

UNIVERSITY OF SOUTHERN QUEENSLAND

***Foreign Exchange Exposure, Competition and the
Market Value of Domestic Corporations of UAE***

A Dissertation submitted

By:

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***In Partial Fulfilment of the Requirements for the award
Of***

Doctor of Philosophy

School of Commerce

Faculty of Business, Education, Law & Arts

The University of Southern Queensland

Australia

May, 2013

ABSTRACT

The purpose of this study is to examine the foreign exchange exposure of domestic corporations in the United Arab Emirates (UAE) and the implications of that exposure on the market value of those corporations considering the effect of competition as a determinant of exchange rate exposure over the period January 2005 to December 2011 for 49 firms. It was found that in many cases domestic firms are likely to experience exposure to foreign exchange rate. The analysis indicates that UAE's domestic firms, on average, experience negatively significant exposure to the Euro (EUR), British pound (GBP), Australian dollar (AUD), Indian rupee (INR) and equally weighted (EQW) exchange rate and positively significant exposure to the Japanese yen (JPY). The negative exposure indicates that UAE domestic firms experience cost exposure to a depreciation of the currencies GBP, EUR, AUD, INR, and EQW, and this leads to reduced profitability and increased cost of production for domestic firms. An alternative explanation is that UAE domestic firms are under pressure of competition with companies and products originating from destination countries with of these currencies. More interestingly, domestic firms with high debt ratio, market-to-book ratio and low exposure with asset turnover are more likely to have greater exposure to foreign exchange rates. This study also measured the log of equity market value as a measure of size, Herfindahl and PCM as proxy of competition.

CERTIFICATION OF DISSERTATION

The work submitted in this dissertation is original, except as acknowledged in the text. The material herein has not been submitted, either in whole or in part, for any other award at this or any other university except where acknowledged.

Signature of Candidate

Date

Signature of Principal Supervisor

Date

Signature of Associate Supervisor

Date

Dedication

I dedicate this study to:

*For the spirit of my father who passed away as a result of an accident and I could do
nothing for him,*

For my beloved mother who does not know the meaning of “can't”.

Thanks for her tireless encouragement

And

My best brother Mohammed Alssayah

and the rest of

wonderful brothers and sisters,

For their love, prayers, advice and kind support, may Allah reward them all.

A special dedication goes to my

Dearest wife Hanan and my children Alhareth, Shahd, and Mohammed

*for their patience, sacrifices and kind support during my PhD journey, May Allah bless
and reward them all.*

ACKNOWLEDGEMENTS

To begin with, I would like to thank Almighty Allah, worthy of all praises, without whose help, this dissertation would not have been completed.

I am greatly indebted to my principal supervisor “*Dr. Peter Phillips*” for his constructive critiques, comments, suggestions and constant patience and guidance throughout the period of my study. I also wish to thank associate supervisor Professor Chandrasekhar Krishnamurti, who afforded me constant guidance and substantial encouragement throughout the explanation of this work. I really appreciate their support and their patience and guidance.

I am also thankful to Professor Frank Bullen, Dean, Faculty of Engineering and Surveying, for his support and advice in the early stages of study at this university. Furthermore, I am grateful to Mrs Chris O’Reilly, for her continuous help and editing of my thesis writing. I would like to thank Dr Hussain Al Hammadi, Chairman of Consultant Training and Strategic Studies in the Ministry of Economy of the Government of Dubai for his advice and information. Furthermore, I would like to acknowledge and thank all those people I have dealt with who have made this field special to me. Cordial thanks to my Libyan government for its endless financial support. A record of a significant achievement and successful research needs abundant support physically and emotionally. I am grateful to all the people and organisations who have contributed in one way or another to this research study.

I would like to thank and express my appreciation to the University of Southern Queensland for their moral and financial support during the Libyan revolution. I would also thank the Faculty of Business and Law and the School of Accounting, Economics and Finance for accepting me as part of the university, and all of my fellow PhD candidates and colleagues for their help and beneficial discussions

List of Abbreviations

AED	Dirham of United Arab Emirates
AUD	Australian Dollar
CCASG	Cooperation Council for the Arab States of the Gulf
DFM	Dubai Financial Market
DIFC	Dubai International Financial Centre
EQW	Equally Weighted
EUR	Europe Euro
GBP	UK Pound
GCC	Gulf Cooperation Council
GDP	Gross Domestic Product
GrMargin	Gross Margin
IndHerf	the Average Industry Herfindahl Index
INR	Indian Rupee
JPY	Japanese Yen
MENA	Middle East-North Africa
MkBk	Average Market-To-Book Ratio
NMSs	New Member States
PCM	Price Cost Margins
PPP	Purchasing Power Parity
PrMrargin	Profit Margin
R&D	Research and Development
ROE	Return on Equity
SICj	Industry Dummy Variables
UAE	United Arab Emirates
UIP	Uncovered Interest Parity
VAR	Vector Auto Regression
VECM	Vector Error Correction Model

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CHAPTER 1: INTRODUCTION AND RESEARCH BACKGROUND

1.1 Introduction

There are many factors which impact on exposure of companies and organisations to the risk of fluctuations in foreign exchange rates. These factors include: (i) the intrusion strategies of multinational companies in foreign markets; (ii) globalisation of national economies at a very fast pace; and (iii) acceptance of floating exchange rate mechanisms. The exposure to exchange rate fluctuations can be defined as 'economic exposure to exchange rate risk' (Adler & Dumas 1984), and 'the rate of responsive of company's share price and its monetary value with the change in exchange rate' (Hekman 1983). The exchange rate remains the most significant risk factor affecting cash flows for those companies that extensively import or export, or have heavy assets and liabilities in foreign countries that are denominated by foreign currencies.

Companies not engaged in any direct investment or operations in a foreign country are also subject to foreign exchange risk because they also face competition with global competitors and are subject to the macro-economic environment (Parsley & Popper 2006). Therefore, exchange rate risk is one of the main areas of interest and analysis for financial experts in the current business environment. Researchers have continuously strived to establish measures through which the level of firms' exposure to fluctuations in exchange rates can be identified as, currently, it is very difficult for management to identify the direction of exposure in exchange rates.

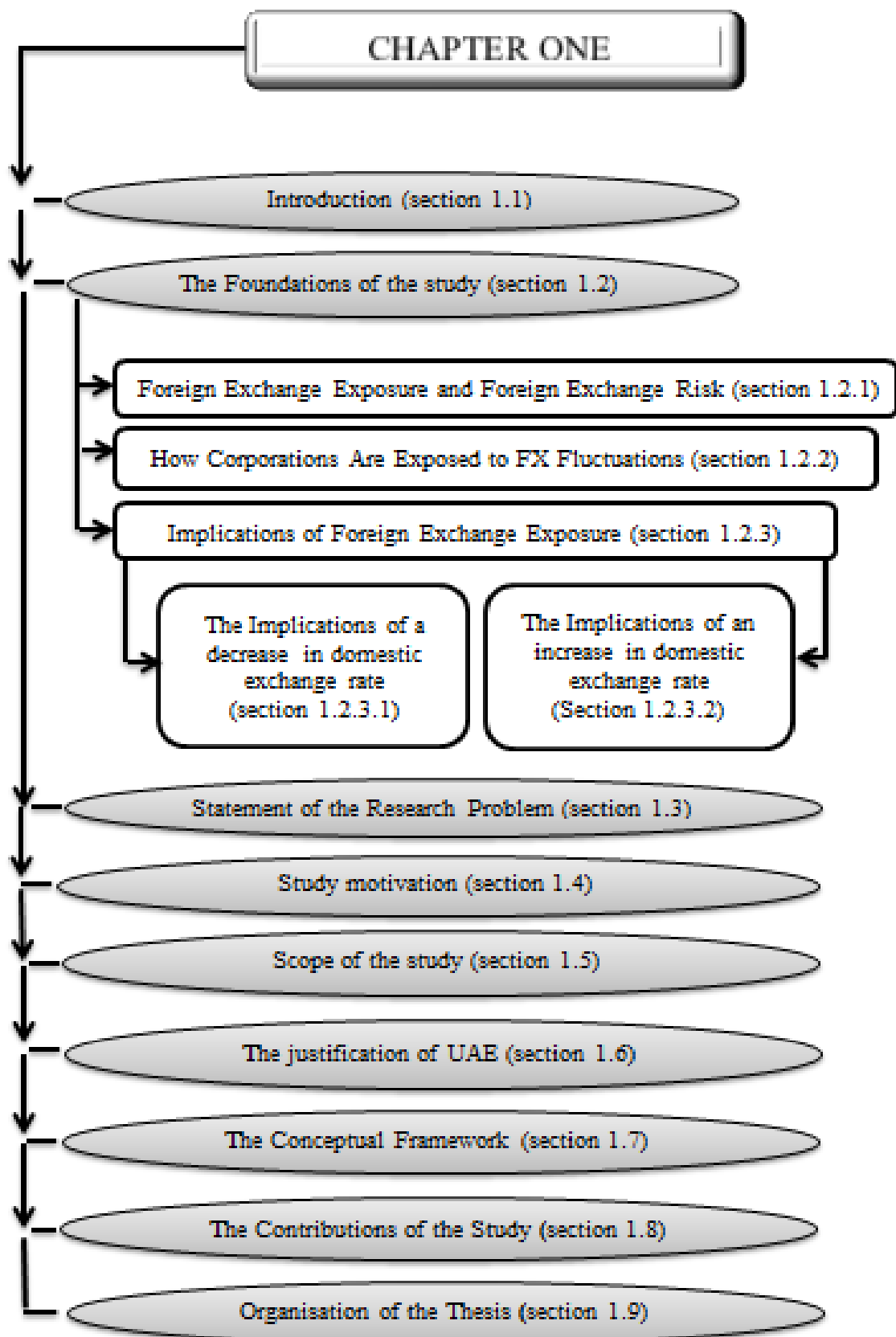
There have been numerous research (Adler & Dumas 1984; Choi, Elyasiani & Kopecky 1992; Bodnar & Gentry 1993; Choi & Prasad 1995; Chamberlain, Howe &

Popper 1997) conducted to identify the level exposure of firms toward movement in exchange rates, however, most of these studies are inconclusive. These studies have been concerned mainly with industrialised economies rather than economies of developing countries such as the United Arab Emirates (UAE).

The purpose of this study is to examine the foreign exchange rate exposure of domestic corporations within the United Arab Emirates (UAE) and the implications of that exposure for the market value of those corporations, taking into account the effect of competition as a determinant of exchange rate exposure. The justification for this study is that the UAE has an open economy with a high per capita income and a sizable annual trade surplus. In addition, the World Economic Forum issued its Global Competitiveness Report for the year 2010-2011 in which the UAE was the only Arab country included in the elite club of countries that showed progress in endorsing new and improved methods for developing their economies.

This introductory chapter is organised as follows. Section 2 provides the foundations of the study and introduces the concept of foreign exchange rate exposure in three areas: (1) foreign exchange exposure and foreign exchange risk; (2) how corporations are exposed to foreign exchange fluctuations; and (3) implications of foreign exchange exposure. Section 3 provides a statement of the research problem. Sections 4 and 5 provide the study motivation and scope of the study respectively. The last two sections (section 6 and section 7) provide the justification in choosing the UAE for this study and present an outline of the general format of the thesis.

Figure 1.1: Outline of Chapter 1



1.2 Foundations of the Study

Contemporary finance and economics has been concerned with the effects of changes in exchange rates on returns and cash flows of corporations (Aggarwal & Harper 2010). The definition of an exchange rate is the currency price of one country relative to another (Madura 2010). Purchasing Power Parity (PPP) is the exchange rate between two currencies that would equate the two relevant national price levels if expressed in a common currency at that rate; consequently, the purchasing power of a unit of one currency would be the same in both economies. This concept of PPP is often termed absolute PPP. Relative PPP is said to hold when the rate of depreciation of one currency relative to another matches the difference in aggregate price inflation between the two countries concerned (Lan 2001).

After the collapse of the Bretton Woods System in the mid-1970s, most corporations throughout the world recognised fluctuating exchange rates as an important risk factor (Bartram 2008). This is especially the case in those industries that have been subject to substantial globalisation (Bartram, Brown & Minton 2009). The changes in exchange rates have had an impact on domestic and international corporations that can be defined as the ‘exposure’ of the corporation to fluctuating foreign exchange rates. The exposure to foreign exchange rate fluctuations usually manifests itself as the impact on: (i) ‘the value of net monetary assets with fixed nominal payoffs and (ii) the value of real assets held by the firm’ (Jorion 1990, p. 333).

The uncertainty of exchange rate in the financial environment increased when the global economy transitioned from the Bretton Woods System to a floating exchange rate system. This change has made exchange rates one of the most important aspects within the business environment. Studies relating to foreign exchange exposure of

firms remain controversial with many failing to reach consensus in this regard. Several empirical studies are also inconclusive (Jorion 1990, 1991; Bartov & Bodnar 1994; Choi & Prasad 1995; He & Ng 1998). Therefore, some of the findings of researchers about the determinants which impact on the value of firms with changes in exchange rate are only applicable to very few organisations and this scenario is referred to as the 'exposure puzzle'.

In particular, domestic companies are not concerned with exposure to foreign exchange rates. Domestic firms are unlikely to engage in hedging to protect themselves from foreign exchange risk and therefore, in reality, they are more prone to exchange rate risk. This fact is, however, not widely understood among managers, despite many economists being aware of this point.

Domestic firms are also exposed to foreign exchange risk. Although they are not directly involved in international transactions with their stakeholders, who include customers, suppliers and finance providers, deal directly in international markets and thus these companies are also exposed to foreign exchange risk in the form of interest rates and prices of input materials. Furthermore, the competition inside the country among firms, whether domestic or foreign, means firms are also exposed by domestic firms to foreign exchange risk. However, accounting rules have been adopted to ease exposure of international and multinational companies who have direct transactions with foreign countries and these accounting rules allow benefits of foreign exchange hedging against specific hedge arrangements only. Subsequently, the main purpose of this study is to identify the level of foreign currency exposure borne by domestic companies not involved in international transactions and not operating internationally.

A further aim of this study is to determine the main factors impacting on the level of foreign exchange exposure of domestic firms. The assumption is that these companies are exposed to foreign exchange risk at a level similar to the multinational and international organisations because they also have to transact business with suppliers, customers and competitors who deal directly in international transactions and are exposed to direct foreign exchange risk, global competition, and movement in currency and economic cycles. This study does not encompass international organisations; rather, its main focus is to analyse the impact of foreign exchange movements on domestic companies and to analyse the data of companies in the UAE for a period of seven years from 2005 to 2011 for monthly data (84 months for seven years).

1.2.1 Foreign Exchange Exposure and Foreign Exchange Risk

Though the meaning of risk and exposure may be considered to be entirely different, they are used analogously in studies on foreign exchange exposure. In reality, the exposure represents the quantum of loss that a firm can incur due to changes in foreign exchange and the term *risk* is used to identify the probability of such loss (Moosa 2004, p. 420). According to Adler and Dumas (1984), the concept of exposure measurement is based on the sensitivity of the firm's value to changes in the exchange rate. Therefore, changes in cash flow and value of the company are affected by changes in foreign exchange rates.

Levi (1996) defines risk and exposure separately. He defined foreign exchange risk as being 'related to the variability of domestic-currency values of assets, liabilities, or operating incomes due to unanticipated changes in exchange rate' and, according to him; the definition of foreign exchange exposure is 'what is at risk'. There are

numerous facets of risk and exposure in his definition. Firstly, the value of the firm in local currency is affected by change in foreign currencies in real terms. Secondly, the values should also reflect the adjustment of inflation. Thirdly, the exchange rate exhibits long term variations, and the flows and inventory should also be considered. His fourth contention was that if the firm operates purely in the domestic market, even then it is indirectly exposed to changes. The final argument is that foreign exchange exposure and foreign exchange risk deal with unanticipated changes in foreign exchange rates. In addition, the expected fluctuations in foreign exchange are adjusted by the market itself and it is only the non-expected variations which constitute risk.

Generally, the risk of foreign exchange can be defined as the level of change in cash-flow of the firms in the near future due to changes in exchange rates; while foreign exchange exposure means change in the value of the company which is attributable to the change in exchange rates (Madura 2010).

1.2.2 How Corporations are Exposed to Foreign Exchange Fluctuations

Corporations are exposed to the risk of changing exchange rates through many channels. For example, a firm relying on international or cross-border sales, the firm exposes itself to the risk of foreign exchange rate fluctuations and the change in exchange rate will have an impact on the value of international sales revenue. However, exposure to the exchange rates can be decreased or managed. For example, if the firm sources raw materials from abroad or any cross-border location, it can ensure that its imports and exports are both in the same currency.

Generally, however, such a type of firm may have assets and liabilities at cross-border locations. This can play a vital role in increasing the firm's exposure to

changing exchange rates. Furthermore, it should be noted that it is not necessarily only those firms involved in exporting or importing activities, or those that classified as multinational corporations that are exposed to changing exchange rates. Local companies, firms and corporations that do not have any international revenue or are not involved in cross-border sales may also be impacted by changing exchange rates, possibly indirectly through competition with other importing companies (Jong, Ligterink & Macrae 2006).

1.2.3 Implications of Foreign Exchange Exposure

Researchers continue their efforts to understand the determinants, effects and levels of exposure to changing exchange rates for corporations because of the implications for business activity of foreign exchange exposure and the difficulty in predicting fluctuations in exchange rate markets (Salifu, Osei & Adjasi 2007). Empirical research indicates that volatile exchange rates affect the revenues and profits of both multinational and local corporations (Muller & Verschoor 2006). Because of the prevalence of outsourcing activities to foreign countries, corporations incur costs in foreign currency (e.g., wages, taxes and material) and it is important for corporate financial managers to be aware of the extent of this exposure (Abor 2005). Furthermore, corporations not involved in foreign exchange trades or outsourcing activities are also exposed to the fluctuating exchange rates through competition with multinational organisations, foreign competitors, or macroeconomic conditions. Therefore, many local and multinational organisations find their income statements and business performance affected by fluctuating exchange rates, in spite of their having only indirect financial exposure (Parsley & Popper 2006).

