0.0742	0.0695
S.E	-2.6065	-2.5800	-2.6051	-2.6984	3.5850	3.5527	1.8761	1.7604
C Goods	-0.0759	-0.0749	-0.0574	-0.0554	.1091277*	.1088054*	0.0140	0.0139
S.E	-1.6846	-1.6534	-1.5401	-1.4733	2.2280	2.2031	0.3462	0.3429
Health	0.0000	0.0000	0.0184	0.0221	0.0000	0.0000	-0.0951	-0.0999
S.E	.	.	0.3404	0.4043	.	.	-1.6143	-1.6918
C Servicses	0.0583	0.0594	.0767665*	.0850093*	.2268584***	.226721***	.1317702**	.1355308**
S.E	1.2484	1.2619	1.9735	2.1620	4.4632	4.4236	3.1141	3.2096
Telecom	-.1289236*	-.1277152*	-0.1105	-.1138571*	-0.0304	-0.0305	-.1255114*	-.140994*
S.E	-2.2150	-2.1799	-1.9577	-1.9966	-0.4805	-0.4775	-2.0444	-2.2998
Technology	-0.0184	-0.0176	0.0000	0.0000	0.0951	0.0948	0.0000	0.0000
S.E	-0.3404	-0.3221	.	.	1.6143	1.5958	.	.
R2	29%	30%	0%		42%	42%	0%	
N	432	432	432	432	432	432	432	432
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	0.65	Prob2	0.9996	chi2 (8)	2.21	Prob2	0.974
Hausman	chi2(17)	1.04	Prob2	1	chi2(17)	-0.29 chi2<0		

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Table 5.58: Tunisia Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

TUNISIA

Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	-0.0016264	-0.0460323	.2743865***	-0.0024978	-0.0570479	-0.0843684
S.E.	-0.0295268	-0.9869686	6.460195	-0.0535291	-1.212736	-1.868665
Constant	-.4414386***	-0.016	.1724615*	-.2554754**	0.0580769	-0.240062
S.E.	-3.838036	-0.173	2.217	-2.911224	0.4740607	-1.737671
Profitability	-0.051	.1923031**	.2044601***	.1323371*	.315633***	.3224968***
S.E	-0.638	2.982	3.764	2.150115	3.588092	3.345921
Liquidty	-0.007	-.0257745***	0.003	-0.0058814	-0.0084529	-.0303158***
S.E	-1.315	-6.365	0.946	-1.517686	-1.539518	-5.002428
Risk	-0.049	.1837526***	.1326575***	.0997634***	.1352005***	.2684232***
S.E	-1.279	6.318	5.455	3.534392	3.346415	6.235288
Size	.0282292***	0.004	-0.006	.0140959***	0.0058678	.0172905**
S.E	5.287	0.856	-1.694	3.55417	1.050495	2.772985
Tangibilty	0.050	-.1488978***	-.2548676***	.1986629***	-0.0418109	0.0380041
S.E	1.130	-4.179	-8.428	5.775133	-0.8717121	0.7092026
Tax	0.095	.7765159***	-0.058	-0.0083343	-0.2142422	.7883656***
S.E	0.581	5.826	-0.518	-0.066059	-1.194564	3.982486
Dividends	-0.381	-.7104128**	-0.026	-.8669455***	-0.3991481	-1.58372***
S.E	-1.404	-3.237	-0.140	-4.126412	-1.343058	-4.822008
Growth	0.706	0.369	-2.167838***	-0.2248986	-0.401726	0.3983236
S.E	1.145	0.731	-5.160	-0.4687412	-0.5922241	0.5257256
Cash Flow	-.3394005**	-0.0617982	-.2304374**	.1913581*	-0.086713	0.1034485
S.E	-3.140985	-0.6701718	-2.761541	2.232946	-0.6455587	0.7411683
Government	-0.0360539	-0.036394	0.0045411	-.0706628*	-.1232127**	-.1135943*
S.E	-0.9301674	-1.155621	0.167219	-2.359042	-2.902446	-2.410525
Instituional	.0651271***	.0328027*	.0780841***	-.0344815*	.1082342***	0.0063871
S.E	3.61541	2.06036	6.341463	-2.470182	5.53258	0.2778952
Indivdual	0.0195641	.0526319**	.0575081***	-0.0294679	-0.0264477	0.0144029
S.E	0.8559236	2.851943	3.686806	-1.66647	-1.063868	0.5214878
Oil	-0.0483668	0.0299549	-0.0446739	0.0328444	.0956791*	0.0595641
S.E	-1.347376	1.038731	-1.827458	1.194313	2.46623	1.382957
B Materials	0.0531698	0.0396397	-0.0199926	0.0209976	-0.0586291	0.0473893
S.E	1.161155	1.069292	-0.6393226	0.58247	-1.178885	0.8488423
Industrials	0.0806624	.132951***	-0.0394133	.0707086*	0.0232406	.1971277***
S.E	1.928222	3.943619	-1.384944	2.186856	0.5097882	3.928138
C Goods	0.0548027	.0901668**	0.0282585	0.0488463	0.0545682	.1379922**
S.E	1.312875	2.665905	0.9890139	1.514028	1.203928	2.743621
Health	.2820551***	0.0621298	0.0355632	0.012842	.2658556***	0.0475523
S.E	4.496111	1.201265	0.8292046	0.2581737	3.895807	0.6056779
C Servicses	.1660476***	.1278687***	0.0179703	.141723***	.1961976***	.2606673***
S.E	4.058956	3.798499	0.6196086	4.4576	4.339407	5.270554
Telecom	0	0	0	0	0	0
S.E	0	0	0	0	0	0
Technology	.1194329*	.0834549*	0.0541062	0.0410736	.1147896*	.1216256*
S.E	2.326438	2.005474	1.544709	1.033913	2.046593	1.960813
N	416	416	416	416	416	416

Table 5.59: Tunisia SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Profit	0.003	0.02	0.013	-0.053	0.067	0.015	-0.001	0.032	0.018	-0.007	-0.021	-0.104
	0.471	0.331	0.366	0.268	0.068	0.418	0.495	0.254	0.357	0.446	0.191	0.319
Size	-0.089	0.276	0.068	0.229	-0.133	0.126	-0.044	0.241	-0.045	-0.021	-0.104	0.069
	0.076	<0.001	0.182	<0.001	0.148	0.032	0.177	<0.001	0.176	0.332	<0.001	0.032
Growth	-0.141	0.014	-0.105	-0.077	-0.103	0.038	-0.102	-0.045	0.058	-0.104	-0.13	-0.07
	0.082	0.419	0.177	0.217	0.011	0.273	0.016	0.173	0.112	0.015	0.003	0.07
Tang	0.102	0.068	0.095	0.363	0.113	0.316	0.204	-0.028	0.064	0.069	0.084	0.074
	0.007	0.238	0.053	0.229	0.004	0.118	<0.001	0.278	0.091	0.074	0.04	0.062
Tax	0.161	0.07	0.147	0.042	-0.048	0.043	0.252	0.09	0.192	0.194	-0.046	0.159
	<0.001	0.053	<0.001	0.306	0.277	0.293	<0.001	0.029	<0.001	<0.001	0.166	<0.001
Risk	-0.21	-0.113	-0.203	0.071	-0.149	-0.054	-0.029	-0.029	-0.054	-0.234	-0.132	-0.256
	<0.001	0.05	0.001	0.139	0.08	0.317	0.27	0.271	0.129	<0.001	0.003	<0.001
Div	-0.244	-0.275	-0.312	-0.11	-0.142	-0.179	-0.256	-0.282	-0.329	-0.213	-0.087	-0.288
	<0.001	<0.001	<0.001	<0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001	0.034	<0.001
Liqud	-0.227	-0.155	-0.242	-0.013	-0.095	-0.104	-0.31	-0.193	-0.273	-0.212	0.032	-0.22
	<0.001	<0.001	<0.001	0.417	0.075	0.037	<0.001	<0.001	<0.001	<0.001	0.254	<0.001
Cash Flow	-0.072	-0.019	-0.043	-0.142	-0.002	-0.092	-0.022	0.131	0.056	-0.077	0.031	-0.038
	0.095	0.377	0.207	0.256	0.486	0.319	0.321	0.003	0.121	0.054	0.258	0.216
Ownership												
Gov							0.042	-0.031	-0.007	0.029	-0.109	-0.014
							0.188	0.256	0.44	0.275	0.011	0.386
indv							-0.313	-0.032	-0.163	0.31	0.195	-0.174
							<0.001	0.255	<0.001	<0.001	<0.001	<0.001
Inst							0.426	-0.021	0.231	0.386	0.291	-0.203
							<0.001	0.334	<0.001	<0.001	<0.001	<0.001
Industry												
Oil							0.051	0.022	0.049	0.132	-0.113	0.119
							0.142	0.321	0.155	0.003	0.009	0.006
Mater							-0.191	-0.137	-0.172	-0.258	0.01	-0.257
							<0.001	0.002	<0.001	<0.001	0.416	<0.001
Indust							0	0	0	0	0	0
							0	0	0	0	0	0
Cgoods							-0.178	-0.078	-0.105	-0.169	0.1	-0.118
							<0.001	0.051	0.014	<0.001	0.018	0.006
Health							-0.348	-0.092	-0.238	-0.324	0.015	-0.225
							<0.001	0.027	<0.001	<0.001	0.381	<0.001
Cserv							-0.129	0.067	0.004	-0.084	0.127	0.024
							0.003	0.08	0.467	0.039	0.004	0.31
Telec							-0.321	-0.193	-0.24	-0.247	-0.04	-0.211
							<0.001	<0.001	<0.001	<0.001	0.199	<0.001
Techno							-0.044	-0.108	-0.077	-0.007	0.089	-0.049
							0.177	0.012	0.053	0.439	0.031	0.154
N	432	432	432	432	432	432	432	432	432	432	432	432
R2	8	8	25	30	24	32	27	26	36	16	26	46
Model Fit												
(APC)	0.108	P<0.001		0.108	P<0.001		0.111	P=0.005		0.132	P=0.001	
(ARS)	0.103	P=1.000		0.103	P=1.000		0.263	P<0.001		0.294	P<0.001	
(AARS)	0.084	P=1.000		0.084	P=1.000		0.242	P<0.001		0.261	P<0.001	
(AVIF)	1.222			1.222			1.246			Inf		

Table 5.60: Tunisia ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Tunisia	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	11.09%	5.92%	4.92%	11.44%	7.86%	12.06%
Size	24.49%	15.97%	20.52%	16.53%	25.39%	31.44%
Growth	4.04%	4.82%	0.53%	5.34%	1.31%	3.74%
Tangibility	18.28%	10.77%	14.15%	19.21%	19.46%	19.99%
Non-Debt Tax shield	9.18%	7.34%	11.48%	0.83%	11.56%	0.01%
Volatility	5.67%	39.44%	6.57%	0.12%	13.84%	0.04%
Dividends	6.96%	1.68%	9.04%	10.60%	5.60%	5.74%
Liquidity	16.30%	7.20%	19.94%	30.96%	8.01%	26.95%
Cash Flow	4.00%	6.86%	12.86%	4.97%	6.98%	0.02%
Good prediction %	71.97%	69.94%	93.35%	91.04%	89.88%	96.24%
S.D of abs errors	0.08	0.05	0.1147	0.0387	0.0390	0.1003
RMSE	0.09	0.06	0.1230	0.0447	0.0432	0.1110
MAE	0.05	0.03	0.04427	0.02237	0.01846	0.0475
N	433	433	433	433	433	433
Adding Dummies						
Profitability	11.45%	1.43%	0.69%	15.46%	0.00%	13.44%
Size	10.99%	18.39%	20.44%	10.04%	33.38%	20.84%
Growth	8.90%	1.82%	0.11%	5.14%	0.04%	1.25%
Tangibility	6.70%	1.75%	11.34%	7.44%	8.18%	20.60%
Non-Debt Tax shield	0.46%	7.54%	7.68%	0.18%	16.39%	10.89%
Volatility	7.94%	37.73%	23.89%	17.25%	14.80%	0.63%
Dividends	8.49%	0.62%	3.98%	3.05%	8.64%	5.08%
Liquidity	7.42%	1.20%	2.28%	17.63%	4.77%	15.65%
Cash Flow	0.41%	0.01%	10.84%	1.67%	2.95%	2.35%
Ownership Dummies						
Government	6.04%	3.75%	2.62%	3.77%	1.04%	1.52%
Institutional	3.39%	3.48%	0.81%	0.88%	0.88%	0.31%
Individual	1.66%	2.55%	0.67%	0.60%	0.06%	0.27%
Industry Dummies						
Oil	1.49%	0.52%	0.25%	0.56%	0.82%	0.57%
Basic Materials	1.34%	3.64%	4.86%	1.56%	1.50%	0.24%
Consumer Goods	0.34%	0.00%	0.02%	0.16%	0.42%	0.01%
Consumer Services	0.92%	0.37%	0.04%	0.07%	0.30%	0.04%
Health Care	8.96%	5.30%	3.34%	4.75%	2.41%	3.82%
Industrials	0.00%	0.02%	1.54%	0.07%	0.01%	0.01%
Technology	7.18%	4.67%	2.58%	3.39%	0.61%	0.91%
Telecommunications	5.90%	5.21%	2.03%	6.33%	2.79%	1.58%
Good prediction %	87.57%	75.43%	89.60%	88.73%	86.99%	95.09%
RMSE	0.0170	0.0275	0.0284	0.0196	0.0133	0.0148
MAE	0.0059	0.0094	0.0098	0.0083	0.0048	0.0054
S.D of abs errors	0.0159	0.0259	0.0267	0.0178	0.0124	0.0138
N	433	433	433	433	433	433

The following tables answer the research question:

What is the determinants of capital structure in UAE using Panel Data, SEM, ANN ?

The eleventh country in this chapter is UAE. First, the table of the short term debt panel data results is presented. The R^2 is low and in the range of 14% across the models. The Wald test is not significant and therefore it can be concluded that there is no heteroskedasticiy. The table show that the Hausman test is not significant and therefore it is safe to use the random effect model. From the Table 5.61 the following conclusions could be drawn:

- Risk is negative with STDMVE.

- Size is positively significant with the short term debt in book and market value.

- Tangibility is negatively significant across the models for short term debt value.

- Non-debt tax shield is positively significant for the short term debt in market value.

- Growth is positive with STDBVA.

- Cash flow is significantly negative for both short term debt in book value using tobit.

- The ownership structure show that the government variable is positive and significant for STDMVE. Institutional and individual are both significant and positive with STDBVA.

- The industry classification of consumer services is positive with STDMV.

The second Table 5.62 show the long term debt using panel data models. The Wald test is not significant for the fixed effect. The R^2 is acceptable for the book

debt with 18% and lower for the market value with 29% only. The Lagrange test is not significant and the following could be concluded:

- Profitability is positive and significant for the long term debt in book values.

- Risk is significant with LTDBVA and negative.

- Size is positively significant for the LTDMVE and vice versa for LTDBVA.

- Tangibility is positive and significant in for the LTDMVE.

- Growth is positive and significant in for the long term debt in market values.

- Ownership government is positive and significant for LTDMVE. The other variable which is negative and significant for institutional with LTDMVE.

- industry classification variable which is the oil is significantly positive with LTD-BVA. Basic materials, industrials consumer goods and health and consumer services are all negative with LTDBVA. On the other hand, industrials and consumer goods are positive with LTDMVE.

The third tables which is Table 5.63 shows the results for the total debt for both book value and market value in United Arab Emirates. The Wald test for the total debt is not significant. The Lagrange test is not significant and therefore the random effect could be used. The Hausman test is not significant for total debt and significant for the total market value and therefore would indicate that it is possible to use the Random effect. The R^2 is higher than 24% for both the book and market value. From the Table 5.63 the following conclusions could be drawn:

- Profitability is negatively significant for the total debt market values and vice versa.

- Liquidity is negatively significant for the total debt in market values.

- Risk is negatively significant for the total debt in book values.

- Size is negative and significant for the total debt in book values.

- Non-debt tax shield is negatively significant for the total debt market values across all the models.

- Dividends is negatively significant in for the total debt in book and market values.

- Growth is negatively significant in for the total debt in book values.

- Cash flow is negatively significant for total debt market value and vice versa.

- Ownership government is negatively significant for the total debt in market values and vice versa.

- industry classification variable which are industrials, consumer goods, consumer services are negative with TDBVA while health is positive. Industrials is also positive with TDMVE.

The only interest from Table 5.64 is the lagged variable of the leverage ratio. As it shows that the dependent variable lagged variable is negatively significant for the long term debt of market value and both short term debt values. Which, indicate that firms might adjust their capital structure for the long term debt.

Table 5.65 show the results for United Arab Emirates using the SEM-PLS approach. The model fits at the bottom of the model shows that the model fit is acceptable without dummies and good with the dummies. However, the use of dummies increase the average variable inflation factor to infinity for the book leverage 3 measures with dummies and therefore the results of the ownership and industry variables are handled with caution. The R^2 is good for all the models with or without

the dummies except for the 3 market leverage measures. As the table of the results the following could be concluded:

- Profitability is negatively significant to total debt in market values. On the other hand, it is positively significant to the long term and total debt in book value.

- Size attribute is significantly negative to short term debt in market value and total debt in market value. Also, for total debt in book values.

- Growth is only significantly positive with short term debt book leverage.

- Tangibility is significantly positive in relation to short term debt in book and market values.

- Risk is negatively significant to the long term debt in book value. It is also significantly positive to both short term and long term debt in market values.

- Dividends variable is negatively significant to the total debt in market value.

- Liquidity variable is negatively significant to the total debt in market value.

- Ownership variable government is only positive and significant for the long term debt in market values. Individual variable is significantly positive to the total debt in market values and significantly negative to the long term debt in book values. Institutional variable is only positive and significant for the long term debt in market values.

- industry variables of oil is significantly positive with the long term debt in book values. Consumer goods is significantly negative to the total debt in market values. Health care sector is negatively associated to the long term debt and total debt in market values. But positively associated to the long term debt in book value. Consumer services and is negatively associated to the long

term debt and total debt in market values. Telecommunication is positively significant in relation to the long term debt in book value and significantly negative for the long term debt in market values.

In addition, Table 5.66 show the important variables using the ANN approach. The good prediction is high with values of higher than 56%. From this table we could draw the following conclusions:

- Profitability is only important for the total debt in market values.

- Size is substantially important for the short term debt in book leverage. Similarly, the long term debt is important for the long term debt in market leverage.

- Tangibility is only important for the short term debt in market values.

- Non-debt tax shield is important for both short term debt and total debt in market leverage.

- Volatility is important for the three market leverage variables. Also it is important for the long term debt in book values.

- Dividends is only important in relation to the long term debt in book values.

- Cash flow is extremely important for the total debt in book values and substantially important for long term debt in market values.

- Industry variables of health care and technology are important in relation to the short term debt in book value.

Table 5.61: United Arab Emirates Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

UAE	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	-0.0818	-0.0502	-0.0818	0.0286	.5582332**	.6103014***	.5582332**	.6326336***
S.E.	-0.5608	-0.3382	-0.5608	0.1518	3.2303	3.4796	3.2303	4.0411
Profitability	-0.1632	-0.1331	-0.1632	-0.1845	0.0214	0.0570	0.0214	0.0163
S.E	-1.3078	-1.0488	-1.3078	-1.1222	0.1445	0.3805	0.1445	0.0898
Liquidty	0.0008	0.0012	0.0008	0.0013	-0.0012	-0.0006	-0.0012	-0.0015
S.E	0.4738	0.7358	0.4738	0.6032	-0.6200	-0.3113	-0.6200	-0.6363
Risk	-0.0284	-0.0285	-0.0284	-0.0432	-.0678369*	-.0723391*	-.0678369*	-.0776573*
S.E	-1.0506	-1.0313	-1.0506	-1.2440	-2.1170	-2.2202	-2.1170	-1.9911
Size	0.0042	0.0026	0.0042	-0.0060	-.0269967***	-.0294043***	-.0269967***	-.0205983*
S.E	0.6828	0.4191	0.6828	-0.7492	-3.6903	-3.9563	-3.6903	-2.3312
Tangibilty	0.0635	0.0606	0.0635	0.0838	.0948571*	.0917574*	.0948571*	.1727846***
S.E	1.9219	1.8237	1.9219	1.9356	2.4235	2.3395	2.4235	3.6106
Tax	-0.0454	-0.0479	-0.0454	-0.2562	.5552416**	.5448458**	.5552416**	.5166045*
S.E	-0.2839	-0.2973	-0.2839	-1.1130	2.9269	2.8613	2.9269	2.2533
Dividends	0.3290	0.3253	0.3290	0.3386	-0.2923	-0.310	-0.2923	-0.3792
S.E	1.0884	1.0572	1.0884	0.8747	-0.8160	-0.8533	-0.8160	-0.8582
Growth	1.539062*	1.817509*	1.539062*	1.920455*	-0.6150	-0.2982	-0.6150	-1.4525
S.E	2.1375	2.4266	2.1375	2.0821	-0.7208	-0.3372	-0.7208	-1.2331
Cash Flow	-0.0050	-0.0047	-0.0050	-.018933**	-0.0013	-0.0008	-0.0013	-0.0004
S.E	-1.7297	-1.6048	-1.7297	-2.9202	-0.3774	-0.2332	-0.3774	-0.0964
Government	0.0551	0.0542	0.0551	.0875815*	.1025477**	.1026102**	.1025477**	.1452642***
S.E	1.7271	1.6910	1.7271	2.1035	2.7108	2.7090	2.7108	3.5841
Instituional	.122096***	.1231141***	.122096***	.1504306***	-0.0392	-0.0374	-0.0392	-0.0191
S.E	4.9835	5.0024	4.9835	4.6308	-1.3497	-1.2872	-1.3497	-0.6412
Indivdual	.0702344*	.0719794*	.0702344*	.1062533**	-0.0040	-0.0017	-0.0040	-0.0032
S.E	2.4403	2.4892	2.4403	2.8206	-0.1182	-0.0496	-0.1182	-0.0916
Oil	-0.0003	-0.0025	-0.0003	0.0179	0.0235	0.0212	0.0235	0.0394
S.E	-0.0040	-0.0391	-0.0040	0.2128	0.3082	0.2775	0.3082	0.5114
B Materials	0.0680	0.0626	0.0680	0.0775	0.1348	0.1260	0.1348	0.0851
S.E	0.8064	0.7383	0.8064	0.6941	1.3484	1.2584	1.3484	0.8095
Industrials	-0.0219	-0.0265	-0.0219	0.0123	0.1086	0.1011	0.1086	0.0837
S.E	-0.4075	-0.4904	-0.4075	0.1694	1.7040	1.5823	1.7040	1.2322
C Goods	-0.0111	-0.0183	-0.0111	-0.0538	0.1426	0.1312	0.1426	0.1220
S.E	-0.1787	-0.2939	-0.1787	-0.6486	1.9429	1.7816	1.9429	1.5611
Health	0.0286	0.0198	0.0286	0.0619	0.1267	0.1148	0.1267	0.1255
S.E	0.4240	0.2919	0.4240	0.6899	1.5861	1.4318	1.5861	1.5167
C Servicses	0.0920	0.0858	0.0920	0.1280	.1432783*	.1333893*	.1432783*	.1428999*
S.E	1.6348	1.5132	1.6348	1.7007	2.1486	1.9927	2.1486	1.9715
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	0.0000
R2	14%	14%			19%	19%		
N	440	440	440	440	440	440	440	424
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	2.21	Prob2	0.974	chi2 (8)	7.99	Prob2	0.4348
Hausman	chi2(17)	3.36	Prob2	0.9998	chi2(17)	5.34	Prob2	0.9966

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Table 5.62: United Arab Emirates Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

UAE	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.7754752***	.8431591***	.7754752***	1.278321***	-.3654701**	-.3359957**	-.3654701**	-.5418993**
S.E.	5.4152	5.8103	5.4152	5.7129	-2.8730	-2.5960	-2.8730	-3.1636
Profitability	.4083745***	.4533521***	.4083745***	-0.1845	-0.0511	-0.0246	-0.0511	-0.1169
S.E	3.3327	3.6553	3.3327	-1.1222	-0.4694	-0.2221	-0.4694	-0.7870
Liquidty	0.0016	0.0020	0.0016	0.0013	-0.0008	-0.0007	-0.0008	-0.0009
S.E	0.9948	1.2071	0.9948	0.6032	-0.5584	-0.4840	-0.5584	-0.4742
Risk	-.0536675*	-.0615257*	-.0536675*	-0.0432	-0.0111	-0.0140	-0.0111	-0.0299
S.E	-2.0211	-2.2824	-2.0211	-1.2440	-0.4694	-0.5812	-0.4694	-0.8920
Size	-.0228182***	-.0257632***	-.0228182***	-0.0060	.014187**	.0128737*	.014187**	.0204809**
S.E	-3.7639	-4.1898	-3.7639	-0.7492	2.6345	2.3474	2.6345	2.8209
Tangibilty	0.0189	0.0158	0.0189	0.0838	.2468592***	.2463107***	.2468592***	.3732811***
S.E	0.5822	0.4869	0.5822	1.9356	8.5678	8.5105	8.5678	9.3148
Tax	-0.0745	-0.1010	-0.0745	-0.2562	-0.0040	-0.0134	-0.0040	-0.0398
S.E	-0.4740	-0.6409	-0.4740	-1.1130	-0.0288	-0.0954	-0.0288	-0.2007
Dividends	-0.4674	-0.5459	-0.4674	0.3386	-0.1252	-0.1547	-0.1252	-0.0523
S.E	-1.5746	-1.8152	-1.5746	0.8747	-0.4747	-0.5769	-0.4747	-0.1444
Growth	0.0153	0.3666	0.0153	1.920455*	1.405657*	1.598297*	1.405657*	1.4140
S.E	0.0216	0.5010	0.0216	2.0821	2.2379	2.4485	2.2379	1.5559
Cash Flow	-0.0034	-0.0030	-0.0034	-.015169*	-0.0029	-0.0026	-0.0029	0.0014
S.E	-1.1876	-1.0397	-1.1876	-2.1005	-1.1380	-1.0057	-1.1380	0.3930
Government	-0.0083	-0.0075	-0.0083	-0.0003	.0622625*	.0620437*	.0622625*	.1049514**
S.E	-0.2657	-0.2400	-0.2657	-0.0059	2.2359	2.2198	2.2359	2.8711
Instituional	0.0291	0.0309	0.0291	.0824028*	-.0700787**	-.0696537**	-.0700787**	-.1743807***
S.E	1.2074	1.2842	1.2074	2.0925	-3.2789	-3.2474	-3.2789	-5.7064
Indivdual	0.0047	0.0071	0.0047	0.0640	-0.0076	-0.0066	-0.0076	-.0760787*
S.E	0.1654	0.2498	0.1654	1.4237	-0.3025	-0.2630	-0.3025	-2.1068
Oil	.1653434**	.1633411*	.1653434**	0.1850	0.0232	0.0224	0.0232	-0.0173
S.E	2.6154	2.5863	2.6154	1.8631	0.4128	0.3985	0.4128	-0.2396
B Materials	-.3614564***	-.3721287***	-.3614564***	-.4778726***	0.1300	0.1249	0.1300	.229323*
S.E	-4.3642	-4.4932	-4.3642	-3.7027	1.7663	1.6914	1.7663	2.4030
Industrials	-.2833463***	-.2923753***	-.2833463***	-.3970357***	.158266***	.1543372**	.158266***	.1366244*
S.E	-5.3667	-5.5333	-5.3667	-4.8334	3.3746	3.2748	3.3746	2.2455
C Goods	-.3358469***	-.3495223***	-.3358469***	-.5248781***	.2296561***	.2235028***	.2296561***	.3076784***
S.E	-5.5232	-5.7356	-5.5232	-5.5202	4.2518	4.1121	4.2518	4.3154
Health	-.164555*	-.1790449**	-.164555*	-.2853704**	0.1128	0.1051	0.1128	.1904622*
S.E	-2.4867	-2.6989	-2.4867	-2.7682	1.9195	1.7770	1.9195	2.4659
C Servicses	-.2360229***	-.2487494***	-.2360229***	-.3293449***	.114657*	.1087141*	.114657*	0.0944
S.E	-4.2712	-4.4916	-4.2712	-3.8348	2.3358	2.2009	2.3358	1.4614
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	18%	19%			29%	29%		
N	440	440	440	440	440	440	440	440
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	1.6	Prob2	0.9909	chi2 (8)	5.65	Prob2	0.6863
Hausman	chi2(17)	8.39	Prob2	0.9575	chi2(17)	2.87	Prob2	0.9999

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Table 5.63: United Arab Emirates Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

UAE	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.507615***	.5648414***	.507615***	.5797336***	-0.0233	0.0274	-0.0233	-0.0128
S.E.	5.1779	5.7247	5.1779	5.1718	-0.1511	0.1760	-0.1511	-0.0788
Profitability	.2839343***	.322846***	.2839343***	.3200091***	-.6300699***	-.6056708***	-.6300699***	-.7002683***
S.E	3.3848	3.8284	3.3848	3.3347	-4.7792	-4.5461	-4.7792	-4.9042
Liquidity	0.0002	0.0007	0.0002	0.0001	-.0073169***	-.0068279***	-.0073169***	-.0077532***
S.E	0.2183	0.6340	0.2183	0.0715	-4.2017	-3.8834	-4.2017	-4.1932
Risk	-.061842***	-.067574***	-.061842***	-.0718864***	0.0438	0.0375	0.0438	0.0344
S.E	-3.4019	-3.6868	-3.4019	-3.4575	1.5332	1.2950	1.5332	1.1369
Size	-.0126315**	-.0152004***	-.0126315**	-.016367***	.0134256*	0.0111	.0134256*	.0141385*
S.E	-3.0436	-3.6356	-3.0436	-3.4392	2.0584	1.6740	2.0584	2.0523
Tangibility	-0.0376	-0.0410	-0.0376	-.0507886*	0.0412	0.0392	0.0412	0.0703
S.E	-1.6935	-1.8589	-1.6935	-1.9785	1.1811	1.1247	1.1811	1.8953
Tax	0.0166	0.0008	0.0166	0.1012	-.5093929**	-.5281269**	-.5093929**	-.564133**
S.E	0.1542	0.0073	0.1542	0.8277	-3.0118	-3.1207	-3.0118	-3.1452
Dividends	-0.3877	-.4271155*	-0.3877	-0.3593	-.8160288*	-.8111548*	-.8160288*	-.8494001*
S.E	-1.9077	-2.0889	-1.9077	-1.5532	-2.5551	-2.5111	-2.5551	-2.5038
Growth	-1.580179**	-1.275136*	-1.580179**	-1.906204***	-0.3238	0.1836	-0.3238	-0.7331
S.E	-3.2644	-2.5624	-3.2644	-3.3432	-0.4257	0.2336	-0.4257	-0.8706
Cash Flow	.0088058***	.0093078***	.0088058***	.0095367***	-.0083072**	-.0079688**	-.0083072**	-.0085011**
S.E	4.0726	4.3199	4.0726	3.8698	-2.7388	-2.6232	-2.7388	-2.6016
Government	.0772198***	.0775384***	.0772198***	.0900921***	-.1086169**	-.1080392**	-.1086169**	-.1283951***
S.E	3.5982	3.6390	3.5982	3.6733	-3.2204	-3.2095	-3.2204	-3.5674
Institutional	-0.0036	-0.0019	-0.0036	-0.0126	-0.0296	-0.0279	-0.0296	-0.0359
S.E	-0.2159	-0.1186	-0.2159	-0.6589	-1.1433	-1.0806	-1.1433	-1.3110
Individual	0.0103	0.0124	0.0103	0.0163	0.0243	0.0270	0.0243	0.0177
S.E	0.5325	0.6446	0.5325	0.7384	0.7998	0.8906	0.7998	0.5500
Oil	-0.0290	-0.0312	-0.0290	-0.0414	0.0375	0.0355	0.0375	0.0251
S.E	-0.6704	-0.7260	-0.6704	-0.8495	0.5514	0.5234	0.5514	0.3507
B Materials	-0.0580	-0.0670	-0.0580	-0.0391	0.0663	0.0582	0.0663	0.0458
S.E	-1.0236	-1.1895	-1.0236	-0.6109	0.7439	0.6542	0.7439	0.4860
Industrials	-.1200032***	-.1277674***	-.1200032***	-.1311411**	.1169403*	0.1105	.1169403*	0.0972
S.E	-3.3202	-3.5563	-3.3202	-3.2101	2.0587	1.9475	2.0587	1.6092
C Goods	-.1030642*	-.1147463**	-.1030642*	-.1105153*	-0.0088	-0.0193	-0.0088	-0.0275
S.E	-2.4759	-2.7693	-2.4759	-2.3404	-0.1339	-0.2951	-0.1339	-0.3958
Health	.162349***	.1501381***	.162349***	.1682898**	0.0510	0.0401	0.0510	0.0422
S.E	3.5837	3.3285	3.5837	3.2832	0.7166	0.5632	0.7166	0.5607
C Services	-.1113052**	-.1218586**	-.1113052**	-.122551**	0.0678	0.0581	0.0678	0.0440
S.E	-2.9423	-3.2361	-2.9423	-2.8449	1.1400	0.9762	1.1400	0.6954
Telecom	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
Technology	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
S.E	.	.	.	.	.	.	.	.
R2	36%	37%			24%	23%		
N	440	440	440	440	440	440	440	440
Lagrange	chibar2(01)	0	Prob >chibar2	1	chibar2(01)	0	Prob >chibar2	1
Wald	chi2 (8)	2.97	Prob2	0.9359	chi2 (8)	6.47	Prob2	0.5943
Hausman	chi2(17)	369.31	Prob2	0	chi2(17)	7.87	Prob2	0.9692

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Table 5.64: United Arab Emirates Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care, industrials, technology and telecommunications.

UAE						
Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	-.1333847*	-.1497263**	-0.0972743	0.0111954	0.0252713	-.1918883***
S.E.	-2.439018	-2.956816	-1.682211	0.2430214	0.5995582	-3.494324
Constant	0.0041358	.5954729**	.6043597***	-.3278002*	.717302***	0.106236
S.E.	0.0261242	3.200	4.425	-2.38218	8.313909	0.7830161
Profitability	-0.142	0.085	.4279769**	-0.0232694	.3133008***	-.6463028***
S.E	-1.092	0.551	3.227	-0.2022597	3.741264	-4.81597
Liquidity	0.001	0.000	0.002	-0.000712	0.0007838	-.0060859***
S.E	0.653	-0.031	1.124	-0.4702555	0.7022319	-3.460127
Risk	-0.034	-.0853988*	-.058726*	-0.0159134	-.0703343***	0.0408876
S.E	-1.192	-2.571	-2.035	-0.6311581	-3.822219	1.422361
Size	-0.001	-.0271124***	-.0230885***	.0123138*	-.0154454***	.0136095*
S.E	-0.100	-3.537	-3.469	2.132126	-3.635478	1.997603
Tangibility	.0894898*	.0979572*	0.055	.2482742***	-0.0392561	0.0101794
S.E	2.509	2.450	1.391	8.132064	-1.777311	0.2905469
Tax	-0.093	.6537002***	-0.123	-0.0286146	-0.0019594	-.5398619**
S.E	-0.560	3.361	-0.732	-0.1940652	-0.0183958	-3.219065
Dividends	0.233	-0.344	-0.580	-0.1799944	-.4382393*	-.8232204*
S.E	0.737	-0.932	-1.812	-0.6448935	-2.155791	-2.566525
Growth	1.984416*	-0.744	0.456	1.771123*	-1.201526*	-0.0628957
S.E	2.494	-0.804	0.565	2.49901	-2.397456	-0.0780106
Cash Flow	-0.0046947	-0.0012099	-0.0036566	-0.0025882	.0095367***	-.0079825**
S.E	-1.610389	-0.3591203	-1.258976	-0.9718869	3.869795	-2.648863
Government	.0799901*	.1452642***	0.0172501	.0656481*	.0846649***	-.1357949***
S.E	2.26602	3.584065	0.4844463	2.111661	3.80203	-3.836912
Institutional	.1237418***	-0.0190751	0.0330319	-.0684716**	-0.0009777	-0.0489358
S.E	4.912751	-0.641247	1.289426	-3.075792	-0.0604299	-1.891548
Individual	.0741782*	-0.0031567	0.0157828	-0.0046597	0.0110342	0.018819
S.E	2.511297	-0.0915559	0.5221805	-0.1767124	0.5694753	0.6274741
Oil	0.0032755	0.039415	.1694853*	0.0223385	-0.0303016	-0.0726016
S.E	0.0496688	0.5113562	2.531648	0.3842755	-0.7171463	-0.9932846
B Materials	0.071977	0.0850924	-.2021443**	0.1259357	-.2188404***	0.1183177
S.E	0.8265943	0.809542	-2.83104	1.630477	-4.860056	1.552365
Industrials	-0.0130252	0.0836832	-.1131668**	.1549278**	-.27929***	0.0502583
S.E	-0.232128	1.232224	-2.831596	3.127556	-11.07803	1.239379
C Goods	-0.0080909	0.1219617	-.1616***	.223348***	-.2656096***	-.0940336*
S.E	-0.1247064	1.561127	-4.06514	3.892234	-10.62895	-2.315357
Health	0.0513077	0.1255114	0	0.1044237	0	0
S.E	0.7232561	1.516674	0	1.683986	0	0
C Servicses	0.1092005	.1428999*	-0.0620644	.1086453*	-.2700759***	-0.0323292
S.E	1.80658	1.971509	-1.432291	2.04146	-9.961623	-0.7354236
Telecom	0	0	.1537649*	0	-.1559728***	-0.0796367
S.E	0	0	2.147918	0	-3.464202	-1.06851
Technology	0	0	0	0	0	0
S.E	0	0	0	0	0	0
N	424	424	424	424	424	424

Table 5.65: United Arab Emirates SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDLVE	STDBVA	LTDBVA	TDBVA
Profit	-0.018	-0.007	-0.179	-0.008	0.147	0.176	-0.056	0.024	-0.196	-0.055	-0.121	-0.063
	0.35	0.44	<0.001	0.432	<0.001	<0.001	0.12	0.308	<0.001	0.222	0.06	<0.001
Size	-0.178	-0.131	-0.189	-0.116	-0.044	-0.182	-0.128	-0.045	0.076	-0.121	-0.063	0.246
	<0.001	0.003	<0.001	0.007	0.179	<0.001	0.003	0.174	0.054	0.088	0.166	0.277
Growth	-0.074	-0.036	0.048	0.218	0.057	-0.05	-0.054	0.032	-0.125	-0.063	-0.071	-0.122
	0.06	0.227	0.155	<0.001	0.114	0.148	0.127	0.248	0.004	0.109	0.285	0.083
Tang	0.178	0.09	-0.131	0.226	-0.123	-0.066	0.238	0.281	-0.068	0.246	0.067	-0.069
	<0.001	0.028	0.003	<0.001	0.005	0.08	<0.001	<0.001	0.077	0.002	0.153	0.095
Tax	0.074	0.145	-0.134	0.104	0.136	0.109	-0.192	0.201	0.152	-0.188	-0.106	0.149
	0.059	0.001	0.002	0.014	0.002	0.011	<0.001	<0.001	<0.001	0.249	0.223	0.26
Risk	0.204	0.23	-0.067	-0.092	-0.171	0.134	-0.048	-0.166	-0.086	-0.011	-0.124	-0.086
	<0.001	<0.001	0.078	0.026	<0.001	0.002	0.157	<0.001	0.035	0.395	0.002	0.02
Div	-0.037	-0.041	-0.227	0.107	-0.032	-0.043	-0.022	-0.015	-0.045	-0.021	-0.007	-0.046
	0.219	0.191	<0.001	0.012	0.248	0.183	0.32	0.375	0.172	0.351	0.467	0.27
Liqud	0.145	-0.045	-0.258	-0.029	0.055	-0.039	0.137	-0.02	-0.327	0.136	0.024	-0.326
	0.001	0.172	<0.001	0.272	0.122	0.203	0.002	0.335	<0.001	0.181	0.365	<0.001
Cash Flow	0.031	-0.062	-0.084	0.116	0.115	0.099	-0.049	-0.131	-0.05	-0.051	-0.214	-0.048
	0.254	0.095	0.038	0.007	0.008	0.018	0.15	0.003	0.147	0.134	0.005	0.197
Ownership												
Gov							0.106	0.268	-0.122	0.109	-0.09	-0.124
							0.012	<0.001	0.005	0.071	0.149	0.004
indv							0.109	0.144	0.163	0.108	-0.24	0.163
							0.01	0.001	<0.001	0.215	<0.001	0.007
Inst							0.083	-0.171	0.138	0.083	-0.032	0.138
							0.039	<0.001	0.002	0.265	0.296	0.225
Industry												
Oil							-0.086	0.02	0.127	-0.078	0.311	0.124
							0.035	0.334	0.067	<0.001	<0.001	0.065
Mater							0.084	-0.1	-0.101	0.078	-0.162	-0.097
							0.038	0.017	0.016	0.127	0.025	0.155
Indust							0	-0.091	0	0	0	0
							0	0.027	0	0	0	0
Cgoods							-0.054	0	-0.191	-0.048	-0.013	-0.19
							0.126	0	<0.001	0.246	0.416	0.008
Health							-0.041	-0.169	-0.164	-0.036	0.269	-0.164
							0.193	<0.001	<0.001	0.303	<0.001	0.017
Cserv							0.061	-0.239	-0.071	0.067	0.116	-0.073
							0.101	<0.001	0.067	0.119	0.087	0.147
Telec							-0.004	-0.183	-0.073	-0.009	0.363	-0.072
							0.465	<0.001	0.06	0.405	<0.001	0.095
Techno							0	0	0	0	0	0
							0	0	0	0.487	0.414	0.185
N	440	440	440	440	440	440	440	440	440	440	440	440
R2	18	11	13	23	17	19	27	29	31	25	26	36
Model Fit												
(APC)	0.106	P=0.006		0.106	P=0.006		0.107	P<0.001		0.108	P<0.001	
(ARS)	0.17	P<0.001		0.17	P<0.001		0.288	P<0.001		0.289	P<0.001	
(AARS)	0.152	P<0.001		0.152	P<0.001		0.267	P<0.001		0.256	P<0.001	
(AVIF)	1.143			1.143			1.226			Inf		

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Table 5.66: United Arab Emirates ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

UAE	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	10.63%	11.60%	7.80%	14.13%	1.53%	22.72%
Size	28.35%	5.37%	7.75%	11.57%	22.12%	3.73%
Growth	8.65%	3.19%	3.28%	6.71%	5.06%	8.66%
Tangibility	9.16%	13.70%	14.78%	16.10%	11.43%	10.17%
Non-Debt Tax shield	9.92%	11.37%	1.79%	19.12%	0.18%	17.40%
Volatility	13.04%	16.45%	4.79%	19.29%	23.85%	15.11%
Dividends	0.66%	24.65%	5.26%	0.57%	4.88%	13.88%
Liquidity	11.41%	8.20%	3.50%	8.82%	2.89%	0.22%
Cash Flow	8.17%	5.47%	51.05%	3.68%	28.05%	8.13%
Good prediction %	67.60%	65.16%	70.38%	78.75%	56.45%	70.03%
S.D of abs errors	0.12	0.13	0.0454	0.1375	0.1146	0.0354
RMSE	0.15	0.15	0.0466	0.1735	0.1341	0.0483
MAE	0.08	0.07	0.01039	0.10591	0.06962	0.0329
N	440	440	440	440	440	440
Adding Dummies						
Profitability	13.44%	0.29%	6.65%	15.69%	0.20%	10.20%
Size	1.70%	2.14%	11.36%	4.22%	17.43%	11.45%
Growth	4.70%	1.39%	0.30%	0.71%	0.91%	0.03%
Tangibility	9.88%	2.87%	39.42%	15.50%	32.13%	10.26%
Non-Debt Tax shield	11.83%	6.20%	4.47%	11.00%	0.81%	0.03%
Volatility	11.15%	23.90%	20.88%	9.40%	17.54%	14.33%
Dividends	12.35%	21.59%	4.23%	0.04%	2.01%	9.28%
Liquidity	12.29%	25.94%	5.84%	11.30%	0.03%	13.72%
Cash Flow	1.06%	4.66%	0.12%	6.27%	4.71%	0.01%
Ownership Dummies						
Government	3.40%	2.72%	0.15%	2.47%	0.02%	2.53%
Institutional	0.30%	0.04%	1.32%	0.89%	5.96%	1.03%
Individual	0.08%	0.00%	0.00%	0.00%	0.09%	0.11%
Industry Dummies						
Oil	0.08%	0.00%	0.00%	0.00%	0.09%	0.11%
Basic Materials	0.04%	0.00%	0.00%	0.05%	0.29%	0.14%
Consumer Goods	7.65%	3.01%	3.67%	0.18%	0.38%	6.83%
Consumer Services	1.75%	0.04%	0.05%	5.77%	0.53%	1.57%
Health Care	0.16%	1.28%	0.04%	0.00%	9.08%	4.40%
Industrials	6.35%	0.33%	0.02%	0.24%	0.01%	0.06%
Technology	1.80%	3.59%	1.46%	16.28%	7.77%	13.89%
Telecommunications	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Good prediction %	70.03%	58.19%	57.49%	88.50%	61.67%	73.87%
RMSE	0.0496	0.0243	0.0075	0.0208	0.0544	0.0200
MAE	0.0196	0.0096	0.0021	0.0082	0.0189	0.0108
S.D of abs errors	0.0456	0.0223	0.0072	0.0191	0.0510	0.0168
N	440	440	440	440	440	440

The following tables answer the research question:

What is the determinants of capital structure in MENA using Panel Data, SEM, ANN ?