A change in prices, the cost of final goods, the cost of raw material, labour costs or the costs of input or output and other substitute goods due to fluctuating exchange rates may have an adverse effect on the competitive position of a local or domestic firm with no international and foreign activities. Theory and empirical work in financial economics suggests that the exposure of a firm to changing exchange rates depends on the types of product and the nature of the competitive environment in which the firm operates (Bradley & Moles 2001). Therefore, the general concept of exposure is the level of impact on the net worth of a firm due to fluctuating exchange rates (El-Masry 2006).

1.2.3.1 Implications of a Decrease in Domestic Exchange Rate

If the value of the exchange rate of the domestic currency falls, overall imports become costly for those companies which are gross importers and, consequently, they will provide a lower dividend to their shareholders. This, in turn, will adversely affect the share price of the company. In a study by Heim (2010) he explained that:

‘A decline in the U.S. exchange rate (XR) decreases the amount of foreign currency a dollar can buy, which can increase import prices. Making foreign goods Americans purchase more expensive, thereby reducing American real incomes. This “income effect” may reduce U. S. demand for both domestic and imported goods. It may also cause a “substitution effect” by making imports more expensive: demand may shift toward cheaper American goods. Also, the cheaper U.S. dollar may make U.S. goods cheaper, increasing American exports.’

In this situation where the exchange rate of domestic currency is declining, exporters benefit substantially because their costs are reduced compared to their revenue, thus increasing their share of market and profits. On the other hand, the servicing of foreign debts will become more difficult and cost of capital expenditure will also rise if capital machinery is imported from other countries. Furthermore, goods produced locally will be cheaper than imported goods and the environment will become more competitive (CPA 2009).

According to Jabara (2009), when the currency of importers depreciates, exporters are obliged to adjust their price accordingly so that they can meet the earlier price of importers because they have a very elastic demand curve and a small increase in price will result in a significant decrease in sales. These importers might become the target of other suppliers in the import market or by suppliers in domestic markets. However, hierarchy and structure of the industry determine whether or not the exchange rate differential can be passed on by the exporters to the importers. In the market where the exporter has a competitive edge but does not want other competitors to enter into the market, firms might reduce their profit and thereby preserve their share of market. On the other hand, the monopolist exporters might pass on the burden of exchange rate to the importers to maintain their profit margins because they are aware the demand curve is not very elastic.

The main factors influencing companies' exchange rate risk is its importers and exporters prices distribution in foreign and domestic markets. The domestic competition that the multinational firm meets amid the influences of imported and local production is another vital factor for exchange risk. Shapiro's (1975) model also implied that in the case of depreciation of the local currency, a value increase in the domestic firm will occur along with a decrease in the foreign value of the firm with which it competes. The arguments of these studies are that, for an export-dominant country, the currency appreciation has a negative effect on the domestic stock market due to the reduction of export-market competitiveness. On the other hand, for a dominant import country, the appreciation causes a positive impact on the domestic stock market since it causes lower input costs. Competitive effects depend on the structure of the firm's markets in which it sells its products and sources its inputs. Firms are categorised as having either high or low sensitivities to changes in

exchange rates for costs or prices, or both. Firms which have a mismatch between their cost and price sensitivities (that is, exporter and importer firms in Flood and Lessard's terminology) have the greatest degree of economic exposure. therefore, this study try to describe and investigate the sensitivity of the return value of domestic firms to exchange rate movements and the effect of the exposure on the value of domestic firms taking into consideration the effect of competition as a determinant of exchange exposure.

1.2.3.2 Implications of an Increase in Domestic Exchange Rate

In contrast to the above arguments, if the value of the home currency increases, the value of the company in a foreign country will decrease and exports will be less competitive. This may lead to a reduction in profit margin for exporters. Companies in this case cannot receive benefit from higher profit margins due to reduction in their sale proceeds which, subsequently, will result in lower dividends for their shareholders. In addition, the value of monetary assets investment in foreign subsidiaries will decrease when the value of the domestic exchange rate increases. Furthermore, the importers' competitors receive benefit over domestic producers and have the potential to successfully compete with local suppliers due to the decrease in foreign inputs costs (CPA 2009). Moreover, if the weight of imported goods in the basket of consumer price index is higher, the response of price toward change in exchange will also be higher (Garcia & Restrepo 2001). In addition, the depreciation of the exchange rate will increase the cost of capital goods and imported raw material, and the response of price of domestically produced goods will also be higher (Sahminan 2002).

In general, most of the goods which are imported are directly exposed to changes in foreign exchange rates, but it is also a fact that most goods that are marketable are subject to change in exchange rates. There are a number of direct or indirect channels that can be affected by domestic prices through fluctuations in the exchange rate (Hyder & Shah 2005). In addition, the most important channel affecting imported goods and raw material in the short term is the exchange rate pass-through; and the most indirect channel is competition. Furthermore, firms in an import competitive environment might inflate their prices because they are competing with other foreign counterparts (Hyder & Shah 2005). Generally, the increase in local currency value favours the importers; and a decrease in local currency value increases the cost of imported materials (Jabara 2009).

1.3 Statement of the Research Problem

Fluctuations in exchange rates may have an impact on an organisation's operating cash flows, revenue and costs. Consequently, there may be changes in the value and riskiness of an organisation's cash flows and the company's publicly traded securities. Because of the globalisation of business, very few organisations can be classified as purely local firms (Kiymaz 2003). It is often argued that local or domestic firms have no reason to hedge themselves against a currency risk. Globalisation of financial and product markets means that domestic firms are still likely to be exposed to FX rates as they increasingly compete with international firms based in or operating in their own domestic economy (Aggarwal & Harper 2010).

Because of the indirect nature of FX exposure for local or domestic firms, the managers of these firms are unwilling to engage in hedging activities that may mitigate exchange rate exposure. According to Aggarwal and Harper (2010),

domestic firm usually has no reason to hedge against foreign exchange risk. In addition, Marston (2001) also emphasised that the value of domestic firm can also experience changes in value when changes in the exchange rate occur. The reason behind this effect is that domestic firm may compete with overseas firms in the local market or may have input purchases that are highly dependent on exchange rates. As a result, domestic firms may have significant exposure to foreign exchange rates. UAE has a small open economy with a high degree of exchange rate pass-through (as the small size of the market ensures that the main competitor is normally an importer). Therefore, most domestic companies face exposure to changing FX rates even if they are not actively trading overseas (Naylor & Greenwood 2008). Furthermore, because of the primarily domestic focus of some companies, the managers of UAE companies operating entirely domestically cannot be expected to fully understand the importance of estimating the fluctuation in exchange rates on the cash flows and value of their firm. Consequently, hedging activities within such companies are likely to be insubstantial.

Because of the potentially adverse effects of exchange rate exposure and the difficulty in predicting the movements of exchange rates, research into the determinants and nature of the exchange rate exposure of domestic UAE corporations and the implications of that exposure for firm value is likely to contribute to both the literature and practice. The research problem can be stated as follows:

What are the determinants of the exchange rate exposure of domestic corporations in the UAE and what are the implications of this exposure for the market value of those corporations?

Four sub-questions have been formulated in order to investigate the general research problem:

- 1- What is the extent of the exposure of UAE domestic firms to fluctuations in foreign exchange rates?
- 2- What factors determine a domestic firm's exposure to foreign exchange rates and what is the role of competition as a determinant?
- 3- Do services firms experience greater exposure to foreign exchange rate fluctuations than industrial firms?
- 4- Is there a difference in the determinants of foreign exchange exposure when comparing services firms to industrial firms?

1.4 Study Motivation

This study is motivated by ongoing concerns about the impact of foreign exchange rate exposure on the value of returns of domestic firms in the UAE. More specifically, this research is motivated by concerns about the increased foreign exchange risk faced by firms after the global financial crisis and the lack of research into the foreign exchange exposure of domestic firms operating in developing countries such as the UAE. Kolasa, Rubaszek and Taglioni (2010) indicated that firms in most countries have experienced the adverse effects of world trade contraction, even firms in countries that have avoided the worst of the financial crisis. According to Melvin and Taylor (2009), exchange rates have experienced a record level of unpredictability. The corporate non-financial managers of domestic UAE firms who do not consider that risks are associated with foreign exchange when sales and purchases are made solely in its local market may expose their business and their shareholders to substantial risks.

1.5 Scope of the Study

The main objective of this study is to focus on the determinants of the exchange rate exposure of non-financial domestic UAE firms and the effect of that exposure on the value of domestic firms taking into consideration the effect of competition as a determinant of exchange exposure. This study will focus on the main market of the UAE. The sample for this study will be 133 domestic firms listed on the main market of the UAE between 2005 and 2011 for monthly data (84 months). In addition, this study focuses only on firms with sales and purchases in the local market (i.e., domestic corporations).

1.6 Justification for Choosing the UAE

The justification in choosing the UAE for research and analysis in this study is that the UAE has an open economy with a high per capita income and a sizable annual trade surplus. The successful efforts in the economics of UAE diversification have reduced the share of oil and gas 25% of GDP. A boost has been given to the private sector by the government providing greater economic provisions and increasing its budget allocation for the creation of more jobs and infrastructure development (CIA 2011). Foreign trade constitutes an important factor for the economic activity in the UAE, confirming that the UAE is an open economy. For instance, the proportion of exports and imports to GDP in the UAE exceeded unity for every year during the 1990s, compared to the US at less than 0.25 in the same period (Darrat & Al-Yousif 2003).

Correia (1993) found that domestic firms to be more exposed to foreign exchange rate movements than MNCs in their study. According to Eun and Resnick (1988) and Ceglowski (1989) domestic firms are sensitive to foreign exchange, probably even

more than MNCs, through a substitution effect. Empirical research has focused frequently on the impact of foreign exchange fluctuations on both MNCs and industry portfolios outside the UAE. Most studies have tended to concentrate on US data. This study examines foreign exchange rate exposure for UAE non-financial companies. It seems that the literature suggests that foreign exchange rate changes have an important effect on the values of firms and industries, both domestic and multinational. The variation in these findings makes it difficult to identify a link between exchange rate exposure and stock prices. In order to resolve this debate, more research needs to be conducted on exchange rate exposure and its determinants on a sample of UAE domestic nonfinancial companies”.

In addition, the main purpose of this study is to investigate how foreign exchange rate changes affect the competitiveness of domestic firms in developing countries. Consequently, this study focuses on a developing country that is highly ranked in relation to competitiveness globally. According to the Global Competitiveness report, the UAE has received a high ranking of competition and is also included in the elite club of countries showing an increment in endorsing new and improved methods for developing their economies.

1.7 The Conceptual Framework

This study employs a regression model inferred from Jorion (1991). The analysis starts with a two-factor model as independent variable: (1) the return on the market index; and (2) the exchange rate changes. To test the relationship between foreign exchange rate exposure for firms and the average of the appropriate financial variables for the period of study for each firm, this study employs the following regression model postulated inferred from Aggarwal and Harper (2010), and the

component of the exchange rate as the eleventh factor, with some modification to this model. To measure foreign exchange exposure, this study draws on the two factor model, based on Jorion (1991), the exchange rate, and a market index as an independent variable.

$$R_{i,t} = \alpha + \beta_i R_{m,t} + \gamma_i XR_{j,t} + \varepsilon_i \dots\dots\dots (1.1)$$

From the equation (1): α is the constant term; $R_{i,t}$ is the return of firm i , over time period t ; $R_{m,t}$ is the return on the market index; $XR_{j,t}$ is the exchange rate change of currency or currency index that represent six currencies used in this study j over time period t ; and γ measures the firm's residual foreign exchange exposure to the foreign exchange exposure of the market. This study investigated the impact of foreign exchange rates on a monthly basis. Due to the exposure of foreign exchange rate the impact comes from the competitive situation and is primarily indirect. The average monthly foreign exchange rate (Europe euro, Japanese yen, UK pound, Australian dollar, and Indian rupee currencies, as well as equally weighted exchange rate) will be used to determine its impact on the return for the full sample of firms. The reason behind chosen these countries is that the UAE's trade has strong trade relations with these countries. In addition, these countries represent the first 10 major trade countries with the UAE. In contrast, some of the 10 major trade countries with the UAE has been excluded from this study, because their currencies pegging with the US dollar and UAE's currency has been stable against the U.S. currency since the mid-1997s. The measures of change in exchange rate coefficients will provide the relationship to the index through the effect of the exchange rate on stock return.

$$R_{i,t} = \alpha + \beta_i R_{m,t} + \gamma_i GBP_{j,t} + \varepsilon_i \dots\dots\dots (1.2)$$

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i EUR_{j,t} + \varepsilon_i \dots \dots \dots (1.3)$$

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i JPY_{j,t} + \varepsilon_i \dots \dots \dots (1.4)$$

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i AUD_{j,t} + \varepsilon_i \dots \dots \dots (1.5)$$

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i IND_{j,t} + \varepsilon_i \dots \dots \dots (1.6)$$

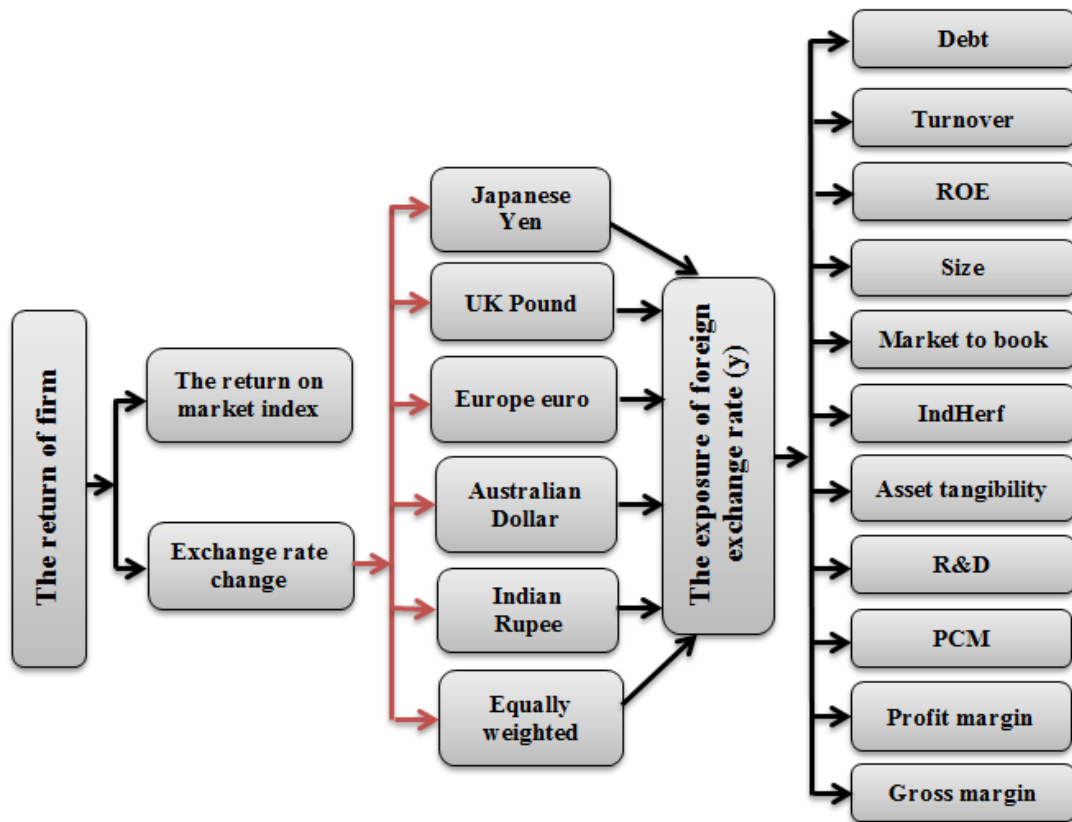
$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i EQW_{j,t} + \varepsilon_i \dots \dots \dots (1.7)$$

The motivation in choosing this model is that the exchange rate risk in this model is the residual risk after the control of the market's own exchange rate exposure. In addition, this model is the most preferred approach by researchers to measure the exposure of foreign exchange (Bodnar & Wong 2003). Ordinary least squares are used for the equations (2-7) to obtain the exposure of exchange rate coefficients for the study sample. The unavailability of US dollar and Chinese Yuan exchange rates means these currencies are not employed in this study despite these countries having major trading relationships with the UAE. The reason behind the decision to exclude these currencies from this study is that the United Arab Emirates currency has been stable against the U.S. currency since the mid-1997s, valued at AED 3.67 per US\$1 and pegging the Chinese Yuan to the US dollar.

To test the relationship between foreign exchange rate exposure for firms and the financial and operational variables (the determinants of foreign exchange rate) that influence a firm's ability to reduce exposure, this study employs the following regression model drawn from Aggarwal and Harper (2010) with some modifications.

$$\begin{aligned} |\hat{\gamma}_i| = & \alpha + \beta_1 \text{Debt} + \beta_2 \text{Turnover} + \beta_3 \text{ROE} + \beta_4 \text{Size} + \beta_5 \text{MkBk} + \beta_6 \text{IndHerf} + \beta_7 \text{AssetTangibility} + \\ & \beta_8 \text{R\&D} + \beta_9 \text{PCM} + \beta_{10} \text{profit margin} + \beta_{11} \text{Gross margin} + \sum_{j=2}^n b_j \text{SIC}_j + \varepsilon \dots \dots \dots (8) \end{aligned}$$

Figure 1.2: Conceptual model of Factors Affecting The return of firms



Source: Developed for this research

1.8 The Contributions of the Study

Three major contributions to the literature are made by this research. Firstly, this study extends the literature regarding developing countries and Clarify the relationship between change in the exchange rate and the value of domestic firms by examining a specific and topical type of the determinants of the exchange rate exposure of non-financial domestic UAE firms and the effect of that exposure on the value of domestic firms taking into consideration the effect of competition as a determinant of exchange exposure. The contribution of this study is not restricted to the UAE context, however. It also extends to the wider field of determinants of

change in foreign exchange rate research's in relevant for United States, including the Western countries, and developing countries.

Secondly, because of the indirect nature of foreign exchange rate exposure for local or domestic firms, the managers of these firms are unwilling to engage in hedging activities that may mitigate exchange rate exposure. In addition, domestic firms are still likely to be exposed to foreign exchange rates as they increasingly compete with international firms based in or operating in their own domestic economy. This study, therefore, highlight the importance of analysis of determinants of the exchange rate exposure of domestic corporations in the UAE and what are the implications of this exposure for the market value of those corporations.

Thirdly, The results of this study suggest that the domestic firms may get better understanding for risk management and the exposure of foreign exchange rate to increase a firm's market value. These results could be viewed in two ways. First, investors may not know how to interpret and analysis the exposure of the exchange rate on the value of domestic firms; thus they do not consider this information to be useful for their firms' value. second The corporate non-financial managers of domestic UAE firms who do not consider that risks are associated with foreign exchange when sales and purchases are made solely in its local market may expose their business and their shareholders to substantial risks. thus research into the determinants and nature of the exchange rate exposure of domestic UAE corporations and the implications of that exposure for firm value is likely to contribute to both the literature and practice.

1.9 Organisation of the Thesis

This thesis is divided into eight chapters. The current chapter presents the foundations of the study, foreign exchange exposure and foreign exchange risk, implications of foreign exchange exposure, how corporations are exposed to foreign exchange fluctuations, statement of the research problem, study motivation, scope of the study, and structure of the thesis.

Chapter 2 concentrates on an overview of UAE and is divided into subsequent sections. The chapter provides a background summary of the United Arab Emirates (UAE). In addition, it describes features of the economy in general and provides general information about the economic context, balance of payments, imports and exports of the UAE to support why the country has been chosen for the purposes of this study. The chapter also describes the banking system in the UAE and how the Central Bank of UAE and local and foreign incorporated banks operate in the UAE.

Chapter 3 explains the literature review of foreign exchange exposure related to this study. Chapter 3 covers six important issues: (i) exchange rate exposure and the value of firms; (ii) the determinants of exchange rate exposure; (iii) exchange rate and competition; (iv) how to manage and hedge foreign exchange rates; (v) how to cover exchange rate exposure and pass through; and, finally, (vi) how an emerging state addresses the experience regarding foreign exchange.

Chapter 4 explains existing theory concerning the exposure of foreign exchange rates and ‘competition’ as a determinant of foreign exchange exposure. This chapter contains theory and determinants of this study and foreign currency exposure. The chapter also describes types of foreign exchange rate exposure and explains the relationship between exchange rates, purchasing power parity and competition.

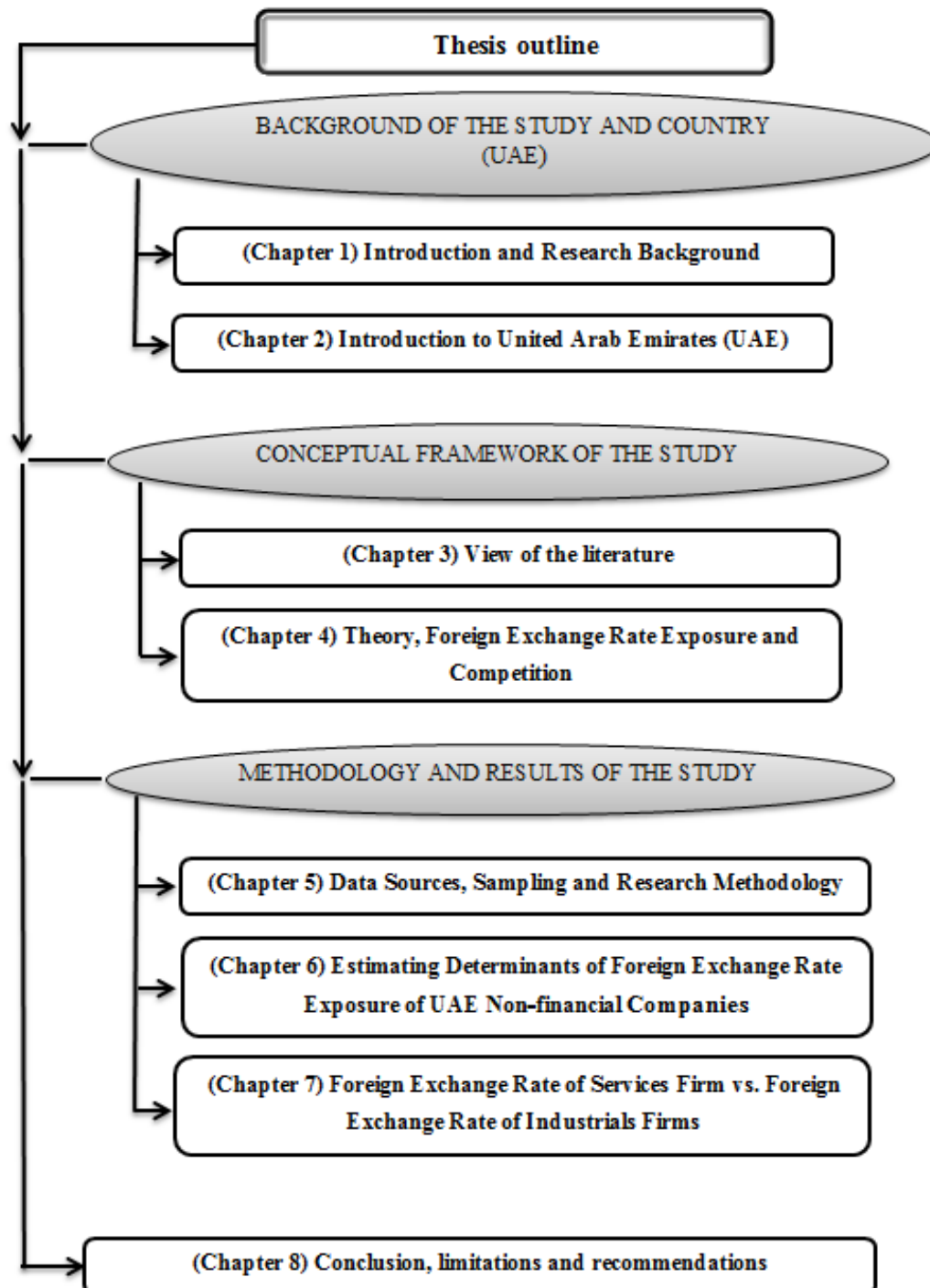
The fifth chapter presents data sources, sampling and research methodology. This chapter discusses the question that is investigated in the thesis. The chapter presents sample selection, data sources and why the study focuses on UAE firms. In addition, this chapter provides a description of the data source and empirical methodology. The last component in Chapter 5 is the provision of a measurement and definition for every factor in this study.

Chapter 6 discusses the empirical results of the relationship between stock returns and foreign exchange rate changes. This chapter provides a summary of descriptive statistics for the variables used in the analysis and also presents the estimated foreign exchange rate exposure for UAE non-financial companies. The results are reported in each table in three categories: (i) for all firms, (ii) for only those with positive exposure, and (iii) those with negative exposure. The final section in this chapter presents the results of the determinants of foreign exchange exposure of UAE non-financial companies. The results are also reported in three categories: (i) for all firms, (ii) for only those with positive exposure, and (iii) those with negative exposure.

Chapter 7 describes and discusses the estimated foreign exchange rate exposure for industry level (services and industrial) firms. In addition, the chapter provides comparative discussions on the determinants of foreign exchange exposure for services firms vs. the determinants of foreign exchange exposure for industrial firms of UAE non-financial companies. The results are reported in each table in three categories: (i) foreign exchange rate exposure in the services and industrial sector; (ii) for services firms; and (iii) for industrial firms of UAE non-financial companies.

The results of the study and suggestions for future study are elaborated in Chapter 8. A summary of the research and some of the limitations of the study are also provided, along with recommendations for further study.

Figure 1.3: Organisation of the thesis



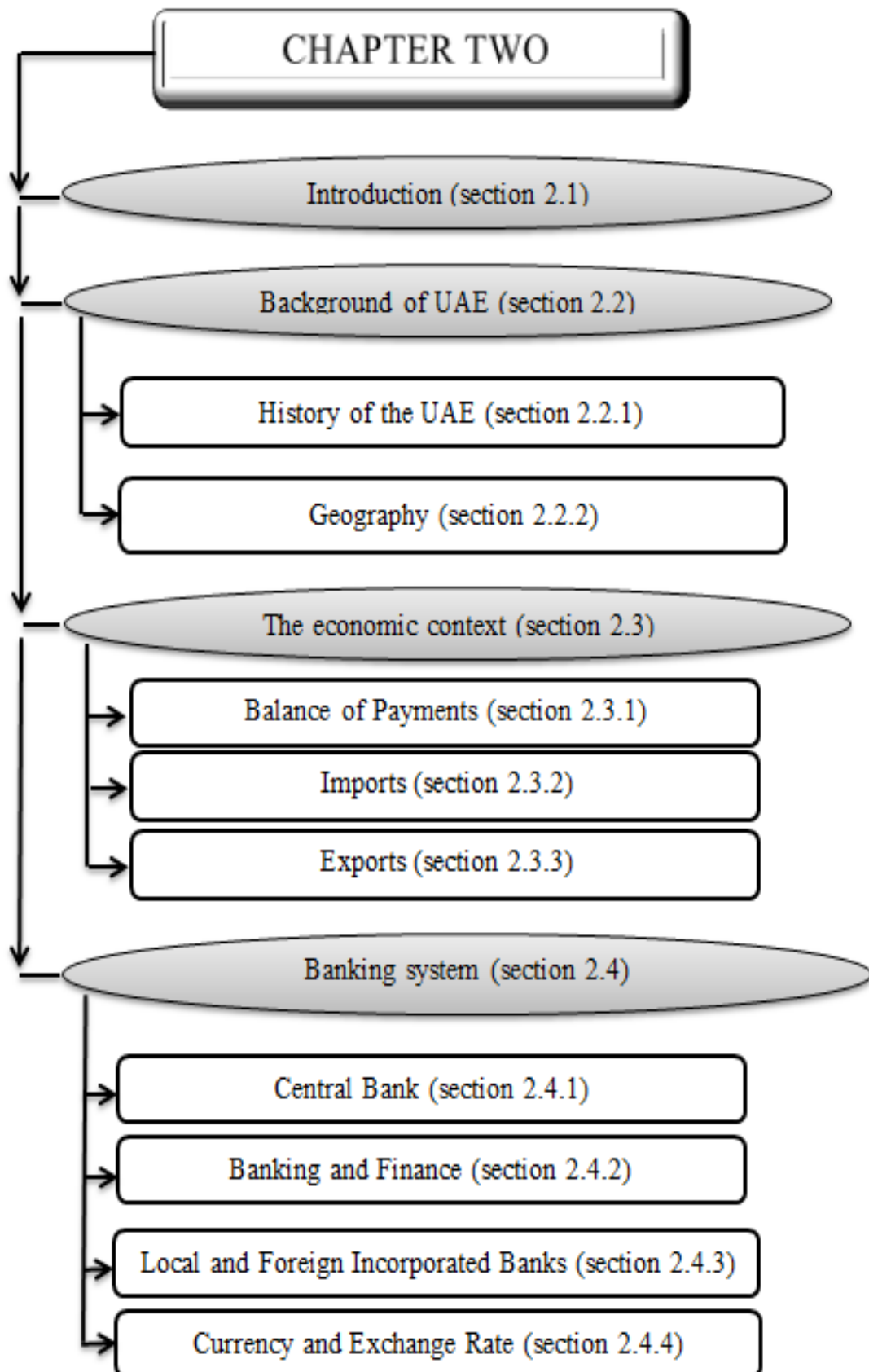
CHAPTER 2: AN INTRODUCTION TO THE UNITED ARAB EMIRATES

2.1 Introduction

The transformation of the United Arab Emirates (UAE) to an oil-based, high-income economy over the last three decades has been considerable. There have been concerted efforts over recent years to make the economy of the UAE less dependent on oil and to develop a more diversified financial system. In fact, the pace of reduction on oil dependency has been rapid compared to other Gulf Cooperation Council (GCC) countries (Taha-Thomure 2008). Its history as an oil-based economy started in 1960 when oil reserves were discovered in Abu Dhabi. Subsequently, the first cargo of export oil was shipped in 1962. Later, in 1969, Dubai also commenced exporting oil. After the end of the protection treaty with Britain, all seven emirates states agreed upon a political union that resulted in the formation of a unit made up of all seven states now known as the United Arab Emirates (Al-Zuhayyan 2012).

Along with most of the other Gulf Cooperation Council (GCC) countries that have been in the process of developing their non-oil sector, UAE's development in this regard has been rapid. According to the International Monetary Foundation–IMF (2005), 90% of the UAE's economy depended on the oil sector in 1980; however, by 2005 this dependency had fallen to less than 60%. UAE managed to achieve this by developing the non-oil sector in areas such as transport, tourism, finance and communication (Taha-Thomure 2008).

Figure 2.1: Outline of Chapter 2



Chapter 2 provides an overview of the UAE, presented in three sections. The first section provides a summary of the background of the United Arab Emirates (UAE). The second section provides features of the economy in general, including concise information about the economic context, balance of payments, and imports and exports of the UAE to support the motivation for choosing this country for this particular study. The last section describes the banking system in the UAE and explains how the Central Bank of UAE and local and foreign incorporated banks operate in the UAE.

2.2 Background of the United Arab Emirates (UAE)

2.2.1 History of the UAE

In 1952 Britain recommended that the rulers of the seven sheikhdoms establish the Trucial Council to encourage the adoption of common policies in administrative matters, possibly leading to a federation of states. The rulers met at least twice a year under the chairmanship of the political agent in Dubai (Division 2007).

Beneath the coastal waters, petroleum reserves were first discovered in 1958 in Abu Dhabi. In 1960, the onshore region also was found to have large reserves of petroleum. It was then determined that there were great natural reserves in the emirates and that this would most likely result in the emirates enhancing their prestige worldwide. By the year 1962, it was decided that commercial production of oil should commence which increased the wealth of the sheikhdom significantly and made Abu Dhabi the most progressive emirate in the UAE (Archick.Bamberger.Perl.Pina.Weiss. Zuhur. 2007, p. 58). Sheikh Shakhbut ibn Al Nahuyyan became ruler of Abu Dhabi in 1928, but his deficiencies as a ruler made it almost impossible for him to continue in the role. He was unable to manage earnings

from the oil sector in a capable and productive way and was forced in 1966 to make way for his younger brother, Sheikh Zayid ibn Sultan Al Nuhayyan, who assumed rule. Sheikh Zayid ibn Sultan Al Nuhayyan proved to be extremely competent and it was under his rule that Abu Dhabi progressed with its public sector and welfare services initiatives. Dubai also discovered oil in the year 1966 and, subsequently, embarked on and achieved immense economic development and prosperity.

In 1968 the United Kingdom declared that by March 1971 it would not only withdraw its forces from the territory but also end the treaty with Trucial Coast states. In March 1968, the seven emirates joined with Bahrain and Qatar to form the federation of the Arab Emirates. Subsequently, Bahrain and Qatar reviewed their decision in 1971 when both countries declared their independence (Archick.Bamberger.Perl.Pina.Weiss. Zuhur. 2007).

In July 1971 all the Trucial states, with the exception of Ras al Khaymah, agreed to form a federation of the six states (Abu Dhabi, Ajman, Al Fujairah, Dubai, Sharjah, and Umm al Qaywayn). It was decided that a federal constitution would be accepted by the six states and the federation would work as an independent territory named the United Arab Emirates. By the end of 1971, United Kingdom ended all treaties with the Trucial states and UAE was deemed to be independent. Later, in February 1972, the last emirate, Ras al Khaymah, agreed to become part of the UAE.

The first nominated President was Sheikh Zayid ibn Sultan Al Nuhayyan from Abu Dhabi. He remained President until his death in 2004. Sheikh Rashid ibn Said Al Maktum, the ruler of Dubai, was appointed vice president. The vice president's eldest son and the crown prince of Dubai, Sheikh Maktum ibn Rashid Al Maktum, was appointed Prime Minister of UAE. The positions of vice president, as well as Prime

Minister, were subsequently assumed by Sheikh Rashid in 1986. Four years later Sheikh Rashid died and his eldest son took up the posts of Vice President, Prime Minister of the UAE and ruler of Dubai (Archick.Bamberger.Perl.Pina.Weiss. Zuhur. 2007). Immediately after independence a provisional constitution was adopted that was expected to wane in its influence after five years. A permanent constitution was formed in the year 1996, before which it remained provisional and renewable if and when required. A centralized government was formed in 1976 which gave it powers in relation to defence, intelligence services, border control, public security and immigration (Archick.Bamberger.Perl.Pina.Weiss. Zuhur. 2007).

2.2.2 Geography

UAE is situated in a strategic and important location with its southern region being attached to the Strait of Hormuz which is significant for transportation of crude oil to the entire world. The location of UAE, being in Southwest Asia, touches the Gulf of Oman and the Persian Gulf in the middle of Oman and Saudi Arabia (http://www.uae.gov.ae/Government/oil_gas.htm 2001). It occupies the eastern region of the Arabian Peninsula with latitudes between 22" 40' and 26" 00', and longitudes 51" 00' and 56" 00' (Alsharhan 1989).