Finally, the last results are for the MENA countries pooled sample which include all the countries which were tested before. First, the table of the short term debt panel data results is presented. Due to the data being from different countries the R^2 is substantially low and in the range of 5% across the models. The Wald test is significant and therefore it can be concluded that there is heteroskedasticiy. The table show that the Hausman test is significant and therefore it is not safe to use the random effect model. From the Table 5.67 the following conclusions could be drawn:

- Profitability is negatively significant with the short term debt in book and market value.

- Liquidity is negatively significant with the short term debt in book and market value.

- Size is positively significant with the short term debt in book and market value.

- Tangibility is positive and significant across the models for both short term debt in book and market value.

- Non-debt tax shield is positively significant for the short term debt for both market and book value.

- Dividends is significantly negative for both short term debt in book and market value.

- Growth is negative and significant for both the tobit and random models in the market value.

• Cash flow is significantly negative for both short term debt in book and market value but not for all models.

The second Table 5.68 show the long term debt using panel data models. The Wald test is significant for the fixed effect. The R^2 is not acceptable for the book debt with 1% and the same for market value. The Lagrange test is significant and the following could be concluded:

• Profitability is negatively significant for the long term debt in book and market values except for the OLS model.

• Liquidity is negatively significant for the long term debt in market and book values for the OLS and tobit model.

• Risk is positive with LTDBVA using fixed and random models and negative with LTDMVE using fixed and tobit.

• Size is positively significant for the long term debt in market values and for the LTDBVA only with the tobit model.

• Tangibility is positively significant in for the long term debt in book and market values.

• Non-debt tax shield is positively significant for the long term debt in book and market values except for the tobit for LTDBVA and the fixed effect for the LTDMVE.

• Dividends is negatively significant for the long term debt in book using tobit and market values for all models except the fixed model.

• Ownership individual and institutional are negatively significant for the long term debt in book values using tobit and OS but also negative for LTDMVE using tobit model only.

The third tables which is Table 5.69 shows the results for the total debt for both book value and market value in MENA. The Wald test is significant and therefore the errors reported are robust. The Lagrange test is significant and therefore the random effect could be not be used. The Hausman test is significant for total debt and significant for the total market value and therefore would indicate that it is possible to use the Random effect. The R^2 is lower than 18% for both the book and market value. From the Table 5.69 the following conclusions could be drawn:

- Profitability is negatively significant for the total debt in book and market values.

- Liquidity is negatively significant for the total debt in book and market values.

- Size is positively significant for the total debt in book and market values.

- Tangibility is positively significant for the total debt in book and market values across all the models.

- Risk negative and significant using the TDBVA except for fixed and random, on the other hand it is positive for the TDMVE and significant but not for the fixed effect.

- Non-debt tax shield is negatively significant for the total debt market values across all the models and positive with TDBVA only using the tobit and OLS models.

- Dividends is negatively significant in for the total debt in book and market values.

- Ownership government is negatively significant for the total debt in market values. Institutional variable is negatively significant for total debt in market values using the tobit model only and the same apply to individual.

- industry classification variable which are basic materials, industrials and technology are positive and significant for the tobit and random models only.

The only interest from Table 5.70 is the lagged variable of the leverage ratio. As it shows that the lagged dependent variable is positively significant for all the ratios except the TDMVE and therefore it would indicate that firms in MENA countries might adjust their capital structure .

The MENA full sample is tested as the previous table shows. As the model fit figures show the model does hold since the measures are significant for all the dependent variables. also the (AVIF) is within the recommended value. It is also notable that the r-square value are very low which is due to different countries included in the same model.Profitability is negative and significant across all the models except for the LTBVA. The size attribute is negative and significant with the short term and long term. Tangibility is positive and significant with short term and long term debt and negative with total debt. Tax is positively significant with with short term and long term debt and negative with total debt.

The second table show the results for Pooled data of all the MENA countries using the SEM-PLS approach. The model fits at the bottom of the model shows that the model fit is acceptable without dummies and good with dummies. However, the use of dummies increase the average variable inflation factor to infinity and therefore the results of the ownership and industry are handled with caution. The R^2 is good for all the models with or without the dummies except for the 3 market leverage measures. . As the table of the results the following could be concluded:

- Profitability is positively significant to both the long term and total debt in book values. It is also negatively significant to total debt in market value.

- Size attribute is significantly positive to total debt in both market and book

values. On the other hand, short term debt for market and book value in addition to the long term debt in books value are all negatively significant.

- Tangibility is significantly negative in relation to total debt in market and book values. Inversely, it is significantly positive to the 4 other measures.

- Non-debt tax shield is significantly negative in relation to total debt in market values. In contrast, it is significantly positive to the 5 other measures.

- Dividends variable is negatively significant to the total debt in market value.

- Liquidity is negatively significant to all the measures of leverage.

- Cash flow positively significant to total debt in market and book values. However, it is negatively significant to 4 other leverage measures.

- The ownership variable of government is significantly positive with long term debt in both market and book value. The individual variable is significantly positive to the short term debt in book and market leverage. It is also negatively significant to long term debt in market value and total debt in book and market values. Moreover, the institutional variable is positively significant with short term and long term debt in both market and book values.

- industry variables of basic materials, consumer goods and consumer services are all significantly positive to all the leverage ratio except the long term debt in book values. Oil variables is significant with the short term debt in both market and book value. Industrial is significantly positive for all the measures except the long term debt in book value which is negatively significant. Health is positively significant short term debt in book value and market value as well as the long term debt in market value. Finally, technology is significant and

positive with the short term debt and long term debt in both market and book value.

This table 5.72 shows the important variable using the ANN approach for the pooled sample which include all the countries included in this thesis. The good prediction is high with values of higher than 40%. From this table we could conclude the following:

- Size is important for short term debt in both book and market values.

- Non-debt tax shield is important for long term debt in both market and book values. Similarly, the short term debt in market values are important.

- Liquidity is important only for total debt in book values.

Table 5.67: MENA Short Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care, industrials, technology and telecommunications.

MENA	STDBVA				STDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	0.0424	-0.0118	-0.0141	-0.0277	.093252***	-0.0585	-0.0221	.0893323***
S.E.	1.8358	-0.3216	-0.2983	-0.8982	3.4948	-1.3516	-0.4077	3.3520
Profitability	-.1169813***	-.079602***	-.0857318***	-.1842948***	-.0869431***	-.1386477***	-.1363492***	-.1110343***
S.E	-5.4629	-4.2807	-4.8199	-6.2812	-3.5131	-6.3337	-6.5122	-3.4991
Liquidity	-.0030317***	-.0013705***	-.0015253***	-.0054002***	-.0045197***	-.0013298**	-.0016513***	-.0080817***
S.E	-5.8895	-3.6727	-4.1807	-7.2797	-7.5970	-3.0271	-3.8400	-9.2470
Risk	-0.0003	0.0014	0.0013	-0.0063	0.0052	0.0047	0.0045	0.0019
S.E	-0.0720	0.5839	0.5394	-1.2016	1.1377	1.6782	1.6254	0.3341
Size	0.0012	.0057358**	.0037121*	.0033132*	-0.0023	.0091047***	.0038309*	0.0004
S.E	1.1500	2.7541	2.2815	2.3696	-1.8788	3.7137	2.0203	0.2641
Tangibility	.0600665***	.0346623***	.0403896***	.1139901***	.0599343***	.0789156***	.0780868***	.1284432***
S.E	7.9736	3.5964	4.6324	11.4718	6.8840	6.9554	7.6331	11.5635
Tax	0.0040	.0833225***	.0754104***	0.0215	.3580486***	.1439219***	.1749941***	.4155924***
S.E	0.1684	3.7274	3.5440	0.6815	13.0921	5.4691	6.9888	12.2036
Dividends	-.1475725***	-0.0082	-0.0184	-.2869659***	-.3871492***	-0.0597	-.0822027**	-.5291156***
S.E	-3.5179	-0.2985	-0.6810	-4.8547	-7.9854	-1.8481	-2.5791	-8.2827
Growth	0.0777	-0.0296	-0.0234	0.2285	-.581125***	-0.1670	-.1983749*	-.9061339***
S.E	0.5722	-0.3642	-0.2904	1.2635	-3.7041	-1.7443	-2.0893	-4.1478
Cash Flow	-0.0007	0.0013	0.0007	-.001385*	-.0017303**	-0.0002	-0.0008	-.0021207**
S.E	-1.4387	1.7654	1.0643	-2.0331	-2.9667	-0.2862	-1.0456	-2.8151
Government	0.0118	0.0000	0.0017	0.0090	0.0067	0.0000	-0.0167	0.0000
S.E	1.4876	.	0.0871	0.8590	0.7317	.	-0.7430	.
Institutional	.0137481**	0.0000	0.0112	0.0076	0.0013	0.0000	-0.0030	0.0000
S.E	3.1915	.	1.0326	1.3248	0.2644	.	-0.2404	.
Individual	.0113876*	0.0000	0.0120	0.0113	.0256168***	0.0000	0.0260	0.0000
S.E	2.2689	.	0.9487	1.7087	4.4163	.	1.8002	.
Oil	-0.0136	0.0000	-0.0095	-0.0109	.0349553**	0.0000	0.0327	0.0000
S.E	-1.3383	.	-0.3729	-0.8250	2.9844	.	1.1205	.
B Materials	.0512466***	0.0000	0.0544	.0560416**	.0595481***	0.0000	0.0512	0.0000
S.E	3.3916	.	1.4340	2.7909	3.4100	.	1.1811	.
Industrials	0.0146	0.0000	0.0212	0.0144	.058005**	0.0000	0.0546	0.0000
S.E	0.9185	.	0.5319	0.6836	3.1601	.	1.1999	.
C Goods	0.0112	0.0000	0.0207	0.0012	.0528352**	0.0000	0.0531	0.0000
S.E	0.6984	.	0.5153	0.0554	2.8449	.	1.1547	.
Health	.0487041**	0.0000	0.0580	.0529143*	.0491721*	0.0000	0.0493	0.0000
S.E	2.8564	.	1.3516	2.3445	2.4952	.	1.0049	.
C Services	.0349487*	0.0000	0.0435	0.0400	.0677461***	0.0000	0.0657	0.0000
S.E	2.1687	.	1.0759	1.8750	3.6375	.	1.4211	.
Telecom	-0.0181	0.0000	-0.0178	-0.0218	0.0025	0.0000	-0.0103	0.0000
S.E	-0.9703	.	-0.3834	-0.8784	0.1146	.	-0.1931	.
Technology	0.0309	0.0000	0.0367	0.0358	.0730619***	0.0000	0.0731	0.0000
S.E	1.6317	.	0.7653	1.4218	3.3372	.	1.3352	.
R2	5%	1%			10%	3%		
N	6368	6368	6368	6368	6368	6368	6368	6368
Lagrange	chibar2(01)	12822.04	Prob >chibar2	0	chibar2(01)	12255.1	Prob >chibar2	0
Wald	chi2 (796)	2.7E+17	Prob2	0	chi2 (796)	4E+15	Prob2	0
Hausman	chi2(8)	17.23	Prob2	0.0278	chi2(8)	61.83	Prob2	0

Table 5.68: MENA Long Term Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

MENA	LTDBVA				LTDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	.122476***	0.0757	.1057656*	-0.0227	-0.0127	-0.0426	-0.0204	-.1578777***
S.E.	4.6989	1.7139	1.9919	-0.5669	-0.5461	-0.9837	-0.4378	-4.6050
Profitability	.1192569***	-.071518**	-.0446009*	-.1842948***	-0.0234	-.1081968***	-.0935607***	-0.0305
S.E	4.9330	-3.2042	-2.1027	-6.2812	-1.0848	-4.9403	-4.5466	-0.9653
Liquidity	-.0016822**	-0.0008	-.0009057*	-.0054002***	-.0012474*	0.0001	-0.0001	-.0032783***
S.E	-2.8946	-1.8274	-2.0746	-7.2797	-2.4105	0.1243	-0.1741	-3.8820
Risk	-0.0039	.0085381**	.0075685**	-0.0063	-0.0074	.0064469*	0.0049	-.0162473**
S.E	-0.8791	3.0093	2.6940	-1.2016	-1.8721	2.3158	1.7725	-2.7279
Size	-0.0022	-0.0005	-0.0005	.0033132*	.0034349**	.0066458**	.0043857*	.0087239***
S.E	-1.8713	0.0251	-0.2484	2.3696	3.2775	2.7095	2.5093	5.6409
Tangibility	.0765725***	.0486456***	.057***	.1139901***	.1361247***	.067467***	.0925937***	.2285379***
S.E	9.0037	4.2049	5.5285	11.4718	17.9751	5.9436	9.4148	20.6186
Tax	.2141942***	.0567646*	.080514**	0.0215	.3878624***	0.0177	.0915991***	.5045833***
S.E	8.0178	2.1156	3.1757	0.6815	16.3047	0.6739	3.7306	15.2212
Dividends	-0.0393	0.0075	0.0098	-.2869659***	-.154497***	-0.0615	-.0683094*	-.2430991***
S.E	-0.8300	0.2274	0.3020	-4.8547	-3.6636	-1.9033	-2.1535	-3.8930
Growth	-0.2533	0.0071	-0.0175	0.2285	0.1115	-0.0134	-0.0021	0.2753
S.E	-1.6531	0.0730	-0.1810	1.2635	0.8168	-0.1394	-0.0219	1.3559
Cash Flow	0.0003	0.0014	0.0010	-0.0008	-.0013866**	0.0001	-0.0006	-.0018115*
S.E	0.5381	1.5602	1.3036	-0.8782	-2.7407	0.1064	-0.8645	-2.4113
Government	0.0099	0.0000	0.0110	-0.0059	-0.0087	0.0000	-0.0105	-0.0194
S.E	1.1032	.	0.5038	-0.4375	-1.0924	.	-0.5634	-1.6687
Institutional	-0.0084	0.0000	-0.0056	-.0262025***	-0.0083	0.0000	-0.0039	-.0310063***
S.E	-1.7187	.	-0.4640	-3.5384	-1.9257	.	-0.3795	-4.8751
Individual	-.026804***	0.0000	-0.0232	-.0468487***	-0.0080	0.0000	-0.0024	-.0231223**
S.E	-4.7305	.	-1.6555	-5.4228	-1.5861	.	-0.1971	-3.1380
Oil	0.0021	0.0000	-0.0036	0.0068	-0.0088	0.0000	-0.0120	0.0045
S.E	0.1877	.	-0.1264	0.3951	-0.8652	.	-0.4934	0.3085
B Materials	-0.0055	0.0000	-0.0112	-0.0250	0.0222	0.0000	0.0218	0.0150
S.E	-0.3215	.	-0.2666	-0.9728	1.4621	.	0.6061	0.6829
Industrials	-0.0226	0.0000	-0.0294	-0.0435	0.0102	0.0000	0.0112	0.0009
S.E	-1.2631	.	-0.6658	-1.6114	0.6414	.	0.2950	0.0377
C Goods	-0.0042	0.0000	-0.0142	-0.0333	0.0102	0.0000	0.0109	-0.0070
S.E	-0.2342	.	-0.3189	-1.2174	0.6336	.	0.2863	-0.2993
Health	-0.0067	0.0000	-0.0110	-0.0214	-0.0012	0.0000	0.0001	-0.0095
S.E	-0.3473	.	-0.2307	-0.7381	-0.0713	.	0.0028	-0.3799
C Services	-0.0020	0.0000	-0.0070	-0.0148	0.0213	0.0000	0.0259	0.0165
S.E	-0.1124	.	-0.1565	-0.5396	1.3172	.	0.6746	0.7003
Telecom	-0.0197	0.0000	-0.0285	-0.0380	-0.0285	0.0000	-0.0355	-0.0447
S.E	-0.9352	.	-0.5529	-1.1998	-1.5190	.	-0.8030	-1.6333
Technology	-0.0307	0.0000	-0.0369	-0.0442	0.0188	0.0000	0.0115	0.0384
S.E	-1.4367	.	-0.6960	-1.3623	0.9868	.	0.2527	1.3924
R2	4%	1%			12%	1%		
N	6368	6368	6368	6368	6368	6368	6368	6368
Lagrange	chibar2(01)	11706.85	Prob >chibar2	0	chibar2(01)	9606.94	Prob >chibar2	0
Wald	chi2 (796)	3.9E+14	Prob2	0	chi2 (796)	1.1E+15	Prob2	0
Hausman	chi2(8)	29.9	Prob2	0.0002	chi2(8)	91.91	Prob2	0