Figure 2.2: Map of United Arab Emirates



Sources: <http://www.google.com.au/imgres?>

2.3 The Economic Context

A number of sources give different figures regarding the rate at which the GDP of the nation has been growing. However, all the sources agree that the UAE has one of the fastest growing economies in the world. The Ministry of Finance and Industry reports that the gross domestic product (GDP) of UAE has increased by 20.8% in 2012 to \$360 billion, in contrast with \$298 billion in 2011 (Staff 2012). With GDP being \$360 billion in 2012, UAE achieved second ranking in the Cooperation Council for the Arab States of the Gulf (CCASG) (after Saudi Arabia). Moreover, in the Middle East-North Africa (MENA) region, it ranks third after Saudi Arabia and Iran. As far as world economic rankings go, UAE holds 30th position (Fund 2007).

Table 2.1 Recent economic indicators

	2007	2008	2009	2010	2011(a)	2012(b)
GDP (US\$) (current prices)	257.9	314.5	259.7	283.9	342	361.9
GDP PPP (\$)	225	242.2	232.6	238.8	256.5	271.2
GDP per capita (US\$)	57,468	65,992	51,270	54,411	63,626	65,377
GDP per capita PPP (\$)	50,130	50,832	45,914	45,759	47,729	48,992
Real GDP growth (% change)	6.6	5.3	-4.8	1.3	5.2	4
Current account balance (US\$)	17,737	24,766	9,073	9,135	33,308	33,634
Current account balance (% GDP)	6.9	7.9	3.5	3.2	9.7	9.3
Goods & services exports (% GDP)	72.3	79.1	77.8	79.3	82.8	82.8
Inflation (% change)	11.1	12.3	1.6	0.9	0.9	0.7

Source: UNITED ARAB EMIRATES Fact Sheet

Despite the UAE holding 30th rank in the Human Development Index, it appears even higher when considering the Asian rankings (Report 2011). The publication of *Doing Business 2011 Report* published by the World Bank Group revealed that the UAE was ranked 41st in the world for best business economy and regulatory environment.

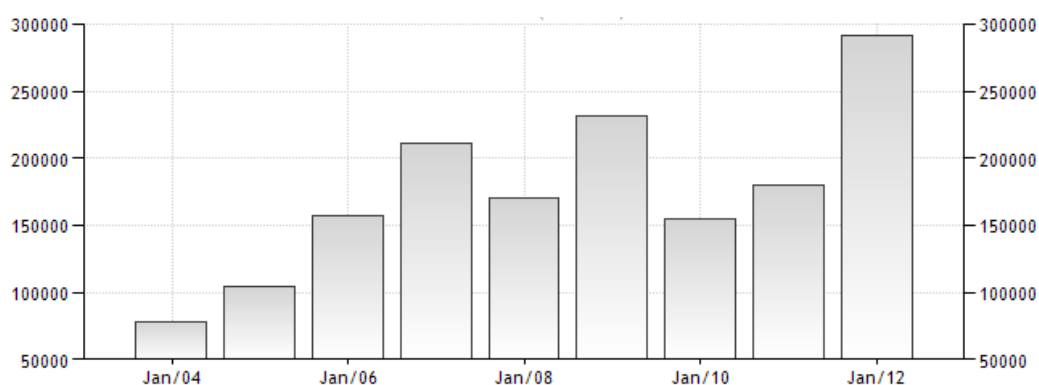
Table 2.2 UAE's global merchandise trade relationships

The Major Imports Partners				The Major Export Partners			
PK	Partners	Mio euro	%	PK	Partners	Mio euro	%
World (all countries)		199,551	100.0%	World (all countries)		238,346	100.0%
1	EU27	27 37,019	18.60%	1	Japan	31,088	13%
2	India	31,249	15.70%	2	India	26,747	11.2%
3	China	25,361	12.70%	3	Iran	21,101	8.90%
4	USA	19,326	9.70%	4	Thailand	11,144	4.70%
5	Japan	7,666	3.80%	5	Singapore	11,091	4.70%

Source: IMF (DoTS) TRADE G.2

European Union: 27 members

With its trade going as high as 291951.0 Million AED in December 2011, and as low as 42160.0 Million AED in December 2001, UAE managed to maintain an average of 144190.6 Million AED trade for the period 2000 to 2011. Despite the fact that natural resources are still a great indicator of the UAE economy, it has still managed to make itself less dependent on natural resources and has diversified into other sectors as well.

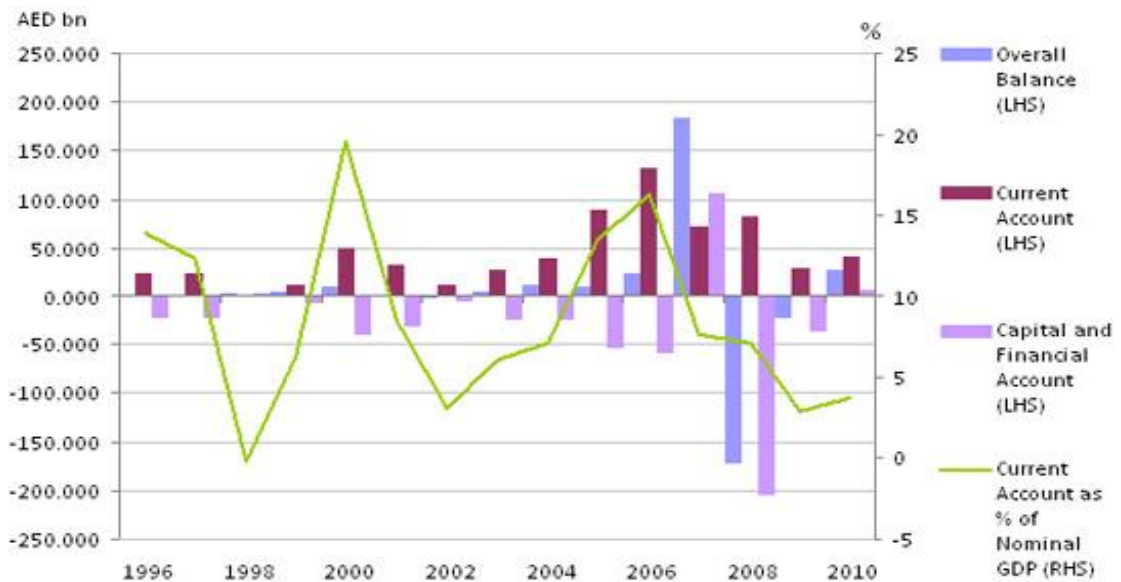
Figure 2.3: United Arab Emirates Balance of TradeSource: <http://www.tradingeconomics.com/united-arab-emirates/balance-of-trade>

Although the UAE has strong trade relations with the European Union, China, Japan and India, it has also been efficiently importing machinery, food, chemicals and equipment. The UAE's global merchandise trade relationships are depicted in table 2.2. Historical data about the Balance of Trade of the United Arab Emirates is provided in Figure 2.2 (Emirates 2011).

2.3.1 Balance of Payments

The balance of payments of UAE shows the country's record of all transaction from the international world in terms of financial statements. As such, it is an indication about the extent to which the country has succeeded to strengthen its economy and generated change to its traditional economic approaches. It also reflects the details of exports, as well as the pricing, employment levels and investments that have occurred.

Figure 2.4: UAE's Balance of Payments



Source: CEIC Data

As oil prices fluctuate, as an oil exporter, UAE's surplus of current account changes from year to year. Nevertheless, UAE has managed to achieve a current account surplus for a number of years because of oil and natural gas exports. It was because of these fluctuations that oil prices increased and made UAE's current account surplus AED 41.3 billion in 2010 which is remarkably higher than the AED 28.8 billion back in 2009. Currently, the account balance has marked up to 3.8% of GDP in 2010. The direct investment inflow also seems to have been moving at a rapid rate to AED 7.1 billion in 2010 compared to AED 4.7 billion in 2009. Conversely, the

outflow has reduced from AED 10 billion in 2009 to AED 7.4 billion. This indicates an improvement in financial and capital accounts.

Reports also confirm that the funds outflow by banks in 2010 also reached a higher level. In 2009 this figure stood at 36.28 billion and reached up to AED 4.7 billion in 2010. These figures have influenced the surplus of AED 7.4 billion in 2010; in contrast to the AED 35.5 billion deficit in 2009 (East & Team 2011).

2.3.2 Imports

In 2008 imports reached US\$104.1 billion; US\$94.6 billion in 2007; US\$86 billion in 2006; and US\$80.2 billion in 2005. In 2005 the major imports were from China which contributed to 9.9% of the total imports. Imports from the UK and USA (with minimal imports from India) contributed to the total. The country's major imports are electrical equipment, precious stones, metals, transport equipment and machinery.

2.3.3 Exports

With exports being US\$126.5 billion in 2005, the numbers were expected to increase in the ensuing years because of high oil prices and the development of the non-oil sector. As a result, exports went up to US\$132.9 billion in 2006; US\$137.3 billion in 2007; and US\$143.7 billion in 2008. Reports reveal that 60% of the total export revenues and re-exports are contributed by the oil and gas sector. The other 40% of the total export revenue is contributed by the non-oil sector of the country. Japan is the main destination of exports for UAE with 26% of the total exports. Other destination countries are South Korea, Thailand and India.

2.3.4 UAE and Competitive Environment

The choice of the UAE for this study is that the UAE has an open economy with a high per capita income and a sizable annual trade surplus with high degree of competition in the market in UAE. The World Economic Forum issued its Global Competitiveness Report for the year 2010-2011 in which the UAE was the only Arab country included in the elite club of countries that have shown an increment in endorsing new and improved methods for developing their economies. It is the second time that the UAE has been included in the 'Innovation-driven economies' category along with global powerhouses like Germany, Sweden, Japan, Australia, Canada, Switzerland, the USA, the UK and Singapore. The UAE was ranked 25th in this report for having been active in enhancing its economy through innovative ideas (Sala-i-Martin, Blanke, Hanouz, Geiger, Mia 2010).

Many other economic factors also show that the country has become a competitive market for investment in the recent years. The UAE was classified in the top 10 countries in more than 18 indicators of competitiveness globally in the report that was made on the basis of examination of different economic factors. In the 139 countries that were classified, the UAE was positioned in the top countries. The quality of infrastructure category had the UAE in third spot, while in the stability and security category the country was placed fourth. The government's participation category placed the UAE in fourth spot, while the UAE's air traffic infrastructure was classified as the fourth best in the world.

The Global Competitiveness Report is made by the World Economic Forum to determine which countries are more suitable for economic development. For this purpose the report utilizes the evaluation of 12 indicators of economic development

for each country included in the survey. All the indicators have their importance and contribute to the total competitiveness of the country. In the category of good market efficiency the UAE has progressed from being 10th in the world to 6th in this year's class. Likewise, UAE maintained sixth position in 'foreign direct investment' and 'technology transfer' indicators.

2.4 Banking System

2.4.1 Central Bank

In 1980 the Central Bank of the UAE was formed under Federal Law 10 to be responsible to the Currency Board in UAE. The bank performs the functions of advising and providing recommendations to government on a number of issues including currency issuance, maintenance of gold, monetary and financial issues. It also gives advice on foreign currency reserves, regulation and supervision of credit policy but with certain limitations. This is because the UAE currency is fixed to the US dollar. The selling and purchase of deposit certificates is controlled by the bank in all monetary and credit transactions.

In the last few years, the Central Bank has been actively performing the supervisory role in the function of credit policy and the formulation of relevant policies. Lending against shares was limited in 1997 and in 1998 International Accounting Standards (IAS) was made mandatory for all banks. Furthermore, licenses became mandatory for all commercial banks operating in the UAE. Local banks were also required by the Central Bank to formulate clear corporate structures in early 1999. The Central Bank of UAE mandated that only UAE nationals were eligible to head most of the banks. UAE Companies Law remained mandatory for the banks and all shareholding

corporations and the Federal Ministry of Economy and Trade were required to register.

2.4.2 Banking and Finance

The main objective of the Central Bank being established in 1980 was to supervise banking, credit and monetary policy. All international financial institutions deal with the Central Bank which operates as the main financial agent of the UAE. It continuously monitors and observes foreign currencies and maintains the government's gold reserves.

Over the years, the World Trade Organisation constantly urged the UAE to welcome competition and allow other foreign banks to operate in UAE. This pressure seemed to be taken seriously by the government and in 2004 it finally declared that it would allow other international banks to operate in the state.

In four years of recording from 2002 to 2005 the top six banks achieved impressive results. These banks hold 70% of the total assets of the banks. Because commercial banking systems encompasses credit cards, residential mortgages and personal loans this sector developed significantly and despite the fall in prices in UAE stock markets they still remained profitable.

In September 2004, The Dubai International Financial Centre (DIFC) was officially opened. With more than a dozen international financial institutions operating under the DIFC, it is an independent financial free zone that is not influenced by the Central Bank. The Dubai International Financial Exchange was opened in September 2005 and is responsible for equities, bonds, funds, sharia-compliant products and related exchange and welcomes foreign investment.

In March 2000, there was another development when the Dubai Financial Market (DFM) and the Abu Dhabi Securities Market were established and later linked electronically in 2004. Both stock markets continued to profit from 2002 but were brought to a halt in November 2005 when there was a decline in the markets that endured for almost two years.

Being a country where religion is a given value, Islamic banking prevails in the UAE banking system. Banks offer sharia-compliant consumer and investment products as part of their business. Financial development across the country has been influenced by the Islamic bonds sukuk which ensures the banking sector prospers.

2.4.3 Local and Foreign Incorporated Banks

There are two types of banks in the banking sector in the UAE: local incorporated banks and foreign bank branches. The former comprises public shareholding companies as per the rules defined by the Union Law No (10) of 1980; while the latter are required to be licensed by the Central Bank and work under the provisions of the mentioned law. The national banks have most of the national shareholding, although some foreign banks had been operating before the currency board was established. This makes it clear that they have been operating prior to the Central Bank being established and commencing its operations and responsibilities.

After the government eased banking restrictions, a large number of banks applied for a license and subsequently commenced operating. When the government eventually realised that there was an imbalance between the needs and the operations of the banks, they then declared that a single foreign bank could set up a maximum of eight branches in the UAE.

Comprising 791 branches and 87 pay offices, there were a total of 23 national banks operating in the country by the end of 2011. Later the number climbed to 28, with 111 branches and 51 pay offices. Appendix (2) provides details of local banks operating in UAE; and Appendix (3) provides details of all the foreign banks in the UAE.

2.4.4 Currency and Exchange Rate

The official UAE currency is the dirham (AED). In addition, the exchange rate of the UAE has been pegged to other currencies almost since the foundations of the country. On January 28, 1978, the dirham was officially pegged to the IMF's Special Drawing Rights and, almost twenty years later, in November 1997, the dirham was officially pegged to the U.S. dollar at the rate of 3.6725 dirhams per US dollar. At the same time, the capital account is quite open, the financial sector integrated to world capital markets and financial funds flow unimpeded. These policies effectively eliminate the capacity of the government to have an independent monetary policy. However, the Central Bank retains some discretionary power vis-à-vis domestic liquidity using the discount (Repo) window and it has played the role of the lender of the last resort for the banking sector during the recent economic crisis. The commitment towards a fixed-exchange rate seems to be very strong: in May 2009 the UAE announced their withdrawal from the monetary union project proposed by the Gulf Cooperation Council (GCC) and reaffirmed the peg to the US dollar on the grounds that it provides stability to the financial sector.

2.5 Summary of the chapter

This chapter has covered the particular background of the United Arab Emirates, its economic environment and financial system in which this study is undertaken. It concluded that the United Arab Emirates has an open economy with a high per capita

income and a sizable annual trade surplus. Moreover, it outlined features of the economy in general by providing brief information about the economic context, balance of payments, imports and exports of the UAE to support why the country has been chosen for this study. The successful efforts of the economics of UAE diversification have reduced the portion of GDP based on oil and gas output to 25%. A boost has been given to the private sector by the government providing greater economic provisions and increasing its budget allocation for the creation of more jobs and infrastructure development (CIA 2011). Foreign trade constitutes an important factor for the economic activity in the UAE, confirming that the UAE is an open economy.

Chapters six and seven provide more details on the situation of applying the UAE foreign exchange rate exposure, and how domestic firms deal with this exposure. The next chapter will present a literature review related to this study.

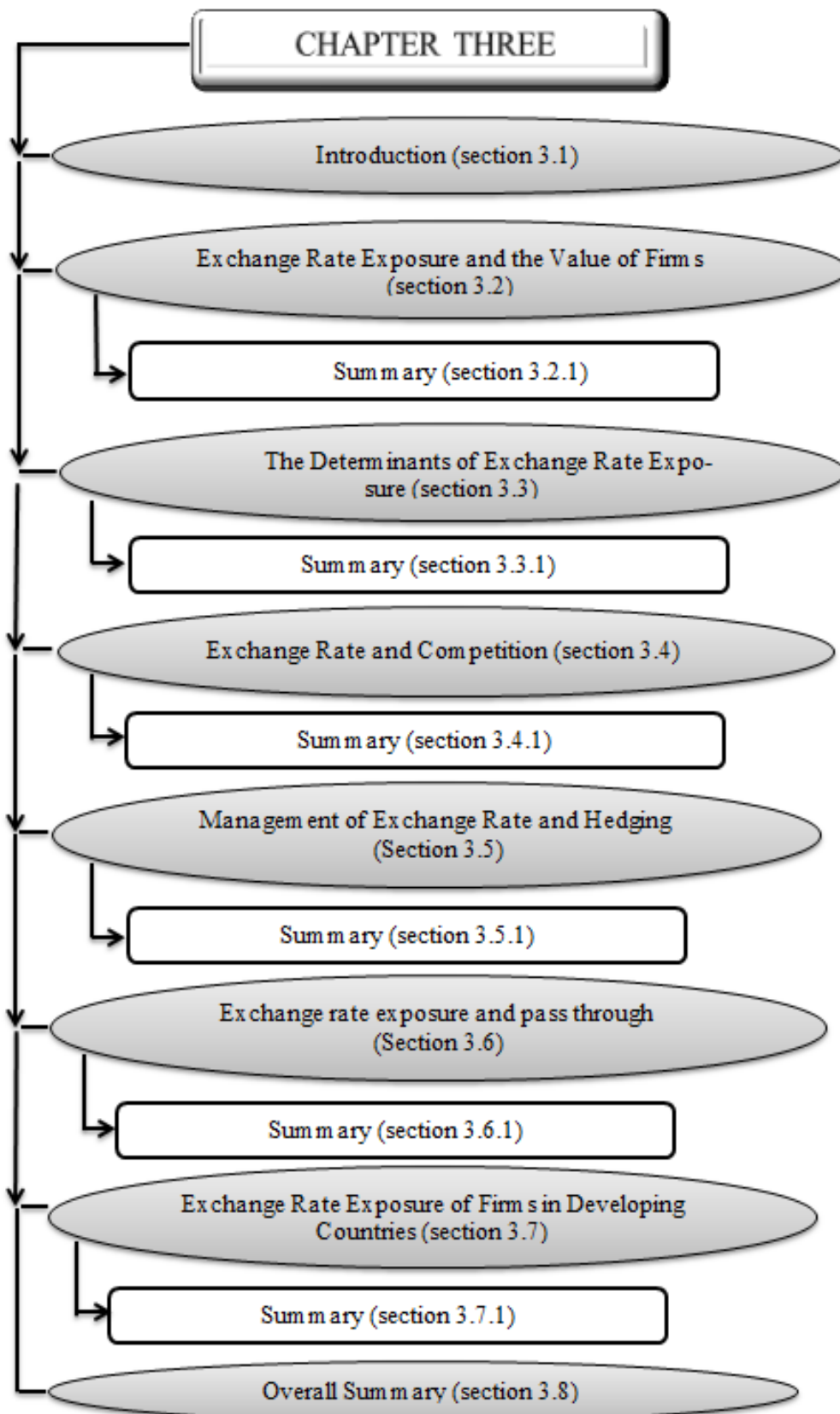
CHAPTER 3 LITERATURE REVIEW

3.1 Introduction

The objective of this chapter is to survey the literature pertaining to the exposure of changes in foreign exchange rates and their determinants on the value of firms, and the comprehensive implications for foreign exchange rate exposure on the competitiveness of local companies. The literature that may have implications for this study deals with management of exchange rate exposure, hedging pass through and exchange rate exposure in developing countries. There are six major streams of research in this review: exchange rate exposure and the value of firm; the determinants of exchange rate exposure; exchange rates and competition; management of exchange rates and hedging; exchange rate exposure of firms in developing countries and exchange rate exposure and pass through.

Some studies argue that organisations with a high percentage of foreign operations are expected to have a lower volume of exposure to foreign exchange rates via hedging activities or with the help of diversification effects. However, Jorion (1990) and (Amihud 1994) were unsuccessful in finding significant correlations between exchange rate changes and stock returns. The reason behind these finding is that firms may engage in hedging activities in financial markets or make use of internal techniques and this is thought to be one of the reasons for few significant associations between stock returns and exchange rate changes and, thus, the exchange rate movements not influencing the value of the firm. Organisations are also involved in a number of activities with diverse exposure to exchange rates that result in variations in a firm's exposure (even to switch signs) and these are likely to change with time.

Figure 3.1: Outline of Chapter 3



This chapter overviews the literature on ‘foreign exchange exposure’ that relates to this study and is divided into six sections. The first section describes the relationship between exchange rate exposure and the value of firms. The second section sheds light on the literature concerning the determinants of exchange rate exposure. Section three highlights exchange rates and competition. Section four discusses how to manage and hedge foreign exchange rates. The final two sections present and discuss exchange rate exposure and pass through and how an emerging state addresses the experience regarding foreign exchange respectively.

3.2 Exchange Rate Exposure and the Value of Firms

This area of research investigates the relationship between firm value and exposure rates in foreign exchange. The traditional theory explains that the fluctuation of exchange rates should lead a firm's value¹. Fluctuations in exchange rate could affect the value of firms through changes in competitiveness and changes in their assets and liabilities denominated in foreign currency² (Tabak 2006). It is commonly believed that the value of firms may be affected by changes in exchange rates. Empirical research indicates that volatile exchange rates affect the revenues and profits of both multinational and local corporations (Muller & Verschoor 2006). Therefore, many local and multinational organisations find their income statements and business performance affected by fluctuating exchange rates, in spite of their having only indirect financial exposure (Parsley & Popper 2006).

1 The theory also accounts for a correlation between the exchange rate and the terms of trade. In contrast to pure monetary models of the exchange rate, the theory provides a rationale behind the frequently encountered popular statements that appreciation of a currency is related to a fall in the country's import prices and a rise in the foreign price of its exports, and that a balance of trade deficit or the anticipation of a balance of trade deficit may be associated with a currency depreciation. Since changes in relative prices occur partially through changes in exchange rates (Friedman, M 1953) And (Machlup, F 1939).

2 Even firms that have a low ratio of exports and imports and low ratio of assets and liabilities denominated in foreign currency may be indirectly exposed to foreign exchange rates through their competition with other foreign firms in local markets.

The general concept of exposure is the level of impact on the net worth of a firm due to fluctuating exchange rates (El-Masry 2006). Some studies show that changes in the exchange rate may affect the value of firms, but others show there is no effect on the value of firms; this may be due to mispricing by investors. Choi and Prasad (1995) and Martin and Mauer (2003) claim to have found significant exposure to exchange rates, while many other studies such as Jorion (1990), Bodnar William and Gordon (1993) and (Amihud 1994) have examined exposure to exchange rates of US firms and have so far documented a weak link between changes in exchange rate fluctuations and the value of firms.

Organisations with a high percentage of foreign operations are expected to have a lower volume of exposure to foreign exchange rates via hedging activities or with the help of diversification effect. This explains why Jorion (1990) and (Amihud 1994) failed to find a significant correlation between exchange rate changes and stock returns. Due to the complexity that is involved in categorising the relationship between the value of the organisation and exchange rate movements, this issue has been examined. The determination of significance of the association between contemporaneous changes in the value of the US dollar and abnormal returns of firms with international activities has been not been successful. Identifying the influence of exchange rate changes on value of firm; determining the full effect of changes in exchange rates on firm value only as information about its past performance is made available; determination of the extent to which a currency movement is permanent or temporary; and judging the effect of different changes in various currencies to determine the economic performance of the firm are the main problems and these result in a complex association between the value of a firm and the exchange rate.

Bartov and Bodnar (1994) studied the relationship between expected changes in equity value and the dollar. Limited success of previous studies in presenting important relationships between changes in the dollar and stock returns and the possibility of sample selection problems were considered responsible for mispricing by investors in the approximation of the relationship between variation in firm value and the dollar. The relationship between the value of a firm and the dollar is not due to sample selection problems as illustrated by the results of Bartov and Bodnar (1994) which aimed to investigate the failure of other studies to document a significant concurrent relationship between the two, which is likely to become weak with the passage of time. The results indicate that the changes in the dollar are not reflected in stock prices. Moreover, a simple trading strategy created upon recent changes in the dollar can be used to obtain the returns gathered from the set of organisations, thus determining its economic significance. Most of the freely available information specific to the recent changes in the dollar and the relationship between performance of the firm and dollar that may result in changes to assets and liabilities and in firm value is not being used by investors.

Changes in the value of the dollar over the end of the fiscal quarter are to be monitored and should be able to shape up neutral prospects regarding the influence of this change on firm performance, assets and liabilities and incorporate this effect into the firm value with the passage of time. In spite of this, at the end of the quarter this effect is systematically ignored by investors. Only with the availability of additional information during the following quarter could this underestimation be amended.

He and Ng (1998) investigated the effect of fluctuations in the exchange rate on the value of 171 multinational Japanese corporations. From the 171 corporations

examined, 25% experienced significant positive exposure effects from January 1979 to December 1993. The results indicated that a firm's value is related positively to its export ratio in foreign exchange exposure. In addition, according to their study, some firms face a very low level of fluctuation in exchange rates exposure compared to other firms. This is due to the fact that as a firm's size increases, its exposure to the international exchange rate also increases.

The coverage of emerging market companies to fluctuations in their domestic exchange rates has been studied by Chue and Cook (2008) in a sample of 900 emerging market firms. There was a negative impact on emerging market stock returns due to devaluation in the time period 1999-2002. An instrumental variable approach has been used in the newly emerged market firms that determine the total exposure of a company to exchange rate movements. This tendency largely vanished in the sub-period of 2002-2006. A common set of instruments was used to study the exchange rate exposure of firms from various countries. Subsequently, the exchange rate exposure was negatively influenced by the impact of various measures of debt in the early sub-period that reverses in the recent sub-period.

According to Choi and Prasad (1995) the sensitivity of the exchange rate exposure is directly related to firms' specific operations. Their model revealed a positive relationship between foreign sales and a firm's exposure to foreign exchange, assets, operating profit, and sensitivity to exchange risk. Choi and Prasad (1995) model was used for determining the exchange risk of a firm's value. The model was used to investigate 409 US firms at a multinational level during the period 1978-1989 in 20 industry portfolios. The results show that 15% of the sampled firms were significantly exposed to changes in the trade-weighted nominal exchange rate at the 10% level. They found that 64% of firms with significant exchange risk exposure

gained from a depreciation in the value of the dollar. When trade-weighted real exchange rate changes were used, they observed only a marginal difference in the exchange rate coefficients obtained compared to those reported for the trade-weighted nominal exchange rate.

Choi and Prasad (1995) used sub-period analysis and found a higher number of firms experienced significant exchange risk sensitivity during the weak-dollar period compared to the strong-dollar period. When aggregating the information into 20 SIC-based industry groups, the study found that there is limited support for exchange risk sensitivity, the results of which indicate that only two industries have had significant exposure to the exchange rate at the 10% level. These researchers claim that aggregating across these firms would result in a finding of insignificant exchange rate exposure coefficients for the portfolios of the industry because they include firms with both negative and positive exposure coefficients. Also, since the firms are homogeneous in nature, when it comes to their financial strategies or their operational characteristics it is not necessary that all firms have the same level of quality that the industry has.

Chow, Lee and Solt (1997) scrutinised the US bond and stock returns of multinational companies for exchange rate exposures from March 1977 to December 1989. The emphasis of this particular study was on determining the fluctuation in the firm's value linked to alterations in the exchange rates on a long-term basis. If the likelihood of committing a systematic error is present by the investor in assessing the association amid fluctuations in the dollar's value and the firm's value in the short-term, then the impact of the exchange rate fluctuation on value is observable only in long-term stock returns. They observed that statistical implications of exchange rate exposure escalates with escalation in the time period, and larger (or smaller) companies are either

positively or negatively influenced by exchange rate fluctuations. Furthermore, they propose that cross-sectional variations in the level of exposure are trivially associated with foreign sale ratios and are chiefly associated with firm size.

The correlation between changes in foreign exchange rates and stock prices for 310 multinational US firms was examined by Fraser and Pantzalis (2004). To observe whether the stock returns of US multinational corporations are affected by any change in the foreign exchange rate, they used a specific firm exchange rate proxy. They found a greater number of firms with major exposure compared to a common index. Also, evidence was found that the percentage of a firm's foreign subsidiaries is negatively related to exposure when a common index is used and is positively related to exposure when exposure is measured with a firm-specific index.

Some studies have recognised a weak connection between the returns of stock and exchange rate fluctuations. Jorion's (1990) suggested that only a minute number (5%) of firms from 287 non-oil multinational organisations are exposed to exchange rate, or to changes in trade-weighted exchange price for the period between January 1971 and December 1987. The presence of cross-sectional differences in exchange rate exposure is somewhat acknowledged because the theory that all exposure coefficients are zero is strongly rejected.

Amihud (1994) presented a similar finding in his study which examined the relationship between changes in the trade-weighted exchange rates of the US dollar and the stock returns of the 32 largest US exporting companies, provisional on the whole stock market via monthly and quarterly intervals for the period between January 1979 and December 1988. However, the results show there was weak significance among monthly changes in nominal and real exchange rates and

monthly equity income for these 32 companies, which implies that although the impact is more distinct for firms with a superior export to sales ratio, the exchange rate changes have no effect on the price of the exporting firms. Amihud (1994) model was updated to approximate the result of lagged changes in exchange rates on firms' stock profits. A weak significant relationship was evident between companies' stock returns and exchange rate changes. It is suggested that exchange rate changes influence the stock returns only with lags up to 2.4% because it was found that the exchange rate coefficients of lags 1 and 3 are significant at the 5% importance level. Consequently, Amihud (1994) findings might be taken as proof that these firms have been successful in shielding cash flows from the impact of exchange rate actions by taking part in hedging activities.

Firms engaging in hedging activities in financial markets or making use of internal techniques are thought to be the reasons for only a few significant associations between stock returns and exchange rate changes. Thus, exchange rate movements do not influence the value of the firm. Organisations may also be involved in a number of activities with diverse exposure to exchange rates that result in variation in a firm's exposure (even to switch signs) and these are likely to change with time. However, investors make some systematic errors which cause mispricing in the value of the relationship within the dollar variations and the firm value that brings irrelevant exposure coefficients of exchange rate. A study by Choi (1986) explained that there can be no positive or negative impact from exposure to exchange rates on a firm's value and its valuation.

The proportion of firm's stock price and earnings exposures are increased over some time limits. Bartram (2007) conducted a study on the foreign exchange rate exposure of 6917 U.S. companies on the basis of stock prices and corporate cash flows of

some nonfinancial firms, and the outcome depicts that some firms are only exposed to one of the foreign exchange rates such as the Canadian Dollar, Japanese Yen or Euro, and they are using it frequently within a longer time limit. Those firms that have some exposure will experience increases in terms of their stock prices and earnings and therefore the percentage of foreign sales and market capitalization are vital economic indicators to measure the size of exposure of stock prices and earnings of a firm. However, a set of economic indicators can measure the stock prices and cash flows as they have an impact on the exchange rate risk. Moreover, the number of firms experiencing heavy foreign exchange rate exposure is generally low and nonfinancial firms experiencing less exposure to foreign exchange rate exposure is high.

The fact that companies with a high percentage of overseas operations are likely to be able to trim their exposure to exchange rate changes through diversification effects or hedging activities is probably the main reason why Jorion (1990), (Amihud 1994), Bodnar, William and Gordon (1993) were unsuccessful in finding a significant association between exchange rate changes and stock returns. They were unsuccessful in establishing an association between the contemporaneous changes in the value of the US dollar and the irregular returns of firms with global actions. However, they did investigate the issue of mispricing, which might have arisen from the complexity involved in characterising the relationship between exchange rate movements and firm value. Issues such as identifying the effect of exchange rate changes on firm value, leading to a lagged relationship among changes in exchange rates and firm value, determining the full effect of changes in exchange rates on company value only as data about the past performance of firm is available, shaping the degree to which a currency movement is permanent or temporary and judging the

effect of the diverse changes in diverse foreign currencies on the economic performance of the firm, are all associated complexities.

Bartram and Karolyi (2006) examined 3220 nonfinancial firms from 18 European countries, the United States and Japan and noted that some vital reduction in market risk exposure has been observed in nonfinancial firms in Europe and non-European countries, although it was envisaged that it will increase the total stock return volatility after Euro's launch. These tests and experiments were conducted after the 1999 launch of the Euro to analyse changes in stock return volatility, market risk, and foreign exchange rate risk exposures. There are some small changes that have been observed statistically and economically. There is a decrease in foreign exchange rate exposure of nonfinancial firms due to the activities of those firms in the European market. If firms are experiencing high foreign sales or hold assets in Europe or in non-European firms, then there is a reduction in the market risk of those firms. Those foreign business firms operating in Europe are facing a decrease in the market risk, whereas firms of the same industry or size can face increased market risk because they are not operating in Europe or they are not involved in foreign sales. Thus, it has been concluded that a decrease in foreign exchange rate risk can be attained by increasing a firm's involvement and sales in Europe as it directly decreases the market risk for non-financial firms. However, this outcome is the result of inferring that the foreign exchange rate risk is in part non-diversifiable.

Reduction in the market betas requires reduced cost for capital corporate investment and firm valuations, along with some associated benefits. Therefore, the reduced market betas or the lower foreign exchange rate exposures are significant as they carry a higher business risk and require more financial control. Bodnar and Wong (2003) investigated the use of stock return regressions on large U.S. firms over the

period 1977-1996. According to these researchers, there is a reduction in the residual variance of the regression with the inclusion of the market return in the exposure model specification, which improves the precision of the exchange rate exposure estimates and controls the value-relevant macroeconomic characteristics connected with the rate of exchange. The ability to understand the ensuing exchange rate exposure coefficients is thus improved. The fraction of firms with statistically positive and negative exchange rate contact varies distinctly over diverse horizons according to the results. The fraction of firms with positive exposure coefficients radically outnumbers those with negative exposure coefficients in short horizons. Nevertheless, ahead of the 12-month-return horizon, these researchers note more negative exposure coefficients than positive exposure coefficients, only to see them balance out beyond 24-month-return horizons. Both firm size and foreign sales ratio are vital for clearing up cross-sectional differences in exchange rate exposure, according to the results based on all horizons. The negative correlation of the exchange rate indicates that firms receive higher returns when the dollar depreciates; this suggests consistency with economic intuition and leads to increases in the streams of the value of foreign cash flow due to dollar depreciations, that is true according to theories in economics because a decrease in the value of the dollar enhances the worth of foreign cash inflows.