Table 5.69: MENA Total Debt Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

MENA	TDBVA				TDMVE			
Variable	OLS	Fixed	Random	Tobit	OLS	Fixed	Random	Tobit
Constant	0.0392	0.0646	0.0306	-0.0204	-0.0256	0.0459	-0.0298	-.1022243**
S.E.	1.4670	1.5783	0.5634	-0.6494	-0.8470	0.9236	-0.4890	-2.9369
Profitability	-.188295***	-.2279625***	-.2282774***	-.1981616***	-.3681477***	-.3970875***	-.4071675***	-.4036898***
S.E	-7.6015	-11.0178	-11.4704	-6.8934	-13.1250	-15.8107	-16.9450	-12.6930
Liquidity	-.0078342***	-.0020239**	-.0024383***	-.012183***	-.0100777***	-.0032426***	-.0038492***	-.0156005***
S.E	-13.1565	-4.8745	-5.9821	-15.3607	-14.9460	-6.4338	-7.7889	-18.0145
Risk	-.0094019*	0.0004	-0.0001	-.0120838*	.0152346**	0.0058	.0064896*	.015371**
S.E	-2.0612	0.1527	-0.0334	-2.2812	2.9496	1.8017	2.0418	2.6446
Size	.0103784***	.00759**	.0088518***	.0126364***	.015093***	.0107978***	.0126815***	.0184448***
S.E	8.6059	3.2754	4.8078	9.0251	11.0525	3.8388	5.8848	11.9496
Tangibility	.0466919***	.027696**	.0331749***	.053203***	.0497069***	.0286875*	.0349885**	.0633208***
S.E	5.3582	2.5826	3.3884	5.2874	5.0375	2.2038	2.9898	5.6970
Tax	.0677947*	-0.0366	-0.0251	.0737678*	-.0712532*	-0.0539	-.0575548*	-.1234561***
S.E	2.4767	-1.4723	-1.0559	2.3306	-2.2988	-1.7855	-2.0035	-3.3768
Dividends	-.3880541***	-.126161***	-.1432648***	-.4944225***	-.8546006***	-.2190379***	-.2705785***	-1.04385***
S.E	-7.9969	-4.1301	-4.7468	-8.6313	-15.5529	-5.9073	-7.3840	-16.2243
Growth	0.0822	0.1774	0.1752	-0.0264	0.0705	0.0508	0.0632	-0.0983
S.E	0.5232	1.9602	1.9499	-0.1362	0.3964	0.4626	0.5784	-0.4515
Cash Flow	-0.0004	0.0009	0.0006	-0.0006	-0.0003	0.0000	0.0000	-0.0005
S.E	-0.7414	1.1069	0.8329	-0.8581	-0.4231	0.0078	0.0106	-0.6555
Government	-0.0126	0.0000	-0.0218	-0.0186	-.0358719***	0.0000	-.0559728*	-.0510696***
S.E	-1.3783	.	-0.9602	-1.7442	-3.4583	.	-2.2366	-4.3021
Institutional	0.0061	0.0000	0.0072	-0.0041	-0.0077	0.0000	-0.0101	-.0175812**
S.E	1.2249	.	0.5771	-0.7035	-1.3726	.	-0.7301	-2.7626
Individual	0.0002	0.0000	0.0024	-0.0001	-.0206458**	0.0000	-0.0191	-.0255338***
S.E	0.0425	.	0.1616	-0.0087	-3.1405	.	-1.1883	-3.4490
Oil	-0.0086	0.0000	0.0011	-0.0004	-0.0108	0.0000	0.0087	-0.0082
S.E	-0.7363	.	0.0374	-0.0264	-0.8148	.	0.2673	-0.5461
B Materials	0.0197	0.0000	0.0304	.0438618*	.081352***	0.0000	.0950643*	.1114047***
S.E	1.1287	.	0.6916	2.1207	4.1104	.	1.9638	4.8267
Industrials	-0.0102	0.0000	0.0082	0.0133	.0457094*	0.0000	0.0717	.0727508**
S.E	-0.5546	.	0.1774	0.6131	2.1972	.	1.4113	3.0002
C Goods	-0.0011	0.0000	0.0163	0.0211	0.0206	0.0000	0.0481	0.0440
S.E	-0.0570	.	0.3503	0.9586	0.9781	.	0.9369	1.7918
Health	-0.0104	0.0000	0.0086	0.0059	-0.0248	0.0000	0.0076	-0.0089
S.E	-0.5295	.	0.1732	0.2526	-1.1107	.	0.1393	-0.3442
C Services	-0.0284	0.0000	-0.0092	-0.0141	0.0014	0.0000	0.0280	0.0182
S.E	-1.5240	.	-0.1956	-0.6386	0.0678	.	0.5436	0.7399
Telecom	-0.0288	0.0000	-0.0012	-0.0063	-0.0246	0.0000	0.0124	0.0073
S.E	-1.3325	.	-0.0218	-0.2507	-1.0043	.	0.2097	0.2585
Technology	-0.0005	0.0000	0.0138	0.0242	.0610957*	0.0000	0.0838	.0953179***
S.E	-0.0243	.	0.2489	0.9400	2.4622	.	1.3715	3.3319
R2	9%	4%	0%		18%	7%	0%	
N	6368	6368	6368	6368	6368	6368	6368	6368
Lagrange	chibar2(01)	13101.75	Prob >chibar2	0	chibar2(01)	11970.77	Prob >chibar2	0
Wald	chi2 (796)	5.9E+19	Prob2	0	chi2 (796)	3.1E+17	Prob2	0
Hausman	chi2(8)	57.23	Prob2	0	chi2(9)	112.23	Prob2	0

Table 5.70: MENA Dynamical Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

MENA						
Variable	STDBVA	STDMVE	LTDBVA	LTDMVE	TDBVA	TDMVE
Lagged	.2655935***	.2377342***	.3186418***	.374036***	.4607556***	0.0337109
S.E.	8.912124	7.106954	10.44099	10.91257	11.94997	0.8087084
Constant	.1282269*	-0.078	.1440087*	-.166208	0.0585529	-0.0873275
S.E.	2.305942	-1.173	2.253	-2.512674	1.057951	-1.424974
Profitability	-0.018	-.1150522***	-0.015	-0.0469424	-.1339062***	-.219233***
S.E	-0.703	-3.901	-0.532	-1.613169	-5.45851	-8.001189
Liquidty	-0.001	0.000	-.0014366**	-0.000035	-.0017932***	-.002188***
S.E	-1.060	-0.654	-2.593	-0.0623442	-3.765996	-4.112131
Risk	-0.002	0.002	.0098517**	0.0050001	-.0075174**	0.0039515
S.E	-0.649	0.699	3.051	1.522566	-2.691618	1.273492
Size	-0.003	.0093121*	-0.005	.01172**	0.0030194	.0171836***
S.E	-1.045	2.494	-1.471	3.162514	0.9855986	5.03687
Tangibilty	0.006	0.028	0.031	.062142***	0.0135821	0.0084506
S.E	0.442	1.705	1.932	3.786069	0.9783793	0.5465515
Tax	0.035	.1018842**	-0.002	0.0480803	0.001928	0.0163079
S.E	1.203	2.984	-0.070	1.425466	0.0676256	0.5129737
Dividends	-0.004	-0.017	.084205*	-.0793163*	-0.0623485	-.0880595*
S.E	-0.131	-0.439	2.224	-2.071787	-1.920624	-2.429945
Growth	0.082	0.034	0.040	0.1892766	.507906***	.4303884***
S.E	0.948	0.334	0.408	1.887015	5.966843	4.407928
Cash Flow	0.0007607	0.0001319	-.0029987**	-0.0002334	-0.0005796	.0021135*
S.E	0.7794825	0.1147617	-2.677467	-0.2059182	-0.8580857	1.973029
Government	0	0	0	0	0	0
S.E	.	.	.	.	.	.
Instituional	0	0	0	0	0	0
S.E	.	.	.	.	.	.
Indivdual	0	0	0	0	0	0
S.E	.	.	.	.	.	.
Oil	0	0	0	0	0	0
S.E	.	.	.	.	.	.
B Materials	0	0	0	0	0	0
S.E	.	.	.	.	.	.
Industrials	0	0	0	0	0	0
S.E	.	.	.	.	.	.
C Goods	0	0	0	0	0	0
S.E	.	.	.	.	.	.
Health	0	0	0	0	0	0
S.E	.	.	.	.	.	.
C Servicses	0	0	0	0	0	0
S.E	.	.	.	.	.	.
Telecom	0	0	0	0	0	0
S.E	.	.	.	.	.	.
Technology	0	0	0	0	0	0
S.E	.	.	.	.	.	.
N	4776	4776	4776	4776	4776	4776

Table 5.71: MENA SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results.Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales, OI/SAL operating income to total sales, EBIT/SAL EBIT to sales and EBIT/TA which is EBIT to total assets. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, MTB market to book ratio, CE/TA capital expenditure to total assets. Tangibility is defined as the net fixed assets to total assets (NFA/TA), INVP/TA inventory and gross plant to to total assets, intangible assets to total assets (IA/TA)and Tang/TA tangible assets to total assets. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA), depreciation to operating income DEP/OI and effective tax rate. Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend payout ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share, STDV(ROA) standard deviation of ROA and STDV(ROE) standard deviation of ROE.Liquidity is defined as the current ratio which is the current liability to current assets, quick ratio, cash ratio and the working capital ratio. Cash flow attribute is defined as Cash to long term debt, short term debt and total assets. It is also defined as EBIT plus depreciation plus amortization to total assets EBITDEP/TA. The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

Determinant	Market			Book			Market			Book		
	STDMVE	LTDMVE	TDMVE	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE	STDBVA	LTDBVA	TDBVA
Proflabilty	-0.119	-0.059	-0.273	-0.088	0.023	-0.171	-0.083	-0.037	-0.172	-0.078	0.017	-0.174
	<0.001	<0.001	<0.001	<0.001	0.031	<0.001	<0.001	0.002	<0.001	<0.001	0.093	<0.001
Size	-0.08	-0.008	0.088	-0.064	-0.001	0.08	-0.057	-0.018	0.084	-0.061	-0.006	0.084
	<0.001	0.251	<0.001	<0.001	0.481	<0.001	0.076	<0.001	<0.001	<0.001	0.312	<0.001
Growth	-0.017	0.033	-0.049	-0.004	-0.028	0.006	-0.011	0.056	-0.034	-0.032	-0.025	-0.045
	0.081	0.004	<0.001	0.364	0.012	0.305	0.181	<0.001	0.003	0.005	0.021	<0.001
Tang	0.081	0.063	-0.071	0.043	0.08	-0.034	0.086	0.081	-0.056	0.082	0.09	-0.06
	<0.001	<0.001	<0.001	<0.001	<0.001	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tax	0.15	0.233	-0.03	0.068	0.117	0.039	0.148	0.222	-0.032	0.151	0.116	-0.03
	<0.001	<0.001	0.008	<0.001	<0.001	<0.001	<0.001	<0.001	0.006	<0.001	<0.001	0.008
Risk	0.012	-0.027	0.005	0.006	-0.025	-0.018	0.009	-0.024	0	0.008	-0.022	0
	0.168	0.014	0.343	0.321	0.022	0.073	0.241	0.026	0.495	0.255	0.043	0.497
Div	-0.038	-0.015	-0.058	-0.025	-0.006	0.032	-0.106	-0.065	-0.229	-0.109	-0.038	-0.227
	0.001	0.109	<0.001	0.023	0.312	0.005	<0.001	<0.001	<0.001	<0.001	0.001	<0.001
Liqud	-0.139	-0.06	-0.236	-0.104	-0.056	-0.199	-0.13	-0.058	-0.218	-0.13	-0.059	-0.221
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cash Flow	-0.033	-0.054	0.037	-0.064	-0.066	0.057	-0.029	-0.054	0.028	-0.022	-0.023	0.033
	0.004	<0.001	0.002	<0.001	<0.001	<0.001	0.01	<0.001	0.011	0.038	0.031	0.004
Ownership												
Gov							-0.011	0.04	-0.018	-0.012	0.041	-0.018
							0.188	<0.001	0.073	0.169	<0.001	0.08
indv							0.064	-0.004	-0.096	0.066	-0.067	-0.095
							<0.001	0.38	<0.001	<0.001	<0.001	<0.001
Inst							-0.045	-0.034	0.049	-0.045	-0.036	0.049
							<0.001	0.003	<0.001	<0.001	0.002	<0.001
Industry												
Oil							0.059	0	0.034	0.061	0.008	0.034
							<0.001	0.488	0.003	<0.001	0.254	0.003
Mater							0.162	0.111	0.182	0.164	-0.005	0.184
							<0.001	<0.001	<0.001	<0.001	0.35	<0.001
Indust							0.209	0.11	0.191	0.213	-0.049	0.194
							<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cgoods							0.159	0.088	0.111	0.163	-0.006	0.113
							<0.001	<0.001	<0.001	<0.001	0.311	<0.001
Health							0.099	0.042	0.015	0.102	0.007	0.016
							<0.001	<0.001	0.122	<0.001	0.301	0.1
Cserv							0.191	0.128	0.084	0.195	0.016	0.085
							<0.001	<0.001	<0.001	<0.001	0.095	<0.001
Telec							0.035	-0.009	0.022	0.035	-0.021	0.024
							0.002	0.241	0.037	0.002	0.045	0.028
Techno							0.079	0.029	0.076	0.079	-0.031	0.077
							<0.001	0.01	<0.001	<0.001	0.007	<0.001
N	6368	6368	6368	6368	6368	6368	6368	6368	6368	6368	6368	6368
R2 %	4	3	10	4	3	10	12	10	19	12	5	21
Model Fit												
(APC)	0.082,	P<0.001		0.082,	P<0.001		0.083	P<0.001		0.127	P<0.001	
(ARS)	0.080,	P<0.001		0.080,	P<0.001		0.135	P<0.001		0.124	P<0.001	
(AARS)	1.065	P<0.001		1.065	P<0.001		0.132	P<0.001		0.124	P<0.001	
(AVIF)	1.292			1.292			4.035			3.897		

Table 5.72: MENA ANN Results

This table shows the ANN results. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA). The table shows results with and without the dummies variables. Ownership structure dummies are for the major share holders either governments, individuals or institutions where it takes 1 or 0 other wise. The industry dummies are to test the effects of being in a different where it takes 0 or 1 if a company in certain industry. The industries are Oil, basic materials, consumer goods, consumer services, health care,industrials, technology and telecommunications.

MENA	Book Leverage			Market Leverage		
Variable	STDBVA	LTDBVA	TDBVA	STDMVE	LTDMVE	TDMVE
Profitability	13.73%	11.79%	10.40%	9.29%	8.38%	10.99%
Size	22.13%	13.24%	12.53%	15.60%	11.12%	13.73%
Growth	9.87%	5.70%	7.79%	7.73%	7.84%	8.22%
Tangibility	12.33%	13.07%	10.08%	14.13%	13.07%	10.33%
Non-Debt Tax shield	12.01%	24.97%	14.58%	21.30%	31.08%	12.14%
Volatility	7.01%	7.76%	9.75%	5.90%	7.71%	10.15%
Dividends	4.09%	5.81%	10.80%	5.78%	5.15%	8.61%
Liquidity	9.27%	10.71%	15.23%	8.97%	10.31%	13.98%
Cash Flow	9.55%	6.95%	8.83%	11.28%	5.34%	11.85%
Good prediction %	47.74%	40.28%	65.29%	45.05%	43.55%	64.06%
S.D of abs errors	0.09	0.13	0.1046	0.1204	0.1118	0.1262
RMSE	0.12	0.15	0.1399	0.1489	0.1316	0.1637
MAE	0.07	0.08	0.09288	0.08765	0.06931	0.1042
N	6368	6368	6368	6368	6368	6368
Adding Dummies						
Profitability	10.51%	5.88%	7.42%	8.30%	8.10%	10.34%
Size	12.41%	11.21%	10.57%	10.55%	10.88%	12.61%
Growth	3.00%	0.26%	1.42%	1.45%	5.31%	1.15%
Tangibility	11.01%	9.11%	7.85%	10.48%	12.10%	7.61%
Non-Debt Tax shield	8.18%	14.62%	11.23%	19.42%	16.06%	10.99%
Volatility	0.15%	7.47%	9.79%	6.22%	7.31%	3.12%
Dividends	7.03%	7.47%	5.13%	3.06%	3.92%	7.45%
Liquidity	8.92%	7.41%	12.16%	7.97%	9.00%	10.47%
Cash Flow	12.16%	11.50%	8.80%	9.97%	4.95%	9.86%
Ownership Dummies						
Government	3.37%	3.71%	3.33%	3.09%	2.77%	0.78%
Institutional	1.34%	3.21%	2.21%	2.61%	1.08%	1.90%
Individual	3.23%	0.89%	3.09%	1.06%	3.18%	4.03%
Industry Dummies						
Oil	2.65%	4.64%	3.64%	2.39%	2.65%	2.90%
Basic Materials	4.03%	3.13%	2.90%	2.05%	1.35%	5.09%
Consumer Goods	0.19%	0.48%	0.08%	2.74%	0.11%	0.22%
Consumer Services	0.45%	1.72%	0.45%	0.44%	3.14%	0.25%
Health Care	3.61%	2.46%	3.50%	2.90%	2.73%	2.15%
Industrials	1.65%	0.03%	0.82%	0.09%	0.39%	2.95%
Technology	3.45%	2.19%	3.25%	2.84%	2.69%	3.72%
Telecommunications	2.66%	2.61%	2.35%	2.38%	2.25%	2.41%
Good prediction %	56.62%	45.59%	75.01%	56.62%	49.24%	74.77%
RMSE	0.0441	0.0481	0.0372	0.0487	0.0404	0.0483
MAE	0.0192	0.0186	0.0175	0.0218	0.0154	0.0226
S.D of abs errors	0.0397	0.0443	0.0328	0.0435	0.0374	0.0427
N	6368	6368	6368	6368	6368	6368

5.5 Discussion

As previously we hypostasized that there is negative relation between leverage and profitability. The results of the three methods are in agreement to some extent with a few different cases. However, noticeably differences exist between the measures of leverage. The pecking order theory suggest that the profitability measure have a negative relation with leverage while the trade-off theory suggest that it is positive. Therefore, the results show that Bahrain, Jordan, Kuwait, Morocco, Qatar, Saudi Arabia all follow the pecking order theory. In this study we notice that the three methodologies might not point to the same result. For example, Egypt long term debt have a positive relation with profitability using the panel data models while the coefficient of the total debt is negative when using the SEM. Oman and UAE both have a positive relation between the long term debt and profitability and negative relation with the total debt. Therefore, it is possible to say that they follow both theories.

The relation between the liquidity measures and the all the definitions of leverage for all the countries in the sample is negative using the panel data and the SEM approaches. With the exception of Morocco and Oman who both have a positive result for the long term debt with liquidity. The notion is that firms would use the internal cash and therefore would not issue either debt or equity. Therefore based on our results we could conclude that we accept the hypothesis and find a strong evidence to support it. Although, the positive results that we encounter with few countries were the relation is positive, this results does not an interpretation in the capital structure context. Furthermore, we also find that the total debt in book values is positive to liquidity for Saudi Arabia using the panel data models. However, this relation is not confirmed by the SEM approach.

As mentioned in the hypotheses development section before that the firms with

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volatile earnings or unstable share price would face higher costs of financial distress and thus debt agency problem is stronger. The results for the risk variable are not strong as expected. In Several countries we find the relation to be no significant at all such as Bahrain, Jordan, and Kuwait. In addition, we find also an inverse relation to what both the pecking order and the trade-off theory suggest which is that the relation is negative. Most of our results are positive. The only countries with the negative results are Saudi Arabia and UAE.

Accordant to the trade-off theory the relation between leverage and tangibility is positive but the pecking order theory suggest that the relation is negative. Our findings when using the total debt and the long term debt are that Bahrain, Egypt, Kuwait, Morocco, Tunisia and UAE follow the trade-off theory. On the other hand, based on the short term debt we find that Jordan, Tunisia, Kuwait and Morocco all follow the pecking order theory. The problem with the theories of capital structure is that there is no exact definition for the measure of leverage that should be used. Therefore, based on that we find that the results for tangibility are between both theories and we can't reject nor accept the hypothesis.

The pecking order theory suggest that firms prefer to finance their projects using internal funds. Therefore, they would use the cash profit instead of paying it as dividends to shareholders. For that reason the expectation is that there is a negative relation between dividends and leverage. It is worth mentioning that the majority of firms in the sample of this study don't pay dividends at all. The results show that all the countries in the sample have a negative relationship between the long term debt and dividends. The results for the long term debt on the other hand are different between the panel data and the SEM model. The SEM shows that all the relations are significant and negative while the panel data results show that Egypt and Palestine both have positive relationship. Based on that we could conclude

that firms that the pecking order theory suggestion for the dividends is strongly supported in the MENA countries.

As discussed previously the trade-off theory suggest a negative relation between the leverage and growth opportunities. On the other hand, the pecking order theory is not clear and it is noted that a positive relation is expected. From the results we find that the results are either negative for all measures or positive. We find that Bahrain, Egypt, Jordan, Kuwait, Morocco, Palestine, Qatar, Tunisia all have a negative relation which would suggest that these countries follow the trade-off theory. On the other hand, Oman and Saudi Arabia have a positive relation and thus would suggest a pecking order theory in these countries. However, the results of Oman are not confirmed by the SEM and the results are negative. UAE have a negative relation with total debt and positive with the short term and long term debt. Therefore, we accept the hypothesis for the countries with the negative results.

The cash flow is linked with the agency theory where it is suggested that using debt would decrease the amount of cash the managers have to spent and act as a discipline tool for managers and thus suggest that firms with high cash flows would prefer to finance their projects using debt to monitor managers. Therefore the agency theory suggest a positive relation. On the other hand, the pecking order theory suggest that firms with high internal cash would use to finance their projects and this won't need any debt and therefore suggest a negative relation. As discussed in the hypotheses section it is expected that the total debt have a negative relation while the long term would have a positive relation. The results show that Bahrain, Jordan, Kuwait, Morocco, Oman, Palestine, Qatar, Saudi Arabia and UAE all have a negative relation which support the pecking order theory. Therefore, we accept the hypotheses and conclude that the majority of the countries in our sample follow the pecking order theory. On the other hand, Qatar and Saudi Arabia both

have a positive result for the short and long term debt which is in line with the agency theory suggestion. The only country which is not following either of the theories is Egypt with a positive relation to total debt.

The agency theory suggest that managers ownership reduce the agency costs. On the other hand, empirical results discussed in Chapter 4 suggest that firms owned by an institution would have low debt. The same is applicable to individual and Institutional and therefore it is suggested that if the relation is negative then it is line with the previous studies. If it is positive then it have no merit. The findings show that for the majority of the countries it is negative and significant. However, the results differ for the same country when changing from book debt to market debt and also when using different methods. Due to the fact that many models which include the dummies for the industrial sectors have problem with the variance inflation factor these results should be interpreted with caution.

Chapter 6

Capital Structure in Financial firms

6.1 Introduction

Islamic finance or banking follows the rules of Sharia Law in the financial trans-
actions. Islamic banks are operating worldwide with conventional banks opening
Islamic windows to try to capture the growth in the industry. According to Earnest
and Young (2011) Islamic banks assets with commercial banks reached 1.1 trillion
at the end of 2012 and with MENA Islamic Banking doubling by 2015 to reach 990
billion dollars. This growth makes it very important to study the capital structure of
Islamic and conventional banks in the MENA countries area.

The Islamic banking industry is growing rapidly at 17% percentage annually. A
report by Ernst and Young forecasted that the global Islamic banking assets would
reach 1.8 trillion dollars by the end of 2013. As the figures show the industry is
booming at the moment, the vast size of the industry has attracted conventional
banks to establish Islamic banks operation windows to take a share of the market.
Despite the vast promise of the Islamic banking industry it has not always been the
case. Yudistira (2003) states that Islamic banks suffered more than conventional
banks from the global crisis between 1998-1999. At that time the estimated Islamic
banking and finance industry size was around US$100 billion as reported by Hamwi
and Aylward (1999).