A study by Gao (2000) examined how an unforeseen fluctuation in exchange rates impacted on the return on investments of US firms from 1998 to 1993. This research concentrates only on manufacturing entities with large operations across the globe. In contrast to prior studies regarding the impact of exchange rates, Gao (2000) takes into account the inconsistency in time of exchange rate exposure by including the company's international production and sales volume in his research. After taking a

sample of 80 US global firms from seven 3-digit SIC manufacturing firms, tests reiterated that the stock exchange provides a true image of the impact on profitability of exchange rate news foreseen by the theory. For instance, a drop in the value of the US dollar has a major impact on the irregular incomes on the stock of global companies with the help of international sales and a considerable impact due to foreign production.

Loudon (1993) conducted a comparable research study on similar economic conditions in Australia, and considered whether stock returns for Australian companies are susceptible to a variation in exchange rates and impacted by currency risk. While Australian firms display a susceptibility to the fluctuation of exchange rates, outcomes from a two-factor asset pricing model imply that stock returns do not take premiums on currency risk into account. Loudon (1993) concludes the study by adding that hedging of currency exposure by large organisations does not enhance their worth. Subsequently, Khoo (1994) measured the rate of foreign exchange for mining firms operating in Australia. By tradition, the fluctuation in the exchange rate is thought to be quite sensitive. The researcher used an estimate of a single equation for the individual stocks, as well as stock portfolios. Yet, the group of industries should be similar. Multivariate regression was also used; however, it was found that the response of the stock returns and the quantity of the stock return was quite low compared with the exchange rate fluctuations. It was further argued that the results could be a means to evaluate the success of policies, as well as the requirement for further policies.

A study carried out by Harris, Wayne Marr and Spivey (1991) comprised 28 commercial US firms involved in the international market between 1977-1986. An examination was made to see if there is correlation between the exchange rate

changes of the dollar and return of stock. The results indicated a negative relationship between the US exchange rate and stock returns. The extent of correlation depends on the international operations of individual banks. Simply put, the observation was that an increase in the value of the dollar would result in a decrease in banks' stock returns. However, the pattern seems to be unstable during the period of sample. Moreover, it provides evidence that foreign operations are playing an integral part in stock price fluctuations and exchange rates. The sensitivity of the currency of the US and Japanese banks was further examined by Chamberlain, Howe and Popper (1997). Their study uses daily and monthly data and ascertained that the rate of stock returns of more than half the large banks was sensitive to exchange rates. On the other hand, a very a small number of Japanese banks turned out to be responsive to the rate of exchange. It was argued that the reason behind such a difference could be variations in local operations and the prevailing conditions in two different countries.

A multidimensional model was presented by Choi, Elyasiani and Kopecky (1992) consisting of rate of interest, rate of market return, and risks associated with exchange rates. They say that the exchange rates and return rates on bank stocks had a negative relationship before October 1979 and thereafter the relationship turned out to be positive. The change has occurred due to the shift of net income in some of the key currencies from positive to negative which became significant in the mid-1980s.

Martin (2000) evaluated the relationship between excess return and changes in exchange rates for some major banks in Switzerland, the US, Japan and the UK. The assessment showed that the exchange rates of Switzerland, the UK and Japan were exposed to changes in the exchange rates. As per the study, financial institutions trading in currencies would show exposure at a significant level because it is

understood that if one of the financial entities earned profit, it would undoubtedly be on account of another entity's loss. When a study for the Chartered Banks of Canada was carried out over the period 1988-1995, it was observed that Canadian banks' return on stock was significantly related to the rate of exchange risks, and that this factor was mainly related to the exchange rates of the US dollar versus the Canadian dollar. The study was carried out by Atindéhou and Gueyie (2001) on the basis of the three main factors of the model, i.e., rate of exchange, interest rate, and the prevailing market.

3.2.1 Summary

The outcomes of different studies carried out to identify the relationship between exchange rate returns and a company's value vary. Some results show that there is a weak relationship between changes in the exchange rate and the firm's value, while others emphasize an important relationship exists between these two factors. The researcher in the current study would say that the risk is related to the firm's own internal systems (e.g. its hedging strategies, financial policies, and other variables purely related to the firm). It is very important to evaluate the firm's value in relation to different exchange rate returns. For that purpose, the researcher in this study has focused on observations in the sample taken of UAE institutions during 2005–2011 by using information on the return on the firm stock of those firms.

3.3 Determinants of Exchange Rate Exposure

The change in the value of firms as a result of changes in the exchange rate may depend on variables that define a firm's degree of exposure to the exchange rate. To gain a better understanding of a firm's specific characteristics that play a role in creating the link between future cash flow expectations and the operating profit from

unpredicted changes in exchange rates, one need to consider the characteristics of firms that may link among expected future of cash flows, profitability and change in the exchange rate. Booth and Rotenberg (1990) utilised foreign assets, foreign debts and foreign sales ratios to assess the valuation of Canadian stock returns in terms of the Canadian dollar which fluctuates in value as the exchange rate of the US dollar fluctuates. Jorion (1990) found that companies that possess greater foreign sales also have a higher exposure to the exchange rate. Similarly, companies that possess greater foreign debt also have a lower exposure to the exchange rate.

Shapiro (1975) devised a two-country model with a focus on profitability. First, he focused on the characteristics (inflation, production strategy, valuation and profitability, cost, demand of goods and profitability) and then examined the bi-national maximising profit strategy of oligopolistic firms. The principal conclusion in his paper is that one of the main factors influencing companies' exchange rate risk is its sales distribution in foreign and domestic markets. The domestic competition that the multinational firm meets amid the influences of imported and local production is another vital factor for exchange risk. Shapiro's (1975) model also implied that in the case of depreciation of the local currency, a value increase in the domestic firm will occur along with a decrease in the foreign value of the firm with which it competes.

He and Ng (1998) investigated the exposure of exchange rate for a sample of 171 Japanese firms. They found that companies less exposed to movements in exchange rates are those with short-term liquidity, or high leverage with well-defined hedging activities. This finding is consistent with optimal hedging theories that suggest firms that hedge their exchange rate are less exposed to foreign exchange rate movements than non-hedging firms. Muller and Verschoor (2007) confirmed these results using Asian foreign exchange risk exposure to examine whether there exists any

relationship between individual Asian firms' stock returns and fluctuations in foreign exchange rates. They found that Asian firms with higher leverage are more exposed to exchange rates, whereas firms with weak liquidity, or less profitable firms, tend to have smaller exposure.

He and Ng (1998) examined the determinants of exposure and found that the estimated exposure is directly affected by the firm's export ratio level. They also found that this exposure is linked to other factors that are proxies for the firm's hedging incentives. Therefore, they explored the effects on the foreign exchange rate by observing variables such as stock returns, ratio of debt, and ratio of dividend payout. These variables also include equity value, ratio of the firm's exports, and the firm's size. By using this approach, He and Ng (1998) explained that the possibility a firm's variables have been used for a firm's hedging activity for its exposure to foreign exchange. Gradually, these types of studies identified those factors that determine the exposure of companies to foreign exchange risk.

This study was expected to yield a positive relationship between firm size and the exposure of foreign exchange rate due to larger firms being more likely to hedge than smaller firms. Large firms are more likely to hedge themselves against currency and operations exposure than small firms. As a result, large firms should have a greater ability to compete than small firms and have diverse clients or products. Consequently, the exposure to exchange rates for larger firms should be less than smaller firms. The financial strength of any corporation could be determined by considering its debt ratio as identified by Benavente, Johnson and Morandé (2003). However, it may be expected that firms with a high level of debt and leverage experience more exposure to additional financial risk. Therefore, these firms may be susceptible to a positive exposure to foreign exchange. However, foreign debt can

play a useful role in hedging foreign currency exposure as in the case of foreign currency derivatives. A research study conducted by Doidge, Griffin and Williamson (2002) produced similar findings to those of He and Ng (1998). These authors have established that large firms are more sensitive to currency movements than small firms.

Chow and Chen (1998) examined a sample of 1,110 Japanese firms. They found that exchange rate exposures are linked with the export and import ratios, the firm's size, total debt, and the firm's leverage. Most of the Japanese firms in Chow and Chen (1998) study were observed to experience a negative impact from changing exchange rates. Furthermore, they indicate another significant factor: R&D was not available to the Japanese firms and therefore could not be observed. Dominguez and Tesar (2006) studied the connection between the exchange rate and the firm's value. The exchange rate exposure of firms publicly listed was observed in 8 countries in both industrialised and emerging markets. The results indicated a link between exposure and other variables such as the size of a firm, its position in the multinational market, foreign trade and transactions, international assets, and ability to compete according to the industrial standard. As indicated by an example of their regression, exposure was observed more in small firms than large and medium firms. Moreover, exposure was observed in firms with international activity that was dependent on multinational status, international assets and foreign sales holdings. That means the exposure to exchange rates is significantly and negatively related to foreign sales ratio. This relationship means that the depreciation of the dollar will generate higher returns for firms, which is consistent with the theory of economics that the foreign cash flow will increase when the dollar depreciates.

Two OECD measures (i.e., the relationship of standard of exposure of an organisation and its competing ability) were utilised to analyse the market concentration. These methods include the Herfindahl index and the mark-up index. Allayannis and Ofek (2001) used these variables for optimal hedging to identify the exposure of foreign exchange rate movements (e.g., R&D expenditures, size of the firm, book value of debt, ratio of market to book, tax dummy variable, leverage and ratio of earning). Allayannis and Ofek (2001) observed that R&D expenditure, foreign debt, a firm's size, and controls for exposure (e.g., foreign income and trade) were significant determinant factors in a firm's decision to utilise foreign currency derivatives. Larger firms are more capable of hedging than smaller firms. R&D expenditures can affect the growth parameters in any firm's investment opportunities. The absence of hedging can lead to firms with R&D expenditures being more exposed to under investment compared to those with low R&D expenditures. Thus, higher R&D expenditures could benefit a firm more than the other factors.

Similar variables were used by Géczy, Minton and Schrand and Aabo, Høg and Kuhn (2010) to identify the risks involved with foreign currency exposure from variables such as foreign activities, foreign debt or an increased concentration of foreign competitors in their industries. The firm's size, R&D expenditures, export and import ratio, amount of profit and the firm's debt were also identified with this exposure. Firms with higher R&D expenditure are more likely to hedge because of the increased probability of competition and financial distress³. Opler and Titman

³ Determining the degree of research and development (R&D) is important to determine the degree of competition. R&D is defined as discovery new product or development of new products. Moreover, the R&D investments reduce the exposure of any firm to foreign exchange rates. Therefore, R&D expenses enable a firm to avoid experiencing exchange rate variations. In addition, the insulation of firm from both foreign and local competition depends on the firm's willingness to invest in unique services and /or products.

(1994) found that customers would be more reluctant to engage with firms spending more on R&D due to their perception that a high R&D expenditure means that the firms are specialised in certain products.

Aggarwal and Harper (2010) measured exchange rate exposure for a sample of domestic firms. They used the average of the suitable financial factors for the previous years of each firm to evaluate financial and operational strengths and the possibility of reducing exposure. They explained that firms with increased levels of debt, financial risks and leverage are more likely to face additional risks to exposure of foreign exchange rates. Firms with higher gross margins enjoy more elasticity in the pricing of their products and services. These firms can deal with shocks much more effectively than firms with low profit margins and therefore have lower exposure to exchange rates a similar argument to assets turnover.

Firms with high R&D expenses insulate themselves from domestic and foreign competition by investing in unique proprietary products. Therefore, high asset tangibility and R&D investment can be determining factors in reducing foreign exchange exposure. The exchange rate determinants also include the firm's size as determined by the log market value and the market-to-book ratio. Large firms have a greater ability to bear the effects of foreign exchange exposure because of their high level of competitiveness. Moreover, large firms can approach the market through their diverse range of products and clients.

According to Aggarwal and Harper (2010) the firm's size affects foreign exchange exposure. Furthermore, their findings indicate that smaller firms have more exposure than larger firms. The level of foreign exchange exposure is also found to increase because of financial leverage. Firms with higher levels of leverage are less flexible

when dealing with changes occurring due to changes in exchange rates. R&D expenses and the market-to-book ratio also affect foreign exchange exposure. Hence, high levels of foreign exchange exposure may be found in domestic firms with high R&D expenses, market-to-book ratios, and in small and high leveraged firms.

Stock returns based on fluctuations in the worth in dollars of US listed companies have been examined by Shin and Soenen (1999), who stated that smaller multinational companies are exposed to foreign exchange risks and gain advantage from declines in the value of the US dollar. However, due to this rationale hedging actions of big companies have a partial impact on exchange rate exposures. Constructive exposure to foreign exchange has been observed for smaller companies (chiefly importers). However, a study by Doidge, Griffin and Williamson (2002) observed that companies' foreign actions are mainly associated with exposure to exchange rates and, as a consequence of their management, bigger companies are more responsive to currency fluctuations compared to smaller companies. To examine the economic significance of these impacts, they utilised the portfolio procedure and observed that companies that carry out international sales at higher magnitudes surpass companies that do not carry out international sales through currency depreciation, and they struggle through currency appreciation.

Bradley and Moles (2002) conducted research on the finance directors of non-financial UK companies, and examined the level to which strategic procedures of controlling exchange rate risks are implemented. They observed that utilizing foreign currency-denominated debts and harmonizing cost with revenue denominated by similar currency are implemented by the majority of the participating companies as a chief measure in controlling exchange rate risks.

Another important determinant is competition which will be the focus of this study. For example, Shapiro (1975), Dominguez and Tesar (2006), Marston (2001), Luehrman (1990) and, Williamson (2001) argue that the level of domestic and foreign competition export sales, and the substitutability in using domestic or foreign inputs are all determinants of exposure.

3.3.1 Summary

Theoretical explanations for the relationship between each determinant and foreign exchange exposure have been provided in the literature. As with other macroeconomic factors, not all firms experience the same effect from their exchange rate exposure. Financial strategies, operating strategies, hedging strategies, and similar variables may be used to manage exchange risk. It is likely that the existence of firm related factors do affect a firm's overall exposure to exchange rate risk. Both financial and operational factors are of relevance here and should be considered separately. The investigation of the level of currency risk across different industries and firms is the prime reason for undertaking this study. To date, findings depict that the extent of contribution to overseas operations determines the level of that firm's or industry's exposure to exchange rate risk. On the other side, the level of exposure mentioned above is also mitigated through hedging tools; hence, hedging theories forecast the extent of risk exposure of any firm or industry by evaluation of its deployment of hedging techniques. An analysis that involves multinational firms having geographical disparities cannot portray the actual value of a firm's exchange rate exposure. The existing investigations into the exchange rate exposure of domestic corporations in developing countries have been questioned in the literature. The notable result is that no known studies have examined the relationship between firm-determinants and exchange rate exposure using UAE data. This study, therefore,

attempts to examine the extent and determinants of foreign exchange rate exposure by concentrating on a sample of 133 publicly traded companies in the UAE during the period 2005 to 2011.

3.4 Exchange Rate and Competition

Movements in exchange rates can make an impact on a company's value through different channels, whether or not it has foreign operations. In addition, movements in exchange rates can also affect domestic companies that do not operate in the international market but face fierce international competition in their local market or are indirectly exposed. For example, they may be importing raw materials from suppliers who use foreign material also used by domestic companies (Dominguez & Tesar 2006). Marston emphasised that a domestic firm (i.e., one that neither imports nor exports) can also experience changes in value when changes in the exchange rate occur. This domestic firm may compete with overseas firms in the local market or may have input purchases that are highly dependent on exchange rates.

A number of studies have identified the importance of competition as a factor that influences the exposure of corporations to exchange rate fluctuations. For example, Shapiro (1975) argued that a multinational corporation facing international competition and having export sales must experience exchange rate exposure. Its exposure should be associated with the degree of the international competition, amount of export sales, and the level at which raw materials can be substituted domestically and internationally. According to Shapiro (1975), major effects of exchange rate risk on multinational firms include sales distributed between export and domestic markets, quantity of competition regarding imports in domestic markets and the degree of availability of substitutes for imported and local factors of production.

Competitive exposure is relevant to the competition in purchasing or expenditure sector in the business. The firm may be exposed to changes in its market share that could result in a differing currency profile of costs compared to its competitors. The costs of firms change according to the competition and depending on the exchange rates; and according to price adjustment firms may be compelled to make as a result of changes in their market share. Specifically, the price of currency in any country is the exchange rate, that is, the products or goods locally produced and sold overseas are determined by the price of the currency of the country. For this reason, the exchange rates indirectly affect the competitiveness of local firms abroad. For instance, if the local currency depreciates, the prices of local products abroad of this country will decrease comparative to foreign products. The depreciation of currency will increase the cash flows of firms that export products produced locally. In contrast, firms will suffer in cases where they sell products locally that are purchased abroad. Clearly, if the firm's sale and production of their goods is denominated in different foreign countries and currencies, the exposure of these firms will be dependent on the relationship among these currencies. According to Géczy, Minton and Schrand (1997), variations in the firm's short-term cash flows are dependent on changes in exchange rates that can be affected by foreign competitors, which may affect market prices and the demand for domestic output.

Lessard and Lightstone (1986) examined the distinction between the level of local and foreign competition that tends to expose a company to foreign exchange rates. They proposed that the assessment of operating exposures necessitates a thorough comprehension of the market and the competition a company encounters. Moreover, they propose that managers must comprehend the importance of exchange rates because they can influence operating profits. Those firms that do not operate in

foreign markets but encounter foreign competitors in the local market are also affected. The real exchange rate fluctuations incorporate both volume and margin effects. Market leaders generally experience lesser market exposures, and firms that encounter similar real exchange rates might experience reverse operating exposures. Hence, the assessment of operating exposure necessitates thorough comprehension of the market composition through which a particular firm and its competitor acquire material and labour and sell their goods.

Flood and Lessard (1986) designed a framework that helped analyse the competitive position of a firm and its degree of economic exposure. Firms are divided into categories in this model based on low or high sensitivity to fluctuations in the exchange rate. Those firms that are less or more sensitive to both price and costs, such as multinational firms or importers that have common costs, have a low level of economic exposure. Luehrman (1990) presented a hypothetical model which shows the effects of changes in the exchange rate on a multinational or global oligopolistic firm. Leuhrman's focus was on competitive interaction in an oligopolistic environment as a major factor of exposure to foreign exchange risk.

Walsh (1994) focused on examining the relationship between changes in the exchange rate and the operating income and a spontaneous relationship between returns from stocks and changes in the exchange rate of 391 companies from April 1982 to January 1993. He discovered different categories of exposure that could help explain the existing relationship between the returns of the firm and changes in the exchange rate. With the help of the relationship of operating income with changes in the exchange rate, individual firms' exposure to the exchange rate was established, and different limitations were used to associate changes of exchange rate and returns from security. He also demonstrated that operating income will only show

movements of lagged relationship to the exchange rate when there is competitiveness. All this discussion leads to a conclusion that if a lagged relationship between changes in the exchange rate and the operation income can successfully categorise firms that show an association between returns from stocks and movements of the exchange rate, then it could be said that a competitive exposure could be the main factor of a relationship between changes in the exchange rate and stock returns.

Economic exposure arises because exchange rate changes constitute variation in firms' discounted cash flows. Therefore, exchange rate levels and exchange rate changes determine the equilibrium of the relative stock price. On the other hand, for an export-dominant country, the currency appreciation has a negative effect on the domestic stock market due to the reduction of export-market competitiveness. On the other hand, for a dominant import country, the appreciation causes a positive impact on the domestic stock market since it causes lower input costs. Competitive effects depend on the structure of the firm's markets in which it sells its products and sources its inputs. Firms are categorised as having either high or low sensitivities to changes in exchange rates for costs or prices, or both. Firms which have a mismatch between their cost and price sensitivities (that is, exporter and importer firms in Flood and Lessard's terminology) have the greatest degree of economic exposure.

Walsh (1994) concluded that more than 10% of the companies were significantly exposed to exchange rates changes; and believed that domestic companies would be more affected by competitive exposure than would multinational companies. He established that a relationship between the return from equity and changes in the exchange rate are extremely related to a lagging relationship among changes in the exchange rate and operating income. He explained that this relationship between

return on equity and changes in the exchange rate could be a reflection of competitive exposure in two quarters of a lagged relationship among changes in the exchange rate and operating income.

Marston (2001) examined competition among firms producing unique products. These firms were exposed to economic risk due to the competition created by firms that import from foreign markets. According to Marston (2001), the exchange rate that affects a firm's cash flow is determined by the nature of competition between these firms; thus, the industry structure is a key decider of economic exposure. A leading firm among many similar firms in the industry will have more exposure than those firms that compete equally due to their common size.

On the other hand, there would be economic exposure for two firms if one has a monopoly in the foreign market while the other competes in the same market. Whether economic exposure is simple or complex is determined by the type of competition among local firms and exporting firms according to Marston's (2001) study. A domestic firm's profits during competition are not only generated through its net foreign currency revenue, but cross elasticity of demand with competitors; and price elasticity of its own also play their respective roles, as is suggested under Marston's model. Other factors determining profit include marginal costs and other demand and cost function derivatives. The substitutability of a product has an important role in a firm's exchange rate exposure because the substitutability of a product of a domestic firm with an imported product determines elasticity.

Firms operating under competition should demonstrate higher exchange rate exposure than those having a monopoly. This can be illustrated by the fact that the costs of an exporting firm which are given in a home currency and have to go

through fluctuating exchange rates also determines its exposure. Marston's (2001) findings reveal that foreign firms will be exposed to exchange rates until demand for their products can be replaced by other firms' products. The exposure takes place away from the type of competition prevailing between two firms, and even though turnover and expenses are generated from the local market, exposure does occur. In addition, the exporting firm's economic exposure will be the sum of revenues generated in foreign currency, even under certain types of competition.

Williamson (2001) explored the effects of exposure to changes in the real exchange rate with regard to the industry value of automotive firms. The role played by industry competition and structure in the relationship between the value of firms and exchange rate exposure was taken into account. The automotive industry was used because levels of foreign competition are present and firms face high elasticity of demand. The companies compete with each other not only at the local level, but also on the international level; therefore competition with each other, along with the financial health of the company, impacts on the risks a company faces in each country.

Williamson explained that foreign currency variations will eventually affect an organisation's cash flows, especially in cases where the exporter's costs are denominated in local currency and in cases of foreign market sales with no local competition. The elasticity of the demand for a certain product will primarily determine the sensitivity of the organisation's cash flow in terms of the local currency and with respect to changes in the exchange rate. With increased competition in the foreign market due to local investments, the sensitivity of cash flows also increases owing to changes in the exchange rates. The participation of local competition will affect the exporter's ability to increase prices with respect to

the depreciation in the local currency. Hence, as the competition in overseas markets increases so will the sensitivity of the exporter's cash flows to the exchange rates.

The sensitivity of cash flows can be reduced by denominating the costs in terms of the local currency. With the depreciation of the local currency, the organisation's cost in the domestic currency will also decrease. The decrease in the local currency will offset the decrease in revenues; hence, the domestic cash flows will be sensitive to changes in foreign currency values. The changing structure of the automotive industry during the sample period has led to a change in the exchange rate exposure through time, as identified by (Williamson 2001). Moreover, his findings for Japanese firms were quite similar to He and Ng (1998), who argued that the most interesting fact is that as the Deutschmark depreciates in comparison to the dollar, US firms gain an advantage. US firms benefit when the Deutschmark depreciates, with the income from their European operations at the expense of their non-German competitors. Conclusively, during periods of high foreign competition and periods of huge and lengthy movements in real currency values for the countries that were tested, the estimated exposure is material for all firms.

Choi et al. (1998) examined the exchange rate risk and its effect on competition in the world's economy, especially on Japanese firms. The use of a conditional and unconditional multifactor capital asset pricing model gives somewhat different results. If, for instance, the unconditional model is used it will price exchange rate risk for both weak and strong yen periods, whereas if the conditional model is used the exchange rate risk is priced no matter what measure is used. If the weighted exchange rate risk is used it will demonstrate mixed results for both the conditional and unconditional models. The important consideration is that the exchange risk is priced in the Japanese stock market, as indicated by the results obtained.

Chow and Chen (1998) confirmed this result using a sample of Japanese firms. The changes in the exchange rate are considered a big risk in international firms. Similarly, Japanese firms involved in international business activities are subjected to exchange rate risk. If the yen depreciates against foreign currency, it will adversely affect high import dependent firms, but for export dependent firms it will be less damaging. The exchange rate risk affects a firm's investment value, and it mostly affects long-term investment value.

3.4.1 Summary

Most previous studies focused on the competitiveness of multinationals and the effect of exchange rate exposure. This study expands on the previous studies by evaluating domestic firms in the UAE, as well as examining actual changes in real exchange rates. This study will directly test the effect of competition on the exposure of firms to exchange rates. Furthermore, Aggarwal and Harper (2010) recommend further study of the nature and effects of foreign exchange exposure on domestic corporations. Williamson (2001) undertook a further study into exchange rate exposure and the competitive aspects of industry structures. This current study aims to contribute positively to these points and take some steps toward filling the gaps that exist in the literature.

3.5 Management of Exchange Rate and Hedging

Previous studies tended to focus on hedging decisions of a company and other ways of reducing exchange rate risk and securing stable future cash flows. The risk management of a firm is driven by the idea that such action will decrease the variability of cash flows and possibly increase the firm's value. Proper risk

management policies are needed to reduce currency risk exposure as noted by (Froot, Scharfstein & Stein 1992).

The disparity that persists in international exchange rate risk practices was studied by Marshall (2000) via his survey of large Asia Pacific MNCs. The inclusion of the UK, the US and Asia Pacific MNCs facilitated the survey to statistically showcase the 179 (30%) responses that portray differences in international risk management practices. Differences also exist in internal and external methods of policies dealing with exposure and exchange rate risk management. These regional differences emphasise conversion and exposure on the economy by exchange rate movements. Many investigations were undertaken into the determinants of exchange rate exposure. For example, Pantzalis, Simkins and Laux (2001) investigated the effects of operational hedges by US multinational companies on their exchange rate exposure. They found strong evidence of firms' ability to build operational hedges by determinants (such as breadth and depth of MNC network) that affect the firm's exchange rate risk exposure.

Multiple methods are present as determined by (Marshall 2000). From various internal and external methods, it becomes necessary to resolve which method is used for translation and which is used for transaction exposure. Marshall's (2000) research focused on finding an appropriate method for both exposures. The resulting study suggests that the internal method for translation risk is balance sheet hedging, while for transaction risk, matching and netting is used. These methods are mostly used in either case, but are not necessarily used. Apart from internal methods used for translation and transaction risks, external methods are also commonly used for these risks. Forward contracts are among the main external methods, but sometimes currency swaps can work for UK MNCs. Exchange traded instruments and external traded instruments are

pre-dominantly used in Asia Pacific MNCs compared to other MNCs. Most MNCs avoid using external traded instruments such as futures and options.

Part of the industry sectors have been used these derivative instruments which notably exchange-traded derivatives. MNCs in operations like transport and utilities have paved the way toward using more currency futures compared to their previous preferences for forward contracts. This shift is due to their earlier experience in derivative markets like the commodity market. The regional differences in risk management policies are monitored by comparing the size of the respondent companies. MNCs in the US and the UK have minor differences in risk management policies, while major differences occur in Asia Pacific MNCs. The relative emphasis on conversion and economic exposure could be described by size comparison of the respondents and could also explain external hedging instruments.

Swedish and Korean firms are used in the study of the exchange rate risk management methods because both are net exporters and greatly depend on foreign trade. Swedish and Korean firms are the focus of a study by Pramborg (2005) of the exchange rate risk management methods because both are net exporters and greatly depend on foreign trade. Thus, the comparison of Korean and Swedish firms is appropriate to test the relative differences in hedging methods of both countries' firms. Korean and Swedish markets are similar in trade aspects, but differences exist in other stages such as economic and financial levels. The derivative market accessibility and credibility is more evident in the Swedish market than the Korean market because the Swedish derivative market is well-developed, whereas the Korean market needs high regulation and monitoring.

Hedging practices are now common in most countries to reduce exchange rate exposure. These practices hold some similarities and some dissimilarities in different regions. The two countries' (i.e. Korea and Sweden) hedging decisions are the focus of Pramborg (2005) study, although hedging decisions are based on the extent of exchange rate exposure and the size of firm, but the purpose of hedging is different in different countries. In Korean firms, hedging is a way of reducing variability in a firm's future cash flows, whereas in Swedish firms it is needed to make the balance sheet appealing to investors and stabilise firm earnings.

Less developed derivative markets offer less potential for Korean firms to use external hedging methods. This leads to a lower proportion of firms in the Korean market using derivatives compared to the Swedish market. Thus, more Swedish firms are keen on hedging their position than Korean firms. Firm-specific variables like foreign exchange exposure, asset base, cash position, or debt proportion could not help suggest lower use of the derivative market. Korean firms use different methods of hedging, demonstrating their decision to hedge based on the firm's characteristics rather than country-specific variables.

The literature also generally indicates that financial and operational hedging decreases exchange rate exposure. Hedging foreign exchange risk to reduce the variation in reported performance and minimise risk premiums based on the possibility of default involves internal hedging or a contract for risk transfer to a counterparty (Smith & Stulz 1985). A study by Allayannis, Ihrig and Weston (2001) explained clearly that by means of operational hedging and financial derivatives, a company can develop policies of risk management. These techniques are divided into two, the first one dealing with the system based on accounts, payments, and invoicing such as netting, matching, lagging, and leading.

It also treats diversification of manufacturing, production, distribution and financing (currency of debt), in addition to pricing policies and sourcing strategies. This technique is named an internal technique, which is different from the second technique, named external technique. The latter deals with forwards, futures, options, and swap which fall under financial derivatives. Internal hedging is defined as the same foreign-currency-based revenues and expenses leading to and covering foreign expenditures, and having a certified profit in foreign exchange rate movements. Internal hedging relates to the findings of Sucher and Carter (1996), which specify that firms found internal hedging to be less valuable than any other peripheral technique.

According to observations made by Allayannis and Ofek (2001), exchange rate exposures are found to have less effect on the hedging activities of large organisations. In cases of small businesses (mostly importers), a positive effect of foreign exchange exposure is found. Nevertheless, hedging is more common in large organisations than small organisations, as is evident in the studies.

Wang and Low (2003) provide one such strategy in which the best hedging strategy is given in terms of the relationship of other factors to the hedge (e.g., future of foreign currency denominated stock index, equity interdependence, futures, markets of foreign exchange). These factors play a vital role in designing the best strategies for hedging. Contemporary investors also use future contracts to expand from hedging, regardless of their type, as is portrayed in the Singapore Exchange given in the traded MSCI⁴ Taiwan index futures.

Bartram (2008) conducted a meaningful investigation of outsized non-financial firms' foreign exchange rate exposure and other risks associated with it. In addition,

⁴ MSCI (Morgan Stanley Capital International) is a leading provider of investment decision support tools to investors globally, including asset managers, banks, hedge funds and pension funds.

they researched how to reduce exposure in businesses that stand on proprietary internal data related to property or ownership by means of hedging. This includes cash flows, derivatives and foreign currency debt, as well as external capital market data. Their findings indicate that non-financial firms' managers who had once worked on foreign exchange rate risks are quite confident and expert in taking steps. Furthermore, it exemplifies and demonstrates the unimportance and irrelevance of foreign exchange rate exposures and complete performance measures. An example is given in terms of total cash flow, which can be explained by hedging at the firm level, so enduring exposure is quite minute if operating cash flows are exposed to exchange rate risk, economically and statistically.

The previous study is consistent with the findings of Bodnar. et al. (1995) who explained that corporations having functions that are greatly influenced by adjustments in exchange rates will depend on experience when they become involved in risk management movement. This will happen when a corporation's hedging increases its worth. As a result, unimportant residual exposures are being shown by corporations with and without operations that are subjected to exchange rate risk. Thus, both firms with and without operations exposed to exchange rate risk are likely to show insignificant residual exposures.

From 1996 to 1998, Allayannis, Ihrig and Weston (2001) investigated the exchange rate risk management operations and financial strategies for US multinational firms. According to their observations, financial risk management is not a suitable alternative for operational hedging. Nevertheless, greater geographic disparity within the firm indicates a need for financial hedging. Therefore, to make financial hedging an effective strategy, operational hedging which provides shareholders with profit should be used to increase the firm's value. A distinction should be made between

the different theories of hedging behaviour. Allayannis and Ofek (2001) observed the use of foreign currency derivatives for hedging or their usage for speculative purposes. Samples of all S&P 500 non-financial organisations for 1993 were used for the study, which indicated that foreign derivatives are used for hedging by firms. The use of derivatives also reduces the risks of exchange rates experienced by the organisations. The decision to use derivatives is highly dependent on exposure factors such as foreign sales and foreign trade. It is also dependent on variables relevant to the theories of optimal hedging, that is, the size of the firm and R&D expenses.

A study by Elliott et al. (2003) used US multinational companies as a sample and studied their foreign debt denomination in relation to foreign currency exposure and its derivative use. The data revealed that foreign currency risk exposure and foreign denominated debt level have a significant positive relationship. Therefore, debt can be used as a hedge. However, a negative relationship exists between foreign-denominated debt and the foreign currency derivative. Consequently, this indicates the use of foreign denominated debt as a hedge, which alternates to reducing currency risk in terms of usage by the foreign currency derivative.

3.5.1 Summary

In many states, the changing rates of administration policies and development, along with expansion of MNCs globally, have considerably added to the domination of economic threat. The previous section reviewed the literature on management and hedging of exchange rates. Moreover, a summary has been presented about what is stated by the texts and writings regarding the process and how it is handled. Various points of view from which the topic has been investigated have been described. The review has showcased prominent attributes of the texts and writings, along with

appropriate comment. The review has also placed corporate hedging of foreign exchange rate and its management in the context of the corporation and its environment, and presented the salient features of the literature and their contribution. Moreover, a theoretical structure in which the experiential examination could be grounded has been established in this chapter. This chapter recognises and explains various company-related attributes linked to the administration of the exchange rate.

3.6 Exchange Rate Exposure and Pass Through

The scope of the exchange rate hedging literature is very broad. It encompasses within itself many facets that involve hedging and protection measures applied by firms for maintaining their existence in their markets. One strategy that does not rely on hedging instruments is 'pass through'. Companies have a different way of how they 'pass through' changes in exchange rates into prices; as a result of their 'exposure' to exchange rates their profits need to be adjusted accordingly. Since prices lead to a change in profitability, a company's pass through and exposure should be related. Bodnar, Dumas and Marston (2002) demonstrated that pass through can have an effect on exchange rate exposure because companies with inelastic demand can pass changes in price onto the end user. According to (Barhoumi 2006) the question of exchange rates affecting the price level is again popular among research methods. This application is called exchange rate pass through because it informs how much of the exchange rate impact is passed through changes in price. Donnenfeld and Zilcha (1991) found that using the technique of invoicing in the consumer's currency results in higher profits, bigger output, and lower prices compared to billing in the exporter's currency.