Capital structure research started with Modigliani and Miller (1958) exceptional

work. Since then a significant amount of research has been directed toward finding the factors that affect the decision of firms in choosing their capital structure. However, banks were always omitted on the basis that the choice of their capital is controlled by regulations. Despite that, it is important to understand the determinants of banks capital structure as non-financial firms. Recent evidence from Gropp and Heider (2010) shows that banks capital structure is determined by standard capital structure theories while regulations are of a second order.

The remainder of this chapter is structured as follows. First section (6.2) discuss the research gap and the contribution of this study. Then, section (6.3) provides a brief literature review of the determinants of capital structure and Islamic banks followed by hypothesis development. Section (6.4) provides main results and findings of this chapter. After that, Section (6.5) discuss and summaries the empirical results.

6.2 Research Gap for Islamic Studies

Islamic finance is based on principle of fairness for all the members of the society. From this principle Islam did forbid the use and charge of (Riba) and replaced it with the profit-loss sharing principle in which both parties share the risks and rewards of the loan agreement. Therefore, Islamic banking is they key toward and Islamic finance and an Islamic economy. The importance of using banks and the banking system did lead to the invention of the Islamic banks which is derived from the rules of the Sharia law. Since Islamic banks started to operate it did lead to conventional banks opening the Sharia windows or Islamic branches in which these banks try to attract customers who prefer to use Islamic banking product. Despite a huge debate to classify these windows as Islamic both are growing rapidly. Khan and Mirakhor (1989) state that the Islamic profit and loss sharing does contribute to the welfare of the society, where labour, capital and entrepreneurship are combined toward

production and economics development. Although, they agree a percentage of the profit it is not considered to be (Riba) as it is not guaranteed. Iqbal (1997) also state that the cornerstone of the Islamic banking is the prohibition of (Riba). Although the importance of Islamic banking to both Muslims and the industry to our knowledge there is no theory about the capital structure of Islamic banks. Few studies did discuss how the Islamic bank capital structure should be and how it is different to the conventional banks capital structure. Therefore, this chapter will try to answer this question empirically to shed light on the difference in the determinants of capital structure of Islamic and conventional banks in the MENA countries area. This study also intend to test if the capital structure can be explained by traditional theories such as pecking order and trade-off theory. The main contribution of this study is to test the determinants of the capital structure of Islamic banks. To our knowledge this was not tested before. This study will also introduce the credit ratings as a possible determinant for capital structure in the MENA countries banks; as it was only used in studies of non-financial firms before. This study also test the ownership structure relationship to the Islamic banks capital structure.

6.3 Literature Review and Hypothesis Development

Modigliani and Miller (1958) is the base for research on capital structure theory. By showing what is irrelevant they opened the door for further investigation towards what is relevant. In their theory (which is also called the Irrelevance theory), the main idea they argued is that under specific assumptions it makes no difference if a company is financed using debt or equity. The assumptions they suggested are: All investors have complete knowledge about the future returns, all firms within an industry have the same risk irrespective of capital structure, no taxes or transactions costs, individuals and corporations borrow easily at the same rate of interest, all earnings are paid out as dividends and there is no growth, the average cost of

capital is constant. In their second proposition Modigliani and Miller (1963), they added taxes to their model and concluded that firms should use as much debt as they can to take advantage off the debt tax shield. After their work several theories tried to relax the assumptions, which are the trade-off theory, pecking order theory, agency theory and market timing theory.

The trade-off theory was introduced by Modigliani and Miller (1963), however, their conclusions were criticized by Kraus and Litzenberger (1973). Kraus and Litzenberger (1973) put into state preference the tax advantage of debt and bankruptcy penalties. Furthermore, it assumes that there are several benefits and costs accompanying the use of debt. Then, it was extended to include benefits and costs of debt associated with agency conflicts. The trade-off theory was heavily criticized by Myers (1984); he argued that the theory is accepted to a certain degree however its low value of the coefficient of determination R2 is not satisfactory. Another form of trade-off theory is the dynamic, which assumes that a company's capital structure in specific time is not their target capital. Instead firms do adjust their capital structure dynamically. According to Leary and Roberts (2005) companies move toward and adjust over years to reach their target capital structure.

Pecking order theory was first suggested by the classic book of Donaldson (1961). He studied the general attitudes towards the use of external debt and surveyed companies and found that companies prefer internal sources of funds rather than external. As he finds in his book: It has been established that a majority of these companies (12 out of 20) had demonstrated the capacity to generate internally virtually all (96%) of their fundsİ (Donaldson, 1961: p. 51).

Although the original idea was Donaldson (1961), Myers (1984) put the theory into practice. They assumed that given information asymmetry is between stakeholders, firms will finance their investment project in an order that is first to internal

funds then debt before equity. The intuition is that companies prefer debt over risky stocks and that issuing equity might indicate for stock holders that stocks are over-priced which would result in a decrease in the share price.

Modigliani and Miller (1958) argue that the value of the firm is independent of its capital structure and thus the method in which firms raise their capital would be irrelevant. However firms operate in an environment of imperfections, where bankruptcy costs, financial distress and transactions costs exist. They also operate within governing regulations such as deposits insurance. Therefore, their market valuation is dependent on their capital structure and level of debt in their capital (Grais and Kulathunga 2007). Rajhi and Hassairi (2012) mention that the MM theory of capital structure is based on the assumption that funds can only be raised through debt and equity: in the case of banks it is between equity , debt and deposits.

Gropp and Heider (2010) work is the motivation for this chapter. They state that deposit insurance and capital regulation are of second order and that there are con-siderable similarities between banks and non-financial firms. Their work opposed the general perception in the research bodies that banks capital structure is de-cided by minimum capital requirement and that capital structure theories are not applicable to financial firms. Their key findings can be summarized as follows: first, standard determinants of firms capital apply to large publicly traded banks in the US and EU except for banks near minimum capital requirements. Second, banks tend to hold more discretionary capital, especially banks which are profitable, divi-dend paying and have high MBT ratios. On the other hand, another theory widely accepted in the literature of banks capital structure is as argued by Froot (2001) that banks capital structure is a buffer against negative shocks to their value.

Octavia and Brown (2010) follow in the footsteps of Gropp and Heider (2010) however they apply their study to the emerging markets. Their findings support

the theory that capital regulations are of second order and that standard determinants of capital structure have more power in explaining the capital structure. They use five determinants, which are size, profitability, market-to-book ratio, collateral value and dividend paying status. They find a negative relationship between profitability and collateral with book leverage. On the other hand, they find a positive relationship between size, MTB and dividends with book leverage. They conclude that the determinants of capital structure have explanatory power in the developing countries banks.

Sharpe (1995) based his study on the Australian banks sector. His choice was based on the fact that research based on the US is unable to examine the determinants of capital structure in the absence of deposit insurance and regulation. In his study he tries to compare pre-1984 and post 1984 to see the effect of the capital adequacy requirements. The findings are consistent with the pecking order theory of Myers and Majluf (1984). He also concludes that the behaviour underlying the short and long-term capital accumulation process was unaffected by the introduction of capital adequacy requirements.

Karim and Ali (1989) suggest that Conventional banks use both debt and equity to finance their investments while Islamic Banks are expected to finance their investments using mainly equity financing and customer deposits accounts. Metwally (1997) argues that the higher the leverage ratio, the higher the probability that the bank is Islamic. This could be linked to the fact that Islamic banks are more reliant on equity and therefore the equity to total assets is higher in Islamic banks than conventional banks. Furthermore, Samad (2004) finds that the ratio of debt to total assets is significantly lower in Islamic Banks. Several studies argue that ROA and ROE are higher in Islamic banks rather than conventional banks. These studies are Iqbal (2001), Rosly and Bakar (2003) and Olson and Zoubi (2008). In addition,

Kaouther et al. (n.d.) finds that the relation between leverage and ROE is negative while positive with ROA. Liquidity is a very important factor in the banking system as mismanaging the bank liquidity could cause bank ruin. Parashar (2010) notes that Islamic banks have less liquid assets in comparison to conventional banks.

The main goal is to test if bank capital structure is determined by the standard determinants and not by the regulatory capital requirements. We try to test these variables for both Islamic banks and conventional banks. We use four variables to represent leverage, 2 for Book leverage and 2 for Market leverage. Any significant results in one of these will result in rejecting the hypothesis: deposit insurance and capital regulation are of first order in the decision of capital structure and then we could conclude that the capital regulations and requirements are of second order. Gropp and Heider (2010) suggest that if the coefficient of the determinants of capital structure is zero then the view of the regulation of banks capital structure holds. In addition, Juca et al. (2012) and Sharpe (1995) find that standard determinants of capital structure are significant. In the following section we develop the main hypotheses of this study.

6.3.1 Profitability

The profitability of the company is the sole purpose of the firm. The trade-off theory proposes that companies with higher profitability will have a higher level of leverage which can be explained as a positive relationship as Modigliani and Miller (1963) argue. In contrast the pecking order theory of Myers and Majluf (1984) suggest a negative relationship as companies prefer to use internal funds before debt and equity and therefore if the company generates more profit it is expected that it will have a lower leverage.

We use four variables as the proxy for profitability to construct the latent of Profit. These are Return on Equity ROE, and Return on Assets ROA as adopted by Booth

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et al. (2001) ,Wald (1999) and Song (2005). We also use Profit Margin Ratio PM and Operating Profit Margin ratio. Strong support for the pecking order theory exists in the literature as in Frank and Goyal (2009), Rajan and Zingales (1995) and Titman and Wessels (1988). Furthermore, studies which focused on the determinants of banks find a negative relationship such as Gropp and Heider (2010) and Octavia and Brown (2010). Therefore the following hypothesis will be tested:

H1: There is a significant and negative relation between the profitability of the bank and its financial leverage.

6.3.2 Risk

Frank and Goyal (2009) argue that companies with volatile stock are expected to be riskier due to the fact that prices reflect the business risk of the bank. Both the pecking order theory and the trade-off theory predict a negative relationship between the risk and leverage. Higher risk means that the probability of paying their debt is less and hence lenders will ask for higher return. Bradley et al. (1984) debate that companies with higher volatility are expected to have less leverage. Furthermore, DeAngelo and Masulis (1980) argue that companies with high variability of earnings are expected to have higher cost of debt and lenders might not lend to these companies. We use yearly standard deviation for price volatility as used by Halov et al. (2010) and Bradley et al. (1984). We also use the following measures to represent the riskiness of the company operations. These are Alpha and Beta for each stock. We suggest the following hypothesis:

H2: There is a significant negative relationship between the risk of the bank and its financial leverage.

6.3.3 Dividends

Dividends proxy is one of the corners of the pecking-order-theory. As the theory of the pecking-order suggests, companies finance their projects in an order where

internal funds are their first choice. Therefore they tend to retain earnings and not pay them as dividends to shareholders. The relation between the dividends paid and the leverage is negative as Frank and Goyal (2007) found in their analysis. They argue that more investigation needs to be done in this area, as results are ambiguous. Dividends relationship with leverage could only be explained in the light of the pecking order theory as there is no firm theory in that regard under the trade off theory.

Different measures to represent the dividends proxy are used in the literature. Frank and Goyal (2007) found a negative relationship between the amount of dividends paid and the leverage. Myers and Majluf (1984) argue that although there are cases where firms issue stocks while they could issue debt and thus reject the whole theory of the pecking order, on aggregate it is evidence that the pattern exists that proves that companies think of the dividends as first choice. Furthermore, Ben Naceur et al. (2006) and Al-Ajmi et al. (2009) supported the negative relationship. We define the dividends proxy in 3 variables. First we use the dividends pay-out ratio (DVD_PR), then dividends per share (DPS) and log of the amount paid in dividends ($Dive_PO$). We test the following hypothesis:

H3: There is a significant and negative relationship between the dividends paid by the bank and financial leverage.

6.3.4 Size

Trade-off and the pecking order theories argue that large firms tend to have higher leverage than small firms. Rajan and Zingales (1995) and Titman and Wessels (1988) suggest that large companies are in general more diversified and have more firm cash flows which would result in lower probability of bankruptcy. Hence, we expect a positive relation between leverage and firm size. Akhtar and Oliver (2009) find a similar relationship for both multinational and domestic Japanese firms.

Furthermore, studies in the emerging market found similar results to the previous ones such as Huang and Song (2006), Booth et al. (2001) and Rajan and Zingales (1995) who all support a positive relationship. The previous studies are based on non-financial firms but could also be generalized to include banks like the findings of Gropp and Heider (2010) and Octavia and Brown (2010). Different ratios are used to represent the size of the company. These are the natural logarithm of total assets, natural logarithm of Sales (Revenues) and the natural logarithm of Market value. The three measures are used in this study. Based on this discussion, we test the following hypothesis:

H4: There is a significant and positive relationship between size and leverage.

6.3.5 Growth

There is mixed evidence in the literature about the effect of growth on capital structure. Successful firms who have high growth are expected to require large injection of capital to retain their profitability. The trade-off theory predicts that firms with more investment opportunities will tend to issue more equity and have less leverage. The reason is that firms with high growth opportunities prefer to have more flexibility that debt cannot provide and therefore suggest a positive relationship. On the other hand the pecking order prediction is more complicated. A simple prediction could be that firms who expect large investments in the future should use more leverage to finance their investments, as the retained earnings alone are not enough. However, the pecking order theory also suggests that highly leveraged firms will not take more profitable investments simply because risks will be carried by equity holders and bond holders will gain the bigger percentage of the returns as defined by Myers (1977). He also argues that the agency cost problem can be solved if firms use short-term instead of long-term debt. We expect a positive relation to growth if growing firms substitute short-term debt for long-term debt. Barclay

and Smith (1995) find that firms who are regulated have more long term debt in their capital structure and therefore suggest a positive relationship between capital structure and growth opportunities. Several studies' findings were similar such as Goyal et al. (2002) who finds that US defense companies have a positive relationship with leverage. Al-Ajmi et al. (2009) also find support for the trade-off theory; they find a positive relation in a sample of companies in Saudi Arabia. In addition, Chen2004 also finds a positive relationship in a sample of Chinese companies. Furthermore, Al-Sakran (2001) finds that the effect of growth on leverage is negative for certain sectors and insignificant for others. This could be interpreted as a company in different industries having a different relationship between leverage and growth. We use 3 measures to represent this proxy. These are the percentage of the change in the value of total assets, percentage of change in the yearly revenues and the percentage of change in the market value every year. Based on the above, we test the following hypothesis:

H5: There is a significant and negative relationship between growth opportunities of the bank and its financial leverage.

6.3.6 Ownership Structure

Jensen and Meckling (1976) suggest that there are agency costs between shareholders and debt holders. Another conflict also exists between managers and shareholders. These conflicts play a vital part when the company faces financial distress. Therefore, firms should choose the optimal capital structure and ownership in a way that reduces total agency costs. Furthermore, Berger and Bonaccorsi di Patti (2006) argued that the agency costs' main components are separation of ownership and control. They also emphasised that excluding the ownership structure from the test of agency costs hypothesis might bias the results. They used variables for insider shareholders, shareholders holding more than 5% and intu-

itional shareholders. In addition, Michaely and Vincent (2012) find that institutional holdings are a significant determinant of capital structure. They suggest that there is a negative relationship between institutional ownership and capital structure.

These results were also verified by a study based on the Saudi Arabia stock exchange by Al-Ajmi et al. (2009). On the other hand, Sharpe (1995) finds that there is no difference between the privately owned banks and the government-owned banks. They used dummy variables for government and private owned banks and concluded that both have the same behaviour in their choice of capital structure. Al-Ajmi et al. (2009) find a similar result and they used three dummy variables to model the ownership structure; these are government, family and institution. In this study we intend to use more variables to investigate more.

The Bankscope data base contains data about the ownership structure. Since we plan to use more than one model we created two sets of variables. The first set are dummy variables showing the ultimate owner of the bank (the largest shareholder) who owns a stake larger than 25%. The second set is the ownership percentages of the largest shareholders in the company. The institutional variables we intend to use are Individual, Holding company, Cooperation, Insurance firm, Bank, Government, Investment advisor. For example, for the government dummy we assign 1 for companies owned by governments or government funds or any other firm controlled by a government and 0 for firms, which are not owned by governments. It is also worth mentioning that some banks are owned by a combination of more than one kind of owner, therefore we assign several scores for the same bank. The following hypothesis is tested:

H6: There is a significant and negative relationship between bank leverage and ownership structure.

6.3.7 Age

The argument is that young firms depend heavily on debt as they do not have internal funds to finance their operations. It is also argued that old companies have good relationships with banks and it will be easier for them to enter the debt markets. Previous empirical studies found different results depending on the chosen variable for the debt. Romano et al. (2001) found a negative relationship between leverage and firm age in the family business. Age variable is used as a numerical variable in the SEM-PLS. It is also used as a dummy variable where banks were grouped into three categories the first one is Age_A which include banks more than 25 years old and the Age_C which include banks less than 25 years old. We propose the following hypothesis:

H7: There is a significant negative relationship between the age of the bank and financial leverage.

6.3.8 Tax

DeAngelo and Masulis (1980) suggest that firms with low non-debt tax shields will have a lower leverage. This suggests a negative relationship between the tax and leverage. Furthermore, Titman and Wessels (1988) suggested using 3 indicators which are investment tax credits over total assets, depreciation over total assets and direct estimates of non-debt tax shields over total assets. Due the unavailability of data for two of the suggested variables we were forced to use only one which is the ratio of total depreciation to total assets which was also suggested by Drobetz and Fix (2005). Titman and Wessels (1988) findings show there is a negative relationship between the non-debt tax shield and the leverage. On the other hand Ozkan (2001) argued that this proxy might not represent the non-debt tax shield and that firms with higher deprecation ratios would have lower growth opportunities and therefore he suggested a positive relationship. We suggest the following hy-

pothesis:

H8: There is a significant negative relationship between the tax shield of the bank and its financial leverage.

6.3.9 Liquidity

The pecking order theory hypothesis is that in the presence of asymmetric information, firms with liquid assets such as cash and marketable securities will prefer to finance their investment internally. Therefore, firms with higher liquidity ratio are expected to have lower leverage. Eldomiaty (2007) suggest that there is a negative relationship between leverage and liquidity proxy. Al-Ajmi et al. (2009), Sbeti (2010), Nikolaos et al. (2007) and Ozkan (2001) find a negative relationship between liquidity and leverage. Furthermore, since the sample in this study are banks liquidity it is crucial. Due to the importance of liquidity this thesis use various measures of liquidity. These are interbank ratio $(INTERB)$, net loans to net assets (NTL_TA), net loans to customer short term funding (NTL_STF), net loans to total deposits and borrowing (NTL_TDE), Liquid assets to customer short term funding (LIQ_DEP) and liquid assets to total deposits and borrowing (LIQ_TDE). We test the following hypothesis:

H9: There is a significant and negative relationship between leverage and liquidity.

6.3.10 Credit Rating

An article by Kisgen (2006) finds that classic determinants of capital structure, the ones we hypothesized in this study, explain capital structure. However he added that firms in a special situation make their choice of capital structure based on their credit rating. The argument is that firms near a credit rating upgrade or downgrade issue less debt relative to equity than firms not near a change in rating. On the other hand, Kemper (2011) finding shows that credit ratings are not a first order concern of capital structure decisions, and that the model does not hold through

the different classes of credit ratings. However, Shin2012 et al. (2012) find that the effects between credit ratings on capital structure persist significantly in the context of trade-off and pecking order theory. It is possible to implement the credit rating dummies using the panel data regressions. However, when we use the SEM it is not possible to test this assumption. Therefore this study included 2 sets of variables for testing the hypotheses of credit rating effect on the capital structure. We first create 2 dummy variables based on the Capital Intelligence credit rating through the Bankscope database. Specifically we use the Financial Strength rating as the credit rating variable. We construct a credit rating variable from historical bank rating for the banks in the sample; if the variable is significant then banks do consider their credit rating when they issue debt or equity. We construct 2 different dummy variables to test the credit rating hypothesis. We construct 2 dummies which are Cr_p and Cr_m and these take the value of 1 if the credit rating is plus $(+)$ in Cr_p and minus in Cr_m. We also construct credit rating score variables. We base it on the 4 different credit rating agencies which are Fetch, SP, Moodys and Capital Intelligence. These variables are CR_SP, CR_FITCH, CR_MODY and CR_CI. We convert the historical credit rating for each year in the sample into a score starting from 1 for the highest rating and 25 for the lowest rating. The reason for creating this variable is the need to use the construct of Credit Rating in the SEM mode. We use historical data of credit rating at the end of each year of the sample. The following hypothesis is tested:

H10: Banks do consider credit ratings in their decision of capital structure.

In this study our main goal is to compare the capital structure of Islamic banks and conventional banks. Since the number of Islamic banks in the area of our interest is considered small, it is important to use PLS as it is able to deal with a small sample size. This study sample is drawn from the MENA countries; the sample includes

108 conventional banks and 30 Islamic Banks. Table 4.1 presents the banks used in this study by country. Data availability was a challenge and one of the main limitations of this study. The source of the Data is Bankscope and Bloomberg. The sample use eight yearly observations starting from 2006 to 2013 and any bank with four years missing was excluded. Furthermore, in this study banks from Syria, Iraq and Iran were dropped because of unavailable data.

6.4 Main Results

In Table 6.1 we find the results of using the Partial Least Squares (PLS) Structural Equation Modelling to empirically examine the relationships between the dependent and independent determinants of capital structure. First of all we could see that the R2 value is 31.5% percent in Conventional banks and 67% for Islamic banks for the dependent variables of the Book leverage. On the other hand, it also reports that the R^2 for the market leverage is lower than the book leverage, where the values are 19% for conventional banks and 36% for Islamic banks. According to Chen et al. (1999) the values of the coefficient determination R^2 above .670 are substantial and values around .33 are average and .190 weak. Therefore we believe that the R2 of our models are sound except for the Conventional banks market leverage model where the values are weak.

Furthermore, we find that there is a deference in determinants of capital structure between the Conventional banks and the Islamic banks in the profitabilty measure. We start with the book leverage and find that the relation is significant for both banks. The relation is positive which is not in accordance with our hypotheses and therefore we reject the hypotheses. On the other hand, we find that the relationship is significant for the market leverage and negative which is in agreement with the hypotheses. Secondly, risk is not significant when the book leverage is the dependent variable but significant for the market leverage. The sign is positive for both banks

which is not what the hypothesis indicates and therefore we reject the hypothesis.

Dividends are significant across all the banks and measures of leverage. However, different results are shown. When using the book leverage the sign is positive which indicates that the banks do not follow the pecking order theory. On the other hand, the results for market leverage shows that the relationship for Islamic banks are negative and therefore we could conclude that Islamic banks do follow the pecking order theory; however, conventional banks do not. Size is only significant with Islamic banks when we use the book leverage however the sign of the coefficient is not what we expected; this would indicate that Islamic banks do not need to take leverage when they are large. This is in theory true as the major source of income for Islamic banks is PLS products which would increase when the bank is large and thus the banks will not be in a position where they need to increase their leverage.

Growth opportunities as we discussed before have mixed results in the empirical literature. Our findings are not far from that. We find that it is negative only for the book leverage in the conventional banks and positive in the Islamic banks. This indicates that banks require more cash injections as they focus on growth and therefore they would increase their level of leverage when they have a growth opportunity and vice versa for the conventional banks. On the other hand when we use the market leverage both banks are positive with leverage.

Ownership structure in the context of SEM could only indicate if it is important or not. But we cannot differentiate between the relationships within the construct itself. We can only conclude that if there is an ultimate owner the leverage level would increase. However, it is not the case when we use the market leverage. Liquidity results are a major distinction between the two banks. As Table5 shows, the liquidity variables are not significant for the market leverage of the conventional banks and are significant for others. However, the sign shows that the relationship is negative

with the Islamic Banks and positive with the conventional banks. Our results for the Islamic banks are in agreement with the previous literature and therefore we accept the hypothesis only for Islamic banks.

Age variable is significant across all the banks. The relationship is negative with book leverage and positive with the market leverage. This indicates that old banks would have less leverage than new banks. On the other hand, when we use the market leverage it is the reverse and therefore we would expect old banks to have more leverage than new ones simply because they have a longer financial history. Tax latent variable which is the non-debt tax shield is not significant across all the banks. This might be because we only used on variable to measure it as there is no available data to include more measures.

Credit rating is significantly positive in relation with the conventional banks and negative with the Islamic banks. These can be explained as those conventional banks with good rating would issue more debt. However, the relation is negative with the Islamic Banks which could mean that banks with rating would issue less debt in order to keep their healthy rating.

Table 7.2 and 7.3 shows the results using different models. The dependent variables are book leverage and market leverage. The Hausman test results indicate which models are efficient and which are not. The test is not significant and therefore the fixed effect model is the most efficient one for the purpose of our study. However, one drawback of the fixed effect model is that it drops the dummy variable. Therefore, we chose to use the Tobit model for this purpose. Model 5 is a dynamical model, which we used to quantify the adjusting speed of the banks. As our results show, several factors are significant across the different models. Therefore, we could reject the null hypothesis that deposit insurance and capital regulation are of first order in the decision of Capital Structure. We find that classic or non-financial

firms determinants of capital structure are of first order and therefore banks choose capital structure in the same way non-financial firms do which is in agreement with the findings of Gropp and Heider (2010) and Octavia and Brown (2010).

We find that our profitability variable has a negative relationship to leverage. We expect the results to be negative as we suggested in the hypotheses and thus we accept the hypotheses. This result is in line with the pecking order theory in which firms with more profit have less leverage since they have more internal funds to use for their future investments. This result is in line with Gropp and Heider (2010) and Octavia and Brown (2010). The profit ratio has a significant positive relationship for both IB and CB. This result is in agreement with the findings of Berger (1995). Interestingly the results for the volatility of the return on the price are not what we expected. The relationship is positive across all the models which would indicate that riskier banks would have more debt than the non-risky banks.

The pecking order theory argues that companies pay fewer dividends if they need funds for their investment. In other words they try to use their internal funds before they use debt. Therefore, we expect a negative relationship between the two factors. Our results show a negative relationship, which is in line with the pecking order theory, and thus we accept the hypotheses. The results are positive for Islamic and negative for conventional banks. However, it is worth mentioning that the relationship is not significant for Islamic banks and significant only for conventional banks. This could be explained as that banks that have more leverage tend pay less dividends and thus it could mean that banks used first their internal earnings then they use debt and after that they use equity. Our results are consistent with the finding of Gropp and Heider (2010). Therefore we accept the hypothesis only for conventional banks.

In addition, the table shows that the liquidity proxy is negatively related to lever-

age. This relationship is significant for both banks and significant across the different models. Therefore, we accept the hypotheses that banks with more liquid assets issue less debt and vice versa. This results support the pecking order theory. As the previous results show the non-debt tax shield which is the main variable for the trade-off theory is not significant across all the models and samples. Our size proxy is significant across all models which is similar to the results of Gropp and Heider (2010) Octavia and Brown (2010), Akhtar (2005) and Al-Ajmi et al. (2009). Our result could be interpreted as that the larger the banks is the more investors are willing to lend and the higher is the demand for loans from the bank.

We find that growth has a significant positive relationship across the different models for the Islamic banks. Therefore we reject the null hypothesis and this finding supports the trade-off theory and could be explained as companies with more growth opportunities tend to use more debt to finance their operations. This result is not significant for conventional banks. The regression results in table 5 show that growth is not an important factor in the choice taken by Conventional banks. Ours result for CB is not consistent with the findings of Barclay and Smith (1995) and therefore we accept the hypothesis that regulated banks have more long term debt and therefore have more growth opportunities.

Furthermore, the Dynamical model assumes that banks have an optimal capital structure and that they move toward this target and adjust. The model as suggested by Arellano and Bond (1991)uses a lagged variable of the dependent variable as an independent variable. If the result is significant then this means that banks do adjust their capital structure over time. As table 5 shows the result is significant across all the models for the banks.

As 7.4 and 7.5 shows, unfortunately none of the Ownership structure variables are significant. This is mainly because there are a large number of dummy vari-

ables. The thought is the SEM is more accurate in testing dummy variables than other methods. The same problem is faced when using the Credit Rating variable. More investigation should be done for the ownership structure and the credit rating using the SEM method.

Moreover, Table 6.5 shows the results of using the GRNN and thus producing the variable impact for each variable used in this study. Since one of the motivations for conducting this chapter is to study if Islamic and conventional banks have different capital structure it is worth doing these analyses. As the above table shows, these are the top five variables with the highest impact on the dependent variable, either market leverage or book leverage. It is obvious that when using the book leverage the profitability measure of profit margin is the most important factor. However, after that we can see that different measures of different determinants have a share of the impact.

Table 6.1: MENA Islamic and Conventional Banks SEM-PLS Results

This table shows the structural equation modeling partial least square SEM-PLS results. Book debt ratio is defined as total debt to total assets and shareholders' equity to total assets. Market debt is defined as total debt to market value and total debt to shareholders equity in market values terms. Profitability attribute is defined as operating income to total assets OI/TA, ROA return on assets, ROE return on equity, ROS return on sales. Size is defined as logarithmic of sales, total assets and market value. Growth opportunities factor is defined as growth of the total assets in percentages (GTA), (GTS) growth of total sales, and growth of earning per share EPS. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA), dividend pay-out ratio and dividends per share DPS. Business risk is defined as the standard deviation of the share price (volatility), beta of the share and alpha of the share. Liquidity is defined as interbank ratio (INTERB), net loans to net assets (NTL/TA), net loans to customer and short term funding (NTL/STF), net loans to total deposits and borrowing (NTL/TDE), Liquid assets to customer and short term funding (LIQ/DEP) and liquid assets to total deposits and borrowing (LIQ/TDE). Bank Age is defined as a numerical variable in the SEM-PLS (AGE). It is also used as a dummy variable where banks were grouped into three categories the first one is (Age-a) which include banks more than 25 years old and the (Age-c) which include banks less than 25 years old. Ownership structure dummies are for the major shareholders either governments, individuals, bank, insurance, investment, holding firm, cooperation firm, where it takes 1 or 0 other wise. It also used as the ownership percentages in this table. Credit rating is constructed as score variables. It is based on the four different credit rating agencies which are Fetch, S&P, Moodys and Capital Intelligence. These variables are (CR-SP), (CR-FITCH), (CR-MODY) and (CR-CI). The historical credit rating for each year in the sample is converted into a score starting from 1 for the highest rating and 25 for the lowest rating.

	Islamic Banks				Conventional Banks			
	Book Values		Market Value		Book Values		Market Value	
Determinant	E	P	E	P	E	P	E	P
Profit	0.111***	<0.001	0.085**	0.048	-0.342***	<0.001	-0.124**	0.008
Risk	-0.008	0.39	0.05	0.163	0.074**	0.004	0.207***	<0.001
Dividends	0.159***	<0.001	0.142**	0.003	-0.076**	0.004	0.31***	<0.001
Size	0.022	0.217	-0.069*	0.089	0.004	0.44	-0.021	0.342
Growth	-0.121***	<0.001	0.069*	0.089	0.055**	0.025	0.206***	<0.001
Ownership	0.218***	<0.001	0.285***	<0.001	-0.118***	<0.001	0.091**	0.037
Age	-0.128***	<0.001	-0.18***	<0.001	0.269***	<0.001	0.11**	0.015
Tax	0.001	0.487	0.012	0.405	-0.006	0.412	0.062	0.111
Liquidity	0.476***	<0.001	-0.503***	<0.001	0.01	0.358	-0.176***	<0.001
Credit Rating	0.079**	0.003	-0.163***	<0.001	0.12***	<0.001	-0.161***	<0.001
R2	31.5		67		19		36	
(APC)	0.120,	P<0.001			0.151,	P<0.001		
(ARS)	0.315	P<0.001			0.514,	P<0.001		
(AARS)	0.309,	P<0.001			0.496,	P<0.001		
(AVIF)	1.191				1.249			
(AFVIF)	1.634				1.823,			
(GoF)	0.425				0.547			
(SPR)	0.8				0.85			
(RSCR)	0.962				0.966			
(SSR)	0.95				1			
(NLBCDR)	0.775				0.725			

Table 6.2: MENA Banks Market Leverage Panel Data Results

This table shows the panel data regression results. Market debt ratio is defined as total debt to market value. Profitability is measured by the return on sales ratio which is defined as net income to net sales. Size is defined as logarithmic of total assets. Growth opportunities factor is defined as growth of earning per share EPS. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as the dividend pay-out ratio. Business risk is defined as the standard deviation of the share price (volatility). Liquidity is defined as interbank ratio (INTERB). Bank Age is defined as as a dummy variable where banks were grouped into three categories the first one is (Age-a) which include banks more than 25 years old and the (Age-c) which include banks less than 25 years old. Ownership structure dummies are for the major shareholders either governments, individuals, bank, insurance, investment, holding firm, cooperation firm, where it takes 1 or 0 otherwise. Credit rating is constructed as two dummy variables which are Cr-p and Cr-n and these take the value of 1 if the credit rating have a plus (+) in Cr-p and minus in Cr-n. Also, macroeconomic variables are included which are inflation, GDP growth and market risk

	Market Leverage									
	Islamic					Conventional				
Variable	OLS	Fixed	Random	Dynamical	Tobit	OLS	Fixed	Random	Dynamical	Tobit
Profitability	-0.0014	-0.000386	-0.000704	-0.000187	-0.000596	-0.180*	-0.074	-0.095	0.00499	-0.0564**
Risk	0.0205***	0.0127**	0.0137**	0.00796	0.00463**	0.0191	0.0691	0.0596	0.164	-0.0221
Dividends	0.0120**	0.000804	0.00409	0.000904	0.00258*	-0.00460*	0.00245	0.000369	-0.000778	-0.000191
Size	-0.0709	0.581**	0.253	0.769*	-0.00432	0.0824	0.219	0.119	0.472	0.0643***
Growth	-0.00157	-0.00600***	-0.00558**	-0.00696***	-0.000292	-0.00345	0.000221	0.0000985	0.000326	-0.000633
Liquidity	0.00194	-0.00675	-0.00366	-0.0122	0.00149	0.00258	-0.0145**	-0.00728*	-0.0227***	0.000634
Tax	-8.889	-3.905	-5.129	-5.685	-1.453	-11.59	-0.266	-1.686	-0.172	1.529
GDP Growth	-0.0619**	-0.0133	-0.0284	-0.00623	-0.0267***	-0.0363*	-0.0327*	-0.0359*	-0.0077	-0.00900*
Inflation	-0.00799	0.0133	0.0125	0.0161	-0.00192	0.00977	0.00792	0.00895	0.0181	0.00515
Market Risk	-27.07	-4.01	-12.34	22.54	-14.80**	0.638	12.15	7.67	41.58***	-5.027
Laggged				0.413***					-0.038	
N	243	243	243	189	243	927	927	927	721	927
R2	15%	16%				12%	12%			
Variable	OLS	Fixed	Random	Dynamical	Tobit	OLS	Fixed	Random	Dynamical	Tobit
Profitability	-0.000597	-0.000402	-0.000442	-0.000266	-0.000408	-0.175*	-0.0756	-0.0937	-0.0143	-0.0518**
Risk	0.0174**	0.0126**	0.0126**	0.0128*	0.00475**	-0.0132	0.0939	0.0663	0.247*	-0.029
Dividends	0.00725	0.0000105	0.000949	0.000406	0.00143	-0.00326	0.00196	0.000518	-0.0024	0.000547
Size	0.158	0.640***	0.537***	0.876*	0.0934*	0.183**	0.215	0.185	0.564	0.0747***
Growth	-0.00399	-0.00608***	-0.00603***	-0.00702***	-0.000817	-0.00631	-0.00107	-0.00178	0.00046	-0.00128
Liquidity	-0.00526	-0.00641	-0.0068	-0.0105	-0.00164	0.00254	-0.0143**	-0.00726*	-0.0213***	0.00176**
Non Debt Tax	-4.423	-3.826	-4.04	-5.274	0.659	-11.23	1.612	-0.402	1.578	0.894
Individual	-0.541	.	-1.15	0	-0.363**	0.0367	.	0.0288	0	-0.266***
Holding	0	.				0.181	.	0.119	0	0.00903
Cooperation	0.488	.	1.283	0	0.182	0.500**	.	0.621	0	0.0748
Insurance	0					-0.616	.	-0.594	0	-0.387***
Bank	0.593*	.	0.565	0	-0.0438	0.168	.	0.2	0	-0.0866*
Government	-0.106	.	-0.756	0	-0.167	0.222	.	0.241	0	0.0279
Advisor	0.885**	.	0.74	0	0.185	0.322	.	0.347	0	-0.0258
cr_p	-0.095	0.0489	0.0342	-0.0366	0.077	-0.37	0.0477	-0.0335	-0.0175	-0.0405
cr_n	-0.0842	-0.0935	-0.0678	-0.303	0.0525	-0.165	0.207	0.105	-0.117	-0.0314
age_a	-0.314	.				0	.	-0.959*	0	-0.463***
age_b	0	.				0	.			
age_c	0	.	0.41	0	-0.0606	0.940***	.			
Lagged				0.380***					-0.0381	
N	243	243	243	189	243	927	927	927	721	927
R2	17%	16%				15%	16%			

Table 6.3: MENA Banks Book Leverage Panel Data Results

This table shows the panel data regression results. Book debt ratio is defined as total debt to total assets. Profitability is measured by the return on sales ratio which is defined as net income to net sales. Size is defined as logarithmic of total assets. Growth opportunities factor is defined as growth of earning per share EPS. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as the dividend pay-out ratio. Business risk is defined as the standard deviation of the share price (volatility). Liquidity is defined as interbank ratio (INTERB). Bank Age is defined as as a dummy variable where banks were grouped into three categories the first one is (Age-a) which include banks more than 25 years old and the (Age-c) which include banks less than 25 years old. Ownership structure dummies are for the major shareholders either governments, individuals, bank, insurance, investment, holding firm, cooperation firm, where it takes 1 or 0 otherwise. Credit rating is constructed as two dummy variables which are Cr-p and Cr-n and these take the value of 1 if the credit rating have a plus (+) in Cr-p and minus in Cr-n. Also, macroeconomic variables are included which are inflation, GDP growth and market risk

	Book Leverage									
	Islamic					Conventional				
Variable	OLS	Fixed	Random	Dynamical	Tobit	OLS	Fixed	Random	Dynamical	Tobit
Profitability	0.00186	-0.000681	-0.00198	0.0015	0.000578	-0.214	0.518	0.483	0.990**	-1.428*
Risk	0.197***	0.0591*	0.0734*	0.0201	-0.00617	-0.724	-0.109	-0.147	-0.0236	-0.164
Dividends	0.123***	0.00702	0.0164	0.00844	-0.00206	0.0243	0.0141	0.015	-0.00383	0.00349
Size	-0.00579	4.571***	4.139***	3.475	0.118	0.35	0.667	0.542	1.205	0.402***
Growth	0.0149	-0.00628	-0.00581	0.0254*	0.000509	-0.0146	0.00208	0.00195	0.011	0.00243
Liquidity	-0.0552	-0.262***	-0.205***	-0.121	0.00654	-0.00705	-0.0575**	-0.0501**	-0.0692*	-0.0041
Non Debt Tax	78.1	2.217	2.996	27.81	1.441	27.48	-58.01*	-53.1	-9.166	-9.64
GDP Growth	-0.268	0.0511	0.0331	0.0268	-0.103***	0.0272	-0.0283	-0.0284	0.134	0.0588*
Inflation	-0.351	-0.0123	-0.0262	0.115	0.0287	0.0252	0.0429	0.0437	0.113	-0.0959**
Market Risk	-389.4**	-12.96	-43.6	-1.142	-19.2	170.7*	97.16*	98.48*	-70	1.052
Lagged				0.348***					0.625***	
N	243	243	243	189	243	927	927	927	721	927
R-sq	18%	23%				34%	34%			
Variable	OLS	Fixed	Random	Dynamical	Tobit	OLS	Fixed	Random	Dynamical	Tobit
Profitability	0.00429	-0.00109	-0.00154	0.0011	-0.000195	-0.116	0.46	0.438	0.963**	-1.250*
Risk	0.154***	0.0494	0.0557*	0.0213	-0.000022	-0.0777	0.107	0.0964	-0.149	-0.121
Dividends	0.108**	0.0104	0.0143	0.00804	-0.00236	0.0271	0.0108	0.0121	-0.0014	0.00428
Size	2.579*	4.630***	4.607***	3.426	0.479**	0.452	0.261	0.317	0.983	0.270*
Growth	-0.00126	-0.00606	-0.00607	0.0258*	0.000148	-0.00221	0.0062	0.00667	0.0207	0.00683
Liquidity	-0.182***	-0.264***	-0.240***	-0.109	0.00488	0.00211	-0.0566**	-0.0480*	-0.0671*	-0.000787
Non Debt Tax	73.24	-2.209	-1.617	25.03	-1.277	33.74	-53.6	-48.78	-19.73	-12.73
Individual	-2.109	.	-1.149		-1.250*	-4.217**	.	-4.134	0	-0.920***
Holding	0	.		0		0.915	.	1.119	0	0.612
Cooperation	12.50**	.	17.39	0	1.336	-0.251	.	0.546	0	0.626
Insurance	0	.				-8.109***	.	-7.533	0	-0.985**
Bank	1.552	.	2.781	0	-0.952**	-0.897	.	-1.016	0	-1.056***
Government	-3.281	.	-4.317	0	-1.330**	0.498	.	1.093	0	0.643
Advisor	15.16***	.	19.12*	0	-0.951*	1.934	.	2.707	0	-0.578*
cr_p	-0.757	-1.693	-1.585	-1.406	-0.0439	-0.28	-0.51	-0.48	0.874	0.199
cr_n	0.752	-1.686	-1.516	-0.502	0.152	-0.129	0.942	0.83	-0.412	-0.0958
age_a	-2.727	.				0	.	-6.609	0	6.687
age_b	0	.				0	.			
age_c	0	.	5.798	0	-1.279***	7.037***	.			
Lagged				0.350***					0.610***	
N	243	243	243	189	243	927	927	927	721	927
R-Sq	31%	24%				27%	29%			

Table 6.4: MENA Banks ANN Results

This table shows the ANN results. Book debt ratio is defined as total debt to total assets. Market debt ratio is defined as the total debt to market value. Profitability is measured by the return on sales ratio which is defined as net income to net sales. Size is defined as logarithmic of total assets. Growth opportunities factor is defined as growth of earning per share EPS. Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as the dividend pay-out ratio. Business risk is defined as the standard deviation of the share price (volatility). Liquidity is defined as interbank ratio (INTERB). Bank Age is defined as as a dummy variable where banks were grouped into three categories the first one is (Age-a) which include banks more than 25 years old and the (Age-c) which include banks less than 25 years old. Ownership structure dummies are for the major shareholders either governments, individuals, bank, insurance, investment, holding firm, cooperation firm, where it takes 1 or 0 otherwise. Credit rating is constructed as two dummy variables which are Cr-p and Cr-n and these take the value of 1 if the credit rating have a plus (+) in Cr-p and minus in Cr-n. Also, macroeconomic variables are included which are inflation, GDP growth and market risk

MENA Banks	Book Leverage		Market Leverage	
Variable	Conventional Banks	Islamic Banks	Conventional Banks	Islamic Banks
Dividends	6.09%	5.77%	6.43%	9.08%
GDP Growth	1.17%	4.43%	10.69%	10.34%
Growth	14.85%	8.90%	0.04%	14.88%
Inflation	9.60%	0.11%	6.16%	7.32%
Liquidity	16.90%	19.47%	22.07%	10.16%
Market Risk	1.74%	1.77%	4.34%	4.44%
Non Debt Tax	14.92%	5.73%	10.95%	12.53%
Profitability	9.62%	18.31%	17.30%	12.77%
Risk	7.57%	19.77%	11.56%	11.36%
Size	17.52%	15.74%	10.44%	7.12%
N	927	243	927	243
Adding Dummies				
Dividends	0.16%	0.07%	5.10%	3.88%
GDP Growth	0.01%	0.53%	5.34%	11.98%
Growth	0.00%	1.99%	5.30%	10.09%
Inflation	3.39%	0.00%	5.07%	7.06%
Liquidity	9.89%	18.43%	5.39%	2.90%
Market Risk	0.08%	2.57%	5.39%	6.91%
Risk	0.09%	1.39%	4.53%	9.07%
Non Debt Tax	6.82%	14.17%	4.57%	5.29%
Profitability	6.46%	0.41%	4.38%	14.32%
Size	10.74%	11.48%	4.97%	3.06%
Age Dummies				
Age_A	0.00%	0.11%	4.20%	0.01%
Age_B	0.00%	0.00%	0.00%	0.00%
Age_C	0.00%	0.11%	4.20%	0.01%
Ownership Structure Dummies				
Bank	9.08%	1.78%	4.70%	4.07%
Cooperation	8.30%	17.62%	4.65%	0.28%
Government	10.18%	10.20%	5.34%	5.73%
Holding	6.63%	0.00%	4.51%	0.00%
Individual	9.21%	0.57%	4.64%	3.57%
Insurance	11.67%	0.62%	4.53%	3.54%
Advisor	7.10%	16.83%	4.61%	1.99%
Credit Rating Dummies				
cr_n	0.13%	0.96%	4.36%	4.94%
cr_p	0.06%	0.14%	4.22%	1.28%
N	927	243	927	243

6.5 Discussion

This study investigate whether the classic standard determinants if capital structure are significant in determining the bank capital in the MENA countries. We prove that the widely used non-financial determinants have explanatory power in the choice of banks capital structure. We also prove that Islamic banks are different in their determinants of capital structure. We find that Growth and liquidity are not significant for Islamic banks but significant for conventional banks.

This chapter use different models in order to answer the question of what are the determinants of capital structure. Although these methods were used interchangeable in the literature this study shows that each method shed the light on a different angle of the problem. The SEM method is very powerful and the results are more generalised simply because it use many measure of the same construct. On the other hand, the GRNN is also useful as it shows us which variable is more important than the other one. We also find that banks in our sample do have a target optimal capital structure, which they adjust their capital structure to follow. In addition, we find that credit rating does not have an explanatory power in explaining capital structure.

The study is one of the first attempts to empirically examines and compare the determinants of capital structure is Islamic banks with conventional banks. To our knowledge no previous studies has tested the determinants of Islamic banks with a comparison of conventional banks in MENA area. We also introduced the credit rating as a possible new determinant for capital structure; it was only used in studies of non-financial firms. In addition, despite the large size of the banking industry in the MENA countries, the determinants of Islamic banks using credit ratings have never been researched empirically. This chapter attempted to fill in the gap existed in the literature by testing specific hypotheses on the determinants of capital structure in

both Islamic and conventional banks.

Part IV

Conclusion

Chapter 7

Conclusion

7.1 Introduction

This thesis is devoted to understand the capital structure in the MENA countries. The main purpose of this thesis is to study the determinants of capital structure using the main approaches which are suggested in the previous literature. The approaches are the Panel Data Models, Partial Least Square Structural Equation Modelling PLS-SEM and the Generalized Regression Neural Networks. This thesis is unique in the fact that it tries to examine the both the banks and the non-financial firms. It also focus on the Islamic banks and how do they decide their capital structure mix.

7.2 Conclusions

The findings show that there is a difference in the results when we use different methods. Furthermore, the empirical results we found are mostly in line with the previous literature in that both the pecking order and trade-off theory as well as the agency theory do contribute to the understanding of the capital structure choice. Equally important, this thesis use booth book leverage and market leverage which proved to give almost similar results. Our results show a strong explanation of the trade-off theory and the pecking order theory. Another issue is that it might be incorrect to compare studies of determinants of capital structure because of

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the different definitions of leverage as well as the variances in the independent variables. This study then try to explore the banks capital structure and finds that classical capital structure determinants are significant and that regulations are of second order. Furthermore, we prove that Islamic banks are deferent in their capital structure to conventional banks.

The findings are divided into two categories which are the banks results and the non-financial results. First, the findings of the non-financial shows that profitability is a key determinants and is negative and significant in all countries in the sample, except for Qatar. Which is interpreted as that the countries in the sample do follow the trade-off theory. Also, as expected the majority of the countries in the sample follow the agency theory and the pecking order theory as the liquidity attribute is negative and significant for all the countries with the exception of Qatar and Saudi Arabia. The tangibility attribute have a mixed results. Bahrain, Egypt, Oman and Palestine all have a positive relation which support the trade-off theory. On the other hand, the rest of the countries have negative relation or a mixed result. The risk variable is only meaningful for Saudi Arabia and UAE, while in the other countries it is positive and therefore it is not explained by the theory. Dividends is negative in all the countries and therefore follow the pecking order theory. Also for the growth opportunities findings show that all the countries follow the trade-off theory with a negative relation except Oman and Saudi Arabia which follow the pecking order positive relation. The cash flow attribute is negative for all the countries and follow the pecking order theory. Ownership structure have a negative relation to leverage and therefore suggest that when an ultimate owner exist it force firms to reduce their debt.

Secondly, the findings for the banks show that profitability is positively related to book leverage as argued by the pecking order and vice versa for the market

leverage as suggested by the trade-off theory. Which prove that results could differ depending on the definition of leverage. Also risk is significant but positive which cannot be explained by the theory. Dividends is negative for the Islamic banks and positive for the conventional banks. Growth is also negative in conventional banks and positive for Islamic banks. The ownership structure relation with leverage is the inverse of the relation this study finds in the non-financial firms. As it show when there is an ultimate owner leverage increase. Liquidity is positive for the conventional banks and negative with Islamic banks. Credit rating is also another variable which show that there is a difference between the Islamic and conventional banks where it is negative with the first one and positive with the second one.

7.3 Contribution

This thesis show that firms in the MENA countries follow the capital structure theories suggested in the developing countries. It also show that using book or market leverage does have an effect on the results. It also show that using the three approaches would benefit the researcher as it could verify and add more confidence to the results. It show that using multi approaches could lead to different results and therefore researcher should be cautious when using a single approach. This study is also the first study to use PLS-SEM to study cross-country in capital structure and also to apply it to MENA countries. This thesis also use the GRNN which show the variable impact and therefore validate the results of the other approaches. Furthermore, the work done in this thesis in regards to the banks is also a contribution to literature. First, very limited number of studies did investigate the banks capital structure and none did study the banks in MENA countries. The comparison of the capital structure of Islamic banks and conventional is also original does add value. This thesis investigate both Banks and non-financial firms and therefore added insight to the differences between the two industries within the same geographical

area. It also use credit rating, ownership structure and industry classification as determinants.

7.4 Implication and Limitations

Several limitations of this study do exist as the sample size of the listed companies in the countries of our study is considered not big enough as the majority of developed markets. Therefore, caution should be taken before we generalize our results to other emerging markets. Several popular proxies were doped from this study for this reason such as uniqueness and credit rating for the non-financial firms. Also the sample of credit rated banks in the Bankscope is very small and also the number of Islamic banks. Furthermore, a modelling problem with the SEM is that if the researcher want to take full advantage of the methodology all the variables should be attributes. However, this is not possible when applied in the capital structure as different leverage definition will load differently. Causing the researcher to use them as variables instead of attributes. Furthermore, controlling for dummy variables is not straight forward. For example, trying to test the industry classification on the leverage using the SEM is hard and the results are not always possible as many dummies cause several empirical issues.

This study has several implications on investors, policy makers, regulators and researchers. First, it is useful for investors when they make their decisions to invest in the banking industry. It is also helpful for investors to understand the capital structure decisions effects on the value of the firm. This thesis is also important for researchers as it opens the doors for more research to be conducted in the banks capital structure. Specially, Islamic banks as there is ambiguous theories about Islamic banks capital structure. It also helpful for policy makers to understand how Islamic banks capital structure behaves so they could take into consideration when issuing new regulations. Furthermore, banks owned by large shareholders (govern-

ment or family) generally are more risk averse. This could be useful for the investors decision. Also, Islamic banks pay dividends even if they need the cash for their internal investments, this might be caused by the profit sharing principle. Therefore, investors could get that Islamic banks by nature are more riskier than conventional banks. Regulators (either International or domestic) should take into consideration that Islamic banks have a different operation mechanism and therefore should not be regulated in the same way as conventional bank and credit ratings are an important aspect of capital structure decision.

7.5 Future research

Conducting this research leads to a couple of areas that should be explored in future studies. First, it is recommend to use the survey approach and conduct a mixed methods study with the quantitative data. This approach will explain more about the capital structure. This approach will add more insight to the three approaches this thesis did conduct. Furthermore, Market timing theory was not tested in this study. This theory might explain the behaviour of the firms and banks in the MENA countries. Also studying the dynamics of capital structure using SEM would be an interesting study. In addition, an interesting project to investigate is the use of multilevel analysis to try and answer the capital structure puzzle.

Appendix A

A.1 Descriptive Statistics

Table A.1: Descriptive Statistics (A)

N	Variable	Obs	Mean	Std. Dev.	Min	Max
1	Leverage					
	EQ/TA	954	13.66	6.96	0	60.82
	DEBT/TA	1017	15.96	13.86	0	84.29
	DEBT/MC	945	1.16	2.06	0	34.51
	DEBT/EQ	1017	137.59	152.98	0	2184.95
2	Profitably					
	Proft Margin	1017	21.1	109.28	-1690.09	100.79
	O_Profit	1017	25.16	122.02	-1690.09	102.88
	ROE	999	13.41	11.91	-136.02	72.41
	ROA	999	1.61	2.26	-38.03	19.69
3	Risk					
	Volat	1062	64.35	92.53	0	1195.07
	Beta	918	0.84	0.3	0.07	2.85
	Alpha	918	0.03	0.12	-0.37	1.82
4	Dividends					
	Dive_PO	829	16.93	2.16	8.18	20.91
	DPS	1008	0.25	0.59	0	10.03
	DVD_PR	999	35.14	41.82	0	838.87
5	Growth					
	GR_EPS	990	373.37	6590.78	-11524.8	194523
	GR_Assets	999	17.58	22.03	-44.44	257.06
	GR_REV	1008	22.66	46.28	-86.8	504.33
6	Ownership Strcutre					
	OW_Indvidual	1062	0.14	0.34	0	1
	OW_Holding	1062	0.09	0.29	0	1
	OW_Coopera	1062	0.15	0.36	0	1
	OW_Insurance	1062	0.03	0.18	0	1
	OW_Bank	1062	0.23	0.42	0	1
	OW_Gov	1062	0.24	0.43	0	1
	OW_INVEST	1062	0.22	0.41	0	1
	OW_Indiv%	1062	3.83	9.39	0	48.08
	OW_Holding%	1062	5.08	17.63	0	99.27
	OW_Coopera%	1062	5.33	14.4	0	95.12
	OW_Insurance%	1062	1.43	5.62	0	48.73
	OW_Bank%	1062	13.88	28.26	0	100
	OW_Gov%	1062	13.62	27.8	0	100

Table A.2: Descriptive Statistics (B)

N	Variable	Obs	Mean	Std. Dev.	Min	Max
	OW_INVEST%	1062	14.41	29.77	0	100
7	Credit Rating					
	CR_POM	1062	0.23	0.42	0	1
	CR_P	1062	0.15	0.36	0	1
	CR_N	1062	0.08	0.26	0	1
	CR_S&P SCORE	1062	6.86	5.45	0	16
	CR_FITCH SCORE	1062	7.05	3.69	0	16
	CR_MOODY SCORE	1062	20.48	6.71	0	25
	CR_CI SCORE	1062	8.88	2.51	4	16
8	Firm Age					
	Age_A	1062	0.21	0.41	0	1
	Age_B	1062	0	0	0	0
	Age_C	1062	0.79	0.41	0	1
	Age (Number)	1062	40.08	24.81	6	184
9	Liquidity					
	INTERB	954	217.43	201.4	0	979.17
	NTL_TA	954	54.58	17.59	0	91.48
	NTL_STF	954	76.84	53.92	0.67	938.55
	NTL_TDE	954	66.03	27.85	0	360.83
	LIQ_DEP	954	30.02	18.9	0.86	185.41
	LIQ_TDE	953	26.96	22.79	0	406.09
10	Tax					
	Non_Debt_Tax	1017	0.01	0.01	-0.06	0.24
11	Size					
	Ln_TA	1017	22.29	1.53	17.82	25.51
	Ln_MC	945	20.82	1.52	17.11	24.22
	LN_REV	1016	19.6	1.64	13.8	23.29

Table A.3: Bahrain Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA).

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.027	0.056	0	0.351	144
STDBVA	0.04	0.065	0	0.242	144
TDBVA	0.058	0.095	0	0.483	144
LTDMVE	0.024	0.051	0	0.395	144
STDMVE	0.047	0.082	0	0.422	144
TDMVE	0.071	0.11	0	0.478	144
Profitability	0.037	0.128	-0.573	0.26	144
Liquidity	3.76	3.613	0.558	17.28	144
Volatility	0.451	0.299	0	1.875	144
Size	17.782	1.671	14.325	21.6	144
Tangibility	0.341	0.247	0.03	0.869	144
Tax	0.013	0.019	0	0.062	144
Dividends	0.041	0.052	0	0.531	144
Growth	0.004	0.006	-0.016	0.028	144
FreeCash	0.152	0.14	0	0.6	144
Gov_D	0.056	0.23	0	1	144
Inst_D	0.444	0.499	0	1	144
Indiv_d	0.167	0.374	0	1	144
Oil	0	0	0	0	144
Materials	0.111	0.315	0	1	144
Industrials	0.111	0.315	0	1	144
ConsumerGoods	0.167	0.374	0	1	144
Healthcare	0	0	0	0	144
ConsumerServices	0.5	0.502	0	1	144
Telecomm	0.111	0.315	0	1	144
Utilites	0	0	0	0	144
Techonolgy	0	0	0	0	144

Table A.4: Egypt Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA).

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.079	0.181	0	0.997	1480
STDBVA	0.055	0.129	0	0.978	1480
TDBVA	0.147	0.151	0	0.946	1480
LTDMVE	0.063	0.139	0	0.987	1480
STDMVE	0.08	0.16	0	0.983	1480
TDMVE	0.165	0.172	0	0.918	1480
Profitability	0.089	0.114	-0.534	1.012	1480
Liquidity	2.598	3.851	0.094	57.877	1480
Volatility	0.538	0.469	0	6.828	1480
Size	17.396	1.911	10.902	22.429	1480
Tangibility	0.148	0.181	0	0.995	1480
Tax	0.024	0.069	0	0.722	1480
Dividends	0.028	0.055	0	0.802	1480
Growth	0.003	0.017	-0.056	0.378	1480
FreeCash	1.037	4.554	0	54.305	1480
Gov_D	0.016	0.126	0	1	1480
Inst_D	0.378	0.485	0	1	1480
Indiv_d	0.184	0.387	0	1	1480
Oil	0.065	0.246	0	1	1480
Materials	0.119	0.324	0	1	1480
Industrials	0.297	0.457	0	1	1480
ConsumerGoods	0.243	0.429	0	1	1480
Healthcare	0.086	0.281	0	1	1480
ConsumerServices	0.114	0.317	0	1	1480
Telecomm	0.032	0.177	0	1	1480
Utilites	0	0	0	0	1480
Techonolgy	0.027	0.162	0	1	1480

Table A.5: Jordan Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA).

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.058	0.11	0	0.953	904
STDBVA	0.13	0.16	0	0.969	904
TDBVA	0.178	0.165	0	0.98	904
LTDMVE	0.071	0.131	0	0.871	904
STDMVE	0.149	0.166	0	0.828	904
TDMVE	0.221	0.202	0	0.979	904
Profitability	0.02	0.089	-0.409	0.483	904
Liquidity	2.856	3.707	0	65.494	904
Volatility	0.508	0.447	0	7.37	904
Size	16.14	1.928	8.433	22.53	904
Tangibility	0.356	0.258	0	0.996	904
Tax	0.028	0.064	0	0.872	904
Dividends	0.018	0.036	0	0.295	904
Growth	0.002	0.016	-0.057	0.228	904
FreeCash	0.086	0.159	0	1.627	904
Gov_D	0.062	0.241	0	1	904
Inst_D	0.274	0.446	0	1	904
Indiv_d	0.398	0.49	0	1	904
Oil	0.018	0.132	0	1	904
Materials	0.186	0.389	0	1	904
Industrials	0.274	0.446	0	1	904
ConsumerGoods	0.221	0.415	0	1	904
Healthcare	0.088	0.284	0	1	904
ConsumerServices	0.221	0.415	0	1	904
Telecomm	0.009	0.094	0	1	904
Utilites	0	0	0	0	904
Techonolgy	0	0	0	0	904

Table A.6: Kuwait Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.077	0.116	0	0.981	720
STDBVA	0.111	0.135	0	0.866	720
TDBVA	0.177	0.165	0	0.866	720
LTDMVE	0.084	0.123	0	0.87	720
STDMVE	0.14	0.186	0	0.993	720
TDMVE	0.213	0.213	0	0.993	720
Profitability	0.034	0.067	-0.254	0.233	720
Liquidity	2.889	3.5	0.054	34.014	720
Volatility	0.680	0.493	0	5.467	720
Size	17.809	1.767	11.412	22.731	720
Tangibility	0.273	0.239	0	0.976	720
Tax	0.015	0.022	0	0.111	720
Dividends	0.028	0.043	0	0.443	720
Growth	0.003	0.013	-0.052	0.152	720
FreeCash	0.099	0.114	0	0.72	720
Gov_D	0.033	0.18	0	1	720
Inst_D	0.533	0.499	0	1	720
Indiv_d	0.1	0.3	0	1	720
Oil	0.089	0.285	0	1	720
Materials	0.144	0.352	0	1	720
Industrials	0.4	0.49	0	1	720
ConsumerGoods	0.078	0.268	0	1	720
Healthcare	0.067	0.25	0	1	720
ConsumerServices	0.222	0.416	0	1	720
Telecomm	0.044	0.206	0	1	720
Utilites	0	0	0	0	720
Techonolgy	0.044	0.206	0	1	720

Table A.7: Morocco Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.096	0.124	0	0.703	384
STDBVA	0.099	0.113	0	0.443	384
TDBVA	0.191	0.174	0	0.805	384
LTDMVE	0.104	0.135	0	0.644	384
STDMVE	0.115	0.151	0	0.635	384
TDMVE	0.219	0.218	0	0.952	384
Profitability	0.111	0.091	-0.293	0.405	384
Liquidity	1.894	1.461	0.429	14.666	384
Volatility	0.372	0.13	0.136	1.895	384
Size	18.21	1.713	11.466	22.576	384
Tangibility	0.273	0.206	0	0.825	384
Tax	0.008	0.021	0	0.138	384
Dividends	0.038	0.06	0	0.519	384
Growth	0.005	0.011	-0.024	0.115	384
FreeCash	0.048	0.056	0	0.331	384
Gov_D	0.021	0.143	0	1	384
Inst_D	0.479	0.5	0	1	384
Indiv_d	0.125	0.331	0	1	384
Oil	0.042	0.2	0	1	384
Materials	0.25	0.434	0	1	384
Industrials	0.271	0.445	0	1	384
ConsumerGoods	0.167	0.373	0	1	384
Healthcare	0.042	0.2	0	1	384
ConsumerServices	0.104	0.306	0	1	384
Telecomm	0.021	0.143	0	1	384
Utilites	0	0	0	0	384
Techonolgy	0.146	0.353	0	1	384

Table A.8: Oman Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.139	0.216	0	0.996	648
STDBVA	0.101	0.157	0	0.961	648
TDBVA	0.274	0.236	0	0.971	648
LTDMVE	0.143	0.22	0	0.985	648
STDMVE	0.136	0.21	0	0.982	648
TDMVE	0.312	0.274	0	0.98	648
Profitability	0.059	0.106	-0.688	0.385	648
Liquidity	2.155	2.379	0.005	19.84	648
Volatility	0.412	0.758	0.003	7.029	648
Size	16.839	1.779	9.720	20.907	648
Tangibility	0.394	0.298	0	0.999	648
Tax	0.056	0.114	0	0.98	648
Dividends	0.035	0.059	0	0.974	648
Growth	0.005	0.012	-0.027	0.115	648
FreeCash	0.334	1.781	0	41.962	648
Gov_D	0.086	0.281	0	1	648
Inst_D	0.617	0.486	0	1	648
Indiv_d	0.136	0.343	0	1	648
Oil	0.025	0.155	0	1	648
Materials	0.136	0.343	0	1	648
Industrials	0.309	0.462	0	1	648
ConsumerGoods	0.333	0.472	0	1	648
Healthcare	0.012	0.111	0	1	648
ConsumerServices	0.173	0.378	0	1	648
Telecomm	0.025	0.155	0	1	648
Utilites	0	0	0	0	648
Techonolgy	0.012	0.111	0	1	648

Table A.9: Palestine Descriptive Statistics for Panel Data
This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.042	0.056	0	0.39	184
STDBVA	0.022	0.038	0	0.246	184
TDBVA	0.16	0.075	0	0.481	184
LTDMVE	0.048	0.057	0	0.256	184
STDMVE	0.028	0.044	0	0.223	184
TDMVE	0.17	0.103	0	0.479	184
Profitability	0.041	0.052	-0.132	0.221	184
Liquidity	2.091	0.876	0.378	5.662	184
Volatility	0.488	0.614	0.104	8.435	184
Size	16.816	0.906	14.545	20.088	184
Tangibility	0.119	0.224	0	0.931	184
Tax	0.005	0.005	0	0.034	184
Dividends	0.028	0.023	0	0.158	184
Growth	0.003	0.003	-0.01	0.022	184
FreeCash	0.04	0.051	0	0.309	184
Gov_D	0	0	0	0	184
Inst_D	0.087	0.283	0	1	184
Indiv_d	0.043	0.204	0	1	184
Oil	0.043	0.204	0	1	184
Materials	0.174	0.38	0	1	184
Industrials	0.217	0.414	0	1	184
ConsumerGoods	0.174	0.38	0	1	184
Healthcare	0.13	0.338	0	1	184
ConsumerServices	0.174	0.38	0	1	184
Telecomm	0.13	0.338	0	1	184
Utilites	0	0	0	0	184
Techonolgy	0	0	0	0	184

Table A.10: Qatar Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.105	0.128	0	0.66	152
STDBVA	0.061	0.095	0	0.558	152
TDBVA	0.15	0.109	0	0.499	152
LTDMVE	0.086	0.107	0	0.52	152
STDMVE	0.049	0.092	0	0.794	152
TDMVE	0.18	0.18	0	0.695	152
Profitability	0.023	0.126	-0.617	0.29	152
Liquidity	3	6.007	0.244	69.033	152
Volatility	0.329	0.121	0.109	0.775	152
Size	18.721	2.311	9.464	22.953	152
Tangibility	0.266	0.222	0	0.961	152
Tax	0.047	0.134	0	0.78	152
Dividends	0.045	0.041	0	0.181	152
Growth	0.008	0.012	-0.007	0.084	152
FreeCash	1.147	3.952	0	22.734	152
Gov_D	0.368	0.484	0	1	152
Inst_D	0.474	0.501	0	1	152
Indiv_d	0	0	0	0	152
Oil	0.105	0.308	0	1	152
Materials	0.105	0.308	0	1	152
Industrials	0.421	0.495	0	1	152
ConsumerGoods	0.158	0.366	0	1	152
Healthcare	0.105	0.308	0	1	152
ConsumerServices	0.105	0.308	0	1	152
Telecomm	0.105	0.308	0	1	152
Utilites	0	0	0	0	152
Techonolgy	0	0	0	0	152

Table A.11: Saudi Arabia Descriptive Statistics for Panel Data

Table A.11: Saudi Arabia Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.117	0.204	0	0.994	856
STDBVA	0.088	0.154	0	0.993	856
TDBVA	0.191	0.164	0	0.884	856
LTDMVE	0.097	0.175	0	0.983	856
STDMVE	0.094	0.165	0	0.945	856
TDMVE	0.16	0.171	0	0.681	856
Profitability	0.082	0.096	-0.59	0.432	856
Liquidity	2.74	4.048	0.03	60.668	856
Volatility	0.391	0.215	0	2.817	856
Size	19.026	1.747	9.76	24.648	856
Tangibility	0.231	0.217	0	0.995	856
Tax	0.03	0.118	0	0.912	856
Dividends	0.041	0.061	0	0.423	856
Growth	0.005	0.008	-0.048	0.071	856
FreeCash	1.032	7.061	0	108.087	856
Gov_D	0.14	0.347	0	1	856
Inst_D	0.243	0.429	0	1	856
Indiv_d	0.383	0.486	0	1	856
Oil	0.019	0.136	0	1	856
Materials	0.215	0.411	0	1	856
Industrials	0.336	0.473	0	1	856
ConsumerGoods	0.168	0.374	0	1	856
Healthcare	0.047	0.211	0	1	856
ConsumerServices	0.187	0.39	0	1	856
Telecomm	0.037	0.19	0	1	856
Utilites	0	0	0	0	856
Techonolgy	0.009	0.096	0	1	856

Table A.12: Tunisia Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.105	0.129	0	0.782	432
STDBVA	0.147	0.153	0	0.867	432
TDBVA	0.264	0.178	0	0.928	432
LTDMVE	0.12	0.124	0	0.918	432
STDMVE	0.154	0.141	0	0.89	432
TDMVE	0.273	0.213	0	0.983	432
Profitability	0.061	0.095	-0.576	0.237	432
Liquidity	2.032	1.69	0.324	16.267	432
Volatility	0.375	0.212	0.157	3.04	432
Size	17.846	1.6	14.701	23.724	432
Tangibility	0.274	0.187	0.008	0.897	432
Tax	0.026	0.047	0	0.359	432
Dividends	0.015	0.029	0	0.264	432
Growth	0.005	0.014	-0.034	0.068	432
FreeCash	0.072	0.075	0	0.609	432
Gov_D	0.037	0.189	0	1	432
Inst_D	0.296	0.457	0	1	432
Indiv_d	0.148	0.356	0	1	432
Oil	0.074	0.262	0	1	432
Materials	0.148	0.356	0	1	432
Industrials	0.315	0.465	0	1	432
ConsumerGoods	0.222	0.416	0	1	432
Healthcare	0.037	0.189	0	1	432
ConsumerServices	0.185	0.389	0	1	432
Telecomm	0.037	0.189	0	1	432
Utilites	0	0	0	0	432
Techonolgy	0.056	0.229	0	1	432

Table A.13: UAE Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA)

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.09	0.178	0	0.994	440
STDBVA	0.103	0.177	0	0.959	440
TDBVA	0.147	0.138	0	0.699	440
LTDMVE	0.106	0.17	0	0.986	440
STDMVE	0.166	0.216	0	0.974	440
TDMVE	0.231	0.198	0	0.967	440
Profitability	0.05	0.078	-0.33	0.344	440
Liquidity	3.156	5.249	0.056	71.929	440
Volatility	0.594	0.308	0	1.836	440
Size	18.816	1.698	11.318	23.082	440
Tangibility	0.318	0.294	0	0.954	440
Tax	0.026	0.056	0	0.476	440
Dividends	0.02	0.029	0	0.209	440
Growth	0.006	0.012	-0.022	0.145	440
FreeCash	0.818	3.171	0	31.492	440
Gov_D	0.145	0.353	0	1	440
Inst_D	0.418	0.494	0	1	440
Indiv_d	0.236	0.425	0	1	440
Oil	0.127	0.334	0	1	440
Materials	0.145	0.353	0	1	440
Industrials	0.364	0.482	0	1	440
ConsumerGoods	0.2	0.4	0	1	440
Healthcare	0.073	0.26	0	1	440
ConsumerServices	0.182	0.386	0	1	440
Telecomm	0.036	0.187	0	1	440
Utilites	0	0	0	0	440
Techonolgy	0	0	0	0	440

Table A.14: MENA Descriptive Statistics for Panel Data

This table shows the descriptive table for both the dependent and independent variables used for the panel data regression. Book debt ratio is defined as short-term debt to total assets, long-term debt to total assets and total debt to total assets. Market debt is defined as short-term debt to market value, long-term debt to market value and total debt to market value. Profitability is defined as operating income to total assets OI/TA. Liquidity is defined as the current ratio, which is the current liability to current assets. Business risk is defined as the standard deviation of the share price (volatility). Size is defined as the logarithmic of sales Ln(Sal). Tangibility is defined as the net fixed assets to total assets (NFA/TA). Non-debt tax shield is defined as depreciation expense to total assets (DEP/TA). Dividend is defined as dividends payment amount to total assets (DIV/TA). Growth opportunities factor is defined as growth of the total assets in percentages (GTA).

Variable	Mean	Std. Dev.	Min.	Max.	N
LTDBVA	0.089	0.164	0	0.997	6368
STDBVA	0.092	0.145	0	0.993	6368
TDBVA	0.183	0.172	0	0.98	6368
LTDMVE	0.088	0.152	0	0.987	6368
STDMVE	0.114	0.172	0	0.993	6368
TDMVE	0.206	0.205	0	0.993	6368
Profitability	0.062	0.101	-0.688	1.012	6368
Liquidity	2.616	3.62	0	71.929	6368
Volatility	0.492	0.456	0	8.435	6368
Size	17.631	2.013	8.433	24.648	6368
Tangibility	0.263	0.247	0	0.999	6368
Tax	0.026	0.077	0	0.98	6368
Dividends	0.029	0.05	0	0.974	6368
Growth	0.004	0.013	-0.057	0.378	6368
FreeCash	0.534	3.62	0	108.087	6368
Gov_D	0.068	0.251	0	1	6368
Inst_D	0.384	0.486	0	1	6368
Indiv_d	0.215	0.411	0	1	6368
Oil	0.053	0.224	0	1	6368
Materials	0.158	0.365	0	1	6368
Industrials	0.314	0.464	0	1	6368
ConsumerGoods	0.205	0.404	0	1	6368
Healthcare	0.064	0.245	0	1	6368
ConsumerServices	0.177	0.382	0	1	6368
Telecomm	0.036	0.187	0	1	6368
Utilites	0	0	0	0	6368
Techonolgy	0.026	0.16	0	1	6368

A.2 SEM Results

Table A.15: Bahrain SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	-0.274	<0.001	-0.136	0.047
Size	0.261	<0.001	0.229	0.002
Growth	-0.268	<0.001	0.03	0.357
Tang	0.051	0.267	0.132	0.053
Tax	-0.225	0.003	-0.132	0.053
Risk	0	0.499	-0.039	0.317
Div	-0.153	0.029	-0.092	0.132
Liqud	-0.258	<0.001	-0.446	<0.001
R2	48		44	

Model Fit

Average path coefficient (APC)=0.170, P=0.009

Average R-squared (ARS)=0.464, P<0.001

Average adjusted R-squared (AARS)=0.432, P<0.001

Average block VIF (AVIF)=1.266, acceptable if <= 5, ideally <= 3.3

Table A.16: EGYPT SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	-0.014	0.294	-0.304	<0.001
Size	-0.037	0.078	0.164	<0.001
Growth	0.28	<0.001	-0.007	0.401
Tang	0.458	<0.001	-0.273	<0.001
Tax	-0.088	<0.001	-0.075	0.002
Risk	0.005	0.424	0.023	0.183
Div	0.052	0.021	-0.061	0.009
Liqud	0.011	0.329	-0.349	<0.001
R2	42		41	

Model Fit

Average path coefficient (APC)=0.138, P<0.001

Average R-squared (ARS)=0.415, P<0.001

Average adjusted R-squared (AARS)=0.412, P<0.001

Average block VIF (AVIF)=1.234, acceptable if <= 5, ideally <= 3.3

Table A.17: Jordan SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	-0.261	<0.001	-0.226	<0.001
Size	-0.039	0.121	0.238	<0.001
Growth	0.013	0.347	-0.054	0.052
Tang	0.271	<0.001	0.044	0.089
Tax	-0.003	0.466	0.056	0.045
Risk	-0.039	0.12	-0.068	0.02
Div	-0.047	0.078	-0.144	<0.001
Liqud	-0.201	<0.001	-0.405	<0.001
R2	21		33	

Average path coefficient (APC)=0.132, P<0.001

Average R-squared (ARS)=0.273, P<0.001

Average adjusted R-squared (AARS)=0.266, P<0.001

Average block VIF (AVIF)=1.299, acceptable if <= 5, ideally <= 3.3

Table A.18: Kuwait SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	-0.107	0.002	-0.106	0.002
Size	0.076	0.02	0.255	<0.001
Growth	-0.005	0.443	-0.016	0.334
Tang	0.437	<0.001	0.179	<0.001
Tax	-0.08	0.016	-0.003	0.47
Risk	-0.305	<0.001	-0.51	<0.001
Div	-0.012	0.373	0.016	0.331
Liqud	0.092	0.006	0.087	0.009
R2	38		51	
Average path coefficient (APC)=0.143, P<0.001				
Average R-squared (ARS)=0.445, P<0.001				
Average adjusted R-squared (AARS)=0.439, P<0.001				
Average block VIF (AVIF)=1.154, acceptable if <= 5, ideally <= 3.3				

Table A.19: Morocco SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	-0.462	<0.001	-0.106	<0.001
Size	-0.255	<0.001	0.255	<0.001
Growth	0.038	0.23	-0.016	0.32
Tang	0.008	0.436	0.179	0.04
Tax	0.095	0.03	-0.003	0.118
Risk	0.094	0.031	-0.51	0.118
Div	-0.072	0.078	0.016	0.468
Liqud	0.257	<0.001	0.087	<0.001
R2				
Average path coefficient (APC)=0.173, P<0.001				
Average R-squared (ARS)=0.504, P<0.001				
Average adjusted R-squared (AARS)=0.494, P<0.001				
Average block VIF (AVIF)=1.204, acceptable if <= 5, ideally <= 3.3				

Table A.20: Oman SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	-0.005	0.444	-0.154	<0.001
Size	-0.252	<0.001	-0.35	<0.001
Growth	-0.017	0.335	-0.014	0.358
Tang	0.37	<0.001	-0.004	0.457
Tax	0.029	0.226	0.064	0.052
Risk	-0.006	0.438	-0.012	0.377
Div	-0.023	0.283	0.042	0.139
Liqud	-0.028	0.236	-0.484	<0.001
R2	25		56	

Average path coefficient (APC)=0.116, P<0.001
Average R-squared (ARS)=0.404, P<0.001
Average adjusted R-squared (AARS)=0.397, P<0.001
Average block VIF (AVIF)=1.186, acceptable if <= 5, ideally <= 3.3

Table A.21: Qatar SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	0.295	<0.001	0.19	0.008
Size	-0.109	0.084	0.26	<0.001
Growth	0.231	0.002	0.18	0.011
Tang	0.484	<0.001	0.28	<0.001
Tax	-0.212	0.004	-0.154	0.026
Risk	-0.005	0.476	0.068	0.199
Div	0.07	0.192	0.046	0.286
Liqud	0.059	0.232	0.014	0.431
R2	68			

Average path coefficient (APC)=0.166, P=0.009
Average R-squared (ARS)=0.437, P<0.001
Average adjusted R-squared (AARS)=0.405, P<0.001
Average block VIF (AVIF)=1.669, acceptable if <= 5, ideally <= 3.3

Table A.22: Saudi Arabia SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	0.035	0.152	-0.118	<0.001
Size	-0.078	0.011	0.191	<0.001
Growth	0.014	0.336	0.016	0.321
Tang	0.79	<0.001	0.053	0.06
Tax	-0.053	0.061	-0.036	0.144
Risk	-0.005	0.441	-0.05	0.07
Div	0.033	0.167	0.095	0.002
Liqud	0.053	0.059	0.012	0.366
R2	64		6	

Average path coefficient (APC)=0.102, P<0.001
Average R-squared (ARS)=0.351, P<0.001
Average adjusted R-squared (AARS)=0.345, P<0.001
Average block VIF (AVIF)=1.151, acceptable if <= 5, ideally <= 3.3

Table A.23: Tunisia SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	-0.018	0.353	-0.053	0.133
Size	0.065	0.087	0.154	<0.001
Growth	0.021	0.332	0.187	<0.001
Tang	0.007	0.445	-0.101	0.017
Tax	0.102	0.017	-0.32	<0.001
Risk	-0.227	<0.001	0.01	0.415
Div	-0.221	<0.001	-0.015	0.375
Liqud	-0.375	<0.001	-0.134	0.002
R2	32		27	

Average path coefficient (APC)=0.126, P=0.002
Average R-squared (ARS)=0.301, P<0.001
Average adjusted R-squared (AARS)=0.287, P<0.001
Average block VIF (AVIF)=1.120, acceptable if <= 5, ideally <= 3.3

Table A.24: UAE SEM Results

Determinant	Market		Book	
	Coefficients	P-value	Coefficients	P-value
Prof	0.044	0.176	0.023	0.317
Size	-0.104	0.014	-0.155	<0.001
Growth	0.047	0.159	-0.057	0.116
Tang	0.557	<0.001	-0.117	0.007
Tax	-0.095	0.022	0.018	0.349
Risk	0.042	0.188	-0.008	0.436
Div	0.14	0.002	0.077	0.052
Liqud	0.134	0.002	0.085	0.036
R2	39		4	
Average path coefficient (APC)=0.106, P=0.006				
Average R-squared (ARS)=0.226, P<0.001				
Average adjusted R-squared (AARS)=0.212, P<0.001				

A.3 Background Tables

Table A.25: Anual Inflation consumer prices

Country Name	2005	2006	2007	2008	2009	2010	2011	2012	2013
Algeria	1.38	2.31	3.67	4.86	5.73	3.91	4.52	8.89	3.25
Bahrain	2.59	2.01	3.26	3.53	2.80	1.96	-0.36	2.75	3.19
Egypt	4.87	7.64	9.32	18.32	11.76	11.27	10.05	7.12	9.48
Iran	13.43	11.94	17.21	25.55	13.50	10.14	20.63	27.36	39.27
Iraq	36.96	53.23	-10.07	12.66	6.87	2.88	5.80	6.09	1.88
Jordan	3.49	6.25	5.39	14.93	-0.68	5.01	4.41	4.77	5.47
Kuwait	4.14	3.06	5.48	10.58	4.61	4.50	4.91	3.20	2.70
Lebanon	..	..	..	..	1.19	3.99	..	..	..
Libya	2.65	1.46	6.25	10.36	2.46	2.80	15.52	6.06	2.61
Morocco	0.98	3.28	2.04	3.71	0.99	0.99	0.92	1.28	1.89
Oman	1.86	3.20	5.96	12.09	3.94	3.20	4.07	2.91	1.25
Palestine	3.47	3.88	1.83	9.89	2.75	..	..	..	..
Qatar	8.81	11.84	13.76	15.05	-4.86	-2.43	1.92	1.87	3.13
Saudi Arabia	0.70	2.21	4.17	9.87	5.07	5.34	5.82	2.89	3.51
Syrian	7.24	10.02	3.91	15.75	2.92	4.40	4.75	36.70	..
Tunisia	2.02	4.49	3.42	4.92	3.52	4.42	3.61	5.50	6.10
Turkey	10.14	9.60	8.76	10.44	6.25	8.57	6.47	8.89	7.49
UAE	..	..	..	12.25	1.56	0.88	0.88	0.66	1.10
Yemen	11.81	10.84	7.91	18.98	5.41	11.17	19.54	9.89	10.97
Arab World	3.47	3.88	4.97	11.27	2.92	3.97	4.75	4.77	3.16
World	4.09	4.36	5.03	9.01	2.91	3.49	4.98	3.69	2.63

Table A.26: External balance on goods and services (% of GDP)

Country Name	2005	2006	2007	2008	2009	2010	2011	2012	2013
Algeria	23.13	26.89	22.20	19.26	-0.58	7.02	10.23	8.63	2.86
Bahrain	19.47	22.17	21.57	19.27	18.97	18.60	31.20	26.45	..
Egypt	-2.27	-1.62	-4.58	-5.59	-6.64	-4.78	-4.12	-8.42	-7.03
Iran	8.40	8.04	10.64	..	..	..	..	..	..
Iraq	-7.05	12.41	17.71	19.60	0.11	5.88	16.66	15.55	1.23
Jordan	-41.50	-34.00	-37.52	-31.01	-23.20	-20.80	-26.20	-28.02	-28.84
Kuwait	35.71	41.38	35.10	40.84	30.07	36.32	47.32	48.45	45.01
Lebanon	-20.73	-21.29	-24.83	-30.21	-24.52	-25.60	-27.95	-20.57	-13.60
Libya	38.13	45.84	38.21	39.92	..	..	..	..	..
Morocco	-5.60	-5.48	-9.12	-13.39	-10.99	-9.83	-13.11	-14.40	-13.21
Oman	27.22	24.51	16.49	21.30	15.99	24.45	33.47	26.72	..
Palestine	-59.00	-60.02	-58.44	-52.15	-52.42	-43.72	-37.49	-39.26	..
Qatar	35.42	27.06	24.44	33.29	22.13	38.45	45.88	..	..
Saudi Arabia	32.15	29.72	25.01	28.12	9.32	16.63	26.62	25.10	21.15
Syrian	-1.24	0.78	0.81	..	..	..	..	..	..
Tunisia	-0.39	-1.88	-1.90	-3.05	-2.70	-4.76	-7.19	-9.17	-9.17
UAE	15.62	17.79	7.97	9.22	5.84	6.51	18.10	22.54	20.73
Yemen	5.02	0.44	..	..	..	..	..	..	..
World	0.21	0.21	0.24	-0.29	0.26	0.15	-0.13	-0.06	0.13
MENA	14.76	15.45	12.10	13.94	4.94	9.04	14.80	13.46	11.11

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