Williamson (1990) commented on the tendency of British exporters who enter the US market place, since price elasticity of demand is a significant element when dealing with exchange rate adjustments. In this case, consumers suffer foreign currency denomination, which indicates currency that is presented in terms of a specific currency unit. However, it is a great exposure for firms having high price elasticity of demand. The appreciation of a dollar results in appreciation of import value, i.e., the dollar is directly proportional with import prices. This aspect was clearly examined by Froot and Klemperer (1989), who suggested that when future demand of a firm depends on existing market prices then one should move from exchange rates to import prices, particularly in the US. This is because it has been noticed that foreign firms attempt to gain huge market share price in a hostile way to remain permanently elevated. When there is a money exchange rate positive reception, they behave less aggressively.

A fresh examination of the sources of unfinished pass-through was undertaken by Hellerstein (2008). He anticipated and established a basic model that examines the sources of home currency price constancy for an individual business. This structural model is functional to a group dataset of one business along with the charges of both wholesale and retail for UPC-level products. Counterfactual replications enumerate the comparative significance of the industry's mark-up amendments and local-cost constituents in the unfinished spread of surprises of exchange rates; the outcome of these surprises on customer surplus, overseas and local industries has been facilitated by this model.

The remaining part is described by home-cost constituents as proposed by Hellerstein (2008). According to a general postulation, vendors operate as an unbiased pass-through intermediary; they might generate upwardly partial calculation of the

responsibility of non-traded charges in the unfinished pass-through. Meant for welfare, subsequent to an alternation in the nominal exchange rate, overseas producers normally gain more advantages or tolerate higher rates than local producers, vendors and customers. After the reduction in dollar value, producers having brands that are similar alternates for pretentious overseas brands reduce mark-ups to acquire a share of the market from overseas producers and enhance returns. As a final point, according to the recommendation of the outcomes, few planned communications among the overseas producers were not exaggerated by the transition in exchange rate, local producers who compete in imports, and overseas manufacturers succeeding in the transition in exchange rate that might add up as an unfinished pass-through.

Beirne and Bijsterbosch (2011) stated that exchange rate pass-through to consumer prices is approximately 0.5 by utilising the reactions of impulse. It is approximately 0.6 by utilising the co-incorporated vector auto regression (VAR). Thus, by means of impulse reactions resulting from the VECM (vector error correction model) of five-variants and by means of five-variants co-integrated VAR for every state, they have shown that these exchange rates pass-through to consumer prices. According to their findings, the states that have taken on some kind of permanent exchange rate system apparently have greater exchange rate pass-through. These outcomes are strong substitute arrangements to impulse reactions and to substitute normalization of VAR. Beirne and Bijsterbosch (2011) examined exchange rate pass-through to customer charges for nine European Member States located at the east and centre. Their model encompasses attributes of a circulation chain pricing structure that directs for the effect of demand and supply surprises to check the pass-through of exchange rate

into consumer prices. Their model also permits transitions in exchange rate to influence, indirectly or directly, customer prices by means of manufacturers' prices.

In a similar location, María-Dolores (2010) examined the extent of exchange rate pass-through to the import rates of Turkey, plus a few New Member States (NMSs) belonging to the European Union which were approaching from the Euro region. He anticipated the business-specific charges of pass-through both inside and outside the states. Apart from Cyprus and Slovenia, he could not locate any proof in either privilege of the theory of Manufacturer Currency Pricing (complete pass-through) or the theory of Local Currency Pricing (zero pass-through). The minimum prices for the exchange rate pass-through are in production departments in accordance with outcomes provided by the business, although he noticed reductions in exchange rate pass-through during the chain of pricing.

3.6.1 Summary

The major idea arising from this section was that how the pass-through can influence the exchange rate revelation, since the fact that corporations have a demand does not change with the changes in prices, and they can transfer amendments in prices onto the final consumer. Consequently, emphasized that the administration of the economic threat needs proceedings significantly dissimilar to business deal threats and translation. Companies have a different way of how they 'pass through' changes in exchange rates into prices; as a result of their 'exposure' to exchange rates their profits need to be adjusted accordingly. Since prices lead to a change in profitability, a company's pass through and exposure should be related.

3.7 Exchange Rate Exposure of Firms in Developing Countries

Various studies have examined the foreign exchange exposure of corporations functioning in local businesses. In the period between 1991 and 1998, the foreign exchange exposure of 109 Turkish corporations which deal in the Stock Exchange of Istanbul was examined by (Kiymaz 2003). According to his findings, the eminent overseas exchange threats to businesses are to the equipment, monetary, clothing and chemical industries. Turkish corporations are particularly vulnerable to the threat of overseas exchange. The foreign exchange exposure's symbol shows the unfavourable influence of foreign exchange rate on corporations' worth and is a pessimistic symbol.

A greater extent of foreign exchange rate exposure has been introduced by corporations having substantial amount of overseas participation. These outcomes suggest that the extent of overseas participation has an important influence on the extent of exposure. Greater levels of exchange rate exposure are evident in companies with high level of overseas connections in the shape of imports or exports. The considerable foreign exchange exposure for home companies has also been disclosed in the findings. There are two methods by which this outcome can be clarified. Primarily, it demonstrates that firms working within worldwide surroundings are vulnerable to foreign exchange exposure despite the global environment and are subject to foreign exchange exposure regardless of their overt global participation. Next, corporations working in surroundings that are greatly affected by inflation utilise foreign exchange investments as a restricting tool to safeguard the worth of their resources. In addition, firms operating in a highly inflationary environment use foreign exchange holdings as a tool to safeguard the worth of the resources alongside the increase in prices. According to Kiymaz (2003) findings, corporations are more vulnerable to exchange rate threat prior to the

disaster than after the disaster; and the outcomes for corporations over the study period are directed to foreign exchange exposure. However, during the pre-crisis period, the intensity of the exposure was considerably greater compared to exposure in the post-crisis period.

Aydemir and Demirhan (2009), utilising facts regarding Turkey from 23 February 2001 until 11 January 2008, examined the links among the prices of stock and exchange rates. Services, industrials, the State 100, technology indices, and financials are used as an indication of prices of stock in this examination. According to the specification given by the outcomes of this examination, a two-directional causal link exists among all the indices of the stock market and the exchange rate. A direct causal link exists between the exchange rate and indices of technology, whereas an indirect causal relationship occurs between services, industrials indications, and financials and the exchange rate (backing up the portfolio balance procedure). In contrast, an indirect causal link exists between the exchange rate and total stock market indications.

The link between company worth and exchange rate was investigated by (Dominguez & Tesar 2006). For a large sample of companies and for a considerably longer time period (from 1980 to 1990) they approximated the exposure of exchange rate of publicly listed companies. The sample consisted of 8 promising and developed non-US markets. They established that for a considerable group of companies, exchange rate activities matter and companies are affected. Moreover, the course of exposure changes with time and is dependent on the precise exchange rate. Thus, they recommend that in a reaction to exchange rate threat, companies enthusiastically accommodate their actions. At the enterprise stage, exposure is

associated with worldwide standing, rivalry, business, global assets, sales in overseas and the magnitude of the company.

To examine the exchange rate exposure within 8 states, Dominguez and Tesar (2006) utilised company and business stage profits. A considerable extent of exposure to a collection of various exchange rates was found. They determined that at the level of the state, the intensity of exposure is strong, though the route of exposure and the choice of companies that are influenced by activity in exchange rates is dependent on the particular exchange rate and changes with time. According to their assumptions, various business and company stage attributes are connected to exchange rate exposure. Exposure is more common within companies involved in worldwide operations, which can be computed by their international sales; share of global assets and worldwide standing; and within small companies instead of average or huge companies.

Chue and Cook (2008) examined the disclosure of rising corporations of emerging market to changes in their internal exchange rate charges. They established that in the period between 1999 and 2002 depreciation of the exchange rate had an influence on rising stock profits of the market. They also investigated the country-level and firm-level determinants of exposure. There exists a negative link, as signalled by their results, among the exchange rate exposure of a firm and (1) its intensity of overseas, worldwide currency debt; (2) its stage of entire liability; and (3) the intensity of outside debt of the nation where the firm is situated. In the current sub area, in comparison, the link among negative exchange rate exposure overturns the symbol and vanishes mutually at both the nation and company stage.

An examination of the foreign exchange rate risk-management proceedings, along with Ghanaian companies taking part in foreign business, was conducted by Abor (2005). The way Ghanaian companies deal with difficulties arising from managing exchange rate exposure and their overseas exchange threat was also a focus of this examination. The outcomes of the examination signalled that slightly more than 45% of Ghanaian companies have no person or division accountable for risk-management their overseas business. Through saving and purchasing overseas currency ahead of time and by accommodating prices to mirror alternations in prices of imports that result from changes in currency, the overseas exchange threat is mostly managed.

According to Abor (2005) the major trouble that companies encounter is the problem of holding domestic consumers due to greater rates of imported inputs that normally influence the charges for the last goods that are sold domestically, plus the regular increase of overseas currencies alongside domestic currency. The examination also stated that to manage their overseas exchange threat, a large number of participants never utilise hedging methods. Thus, on the whole, the companies of Ghana that are taking part in global business show a small intensity usage of restricting tools to administer the overseas exchange threat. The cause might be credited to the non-developed temperament of the monetary markets and also to the low intensity of sophistication and education within the treasury staff of the companies.

Ghanaian firms are the focus of a study by Salifu, Osei and Adjasi (2007) in which they describe exchange risk exposure of Ghana stock-exchange listed companies. The period of investigation was from January 1999 to December 2004. The examination was based on foreign currencies impacting on cedi currency, which in turn has an impact on different sectors. The exchange rate focus was on cedi to the US dollar, cedi to the UK pound sterling, and cedi to the euro. To identify the impact

of all exchange rates at once, trade weighted averages of exchange rates were used to find the extent of risk involved. From the results of the survey, about 55% of the firms included in the sample show exposure to the US dollar, which also has an impact on sectors like retail and manufacturing. The result shows dominant exposure of the US dollar on Ghanaian retail and manufacturing sectors. The US dollar was among the most exposed exchange rate risk currencies. On the other hand, the UK pound sterling contributed to about 35% of Ghanaian firms' exchange rate risk. Financial sectors were independent of any foreign currency exchange rate risk. The exchange rate risk is inversely related in the case of some Ghanaian firms if cedi devalues against the dollar and results in losses for the firm.

3.7.1 Summary

Exchange rate risks and exposures of a corporation in developing or emerging states has already been discussed, subsequently, the target now is to communicate how an emerging state addresses the experience regarding foreign exchange. Later, its impacts on the worth of a firm (i.e., how much it contributes to the value of a corporation) will be studied. Furthermore, Abor (2005) elucidates consequences obtained from developing economies' financial markets with respect to structures and characteristics. The consequences provide a detailed idea of different countries having different economic stages, government policies, government stability and criteria of expectations, since these are conditions that are linked to foreign exchange risks. Parsley and Popper (2006) explained that foreign competition or macro-economic conditions are impacted by firms without foreign revenues, costs or operations which circuitously have an effect on adjustments of exchange rates. This present study focuses on the foreign exchange exposure of domestic corporations in

the United Arab Emirates (UAE) and the implications of that exposure for the market value of those corporations

3.8 Overall Summary

Some studies supported that the exposures of the exchange rate have an influence on the firm, but are not sufficient to satisfy the requirements due to their discrepancies, so the argument remains unconvincing due to variations. However, foreign operations, the size of corporations and different hedging policies to some extent are influenced by foreign exchange rate exposures. In this particular section, discussion centres on firms' international involvement, which is how corporate entities engage worldwide. Secondly, it investigates the lack of practical proof regarding the link between instability in exchange rates (i.e., adjustments in exchange rates, and the firm's value support). A considerable portion of this chapter reflects results derived after exposure to adjustments in exchange rates. In addition, it investigates exposures at the firm level and industry level and the determinants of exchange rate exposure. By providing practical evidence and proof, this chapter attempts to fill the gap regarding firms of UAE non-financial companies and their changes in exchange rates.

The main objective of this research is to provide empirical evidence about the contemporaneous and lagged impacts of exchange rate changes on the value of 110 UAE nonfinancial companies from January 2005 to December 2011. In addition, this study aims to contribute to the understanding of the determinants of FX exposure of domestic corporations. The study takes one additional step by examining the implications of FX exposure for the market value of domestic corporations. This, of course, is of paramount interest to investors and corporate financial managers charged with the task of creating market value.

The next chapter of this thesis discusses and explains existing theories concerning the exposure of foreign exchange rates and ‘competition’ as a determinant of foreign exchange.

CHAPTER 4: THEORY, FOREIGN EXCHANGE RATE EXPOSURE AND COMPETITION

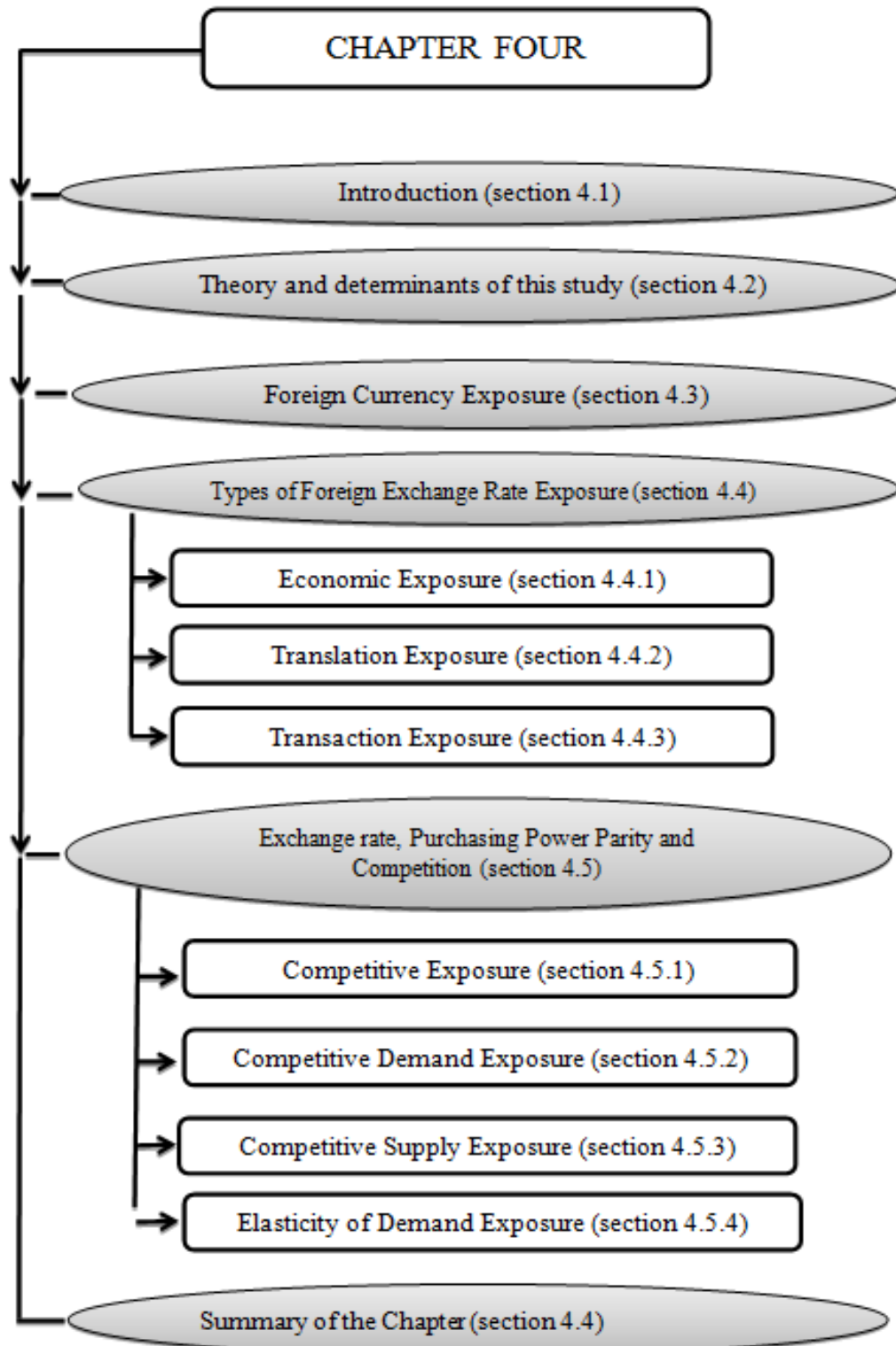
4.1 Introduction

Researchers continue their efforts to understand the determinants and level of exposure to changing exchange rates identify implications for business activity in FX risk and the difficulty in predicting fluctuations in the FX markets (Salifu, Osei & Adjasi 2007). Empirical research indicates that volatile exchange rates affect the revenues and profits of both multinational and local corporations (Muller & Verschoor 2006). Because of the prevalence of outsourcing activities to foreign countries, corporations incur costs in foreign currency (e.g., wages, taxes and material) and it is important for corporate financial managers to be aware of the extent of this exposure (Abor 2005). Furthermore, corporations not involved in foreign exchange trading or outsourcing activities are also exposed to the fluctuating exchange rates through competition with multinational organisations, foreign competitors, or through macroeconomic conditions. Therefore, many local and multinational organisations find their income statements and business performance affected by fluctuating exchange rates, in spite of their having only indirect financial exposure (Parsley & Popper 2006).

Fluctuations in exchange rates may have an impact on an organisation's operating cash flows, revenue and costs. Consequently, there may be changes in the value and riskiness of an organisation's cash flows and the company's publicly traded securities. Because of the globalisation of business, very few organisations can be classified as purely local firms (Kiymaz 2003). Therefore, most domestic companies also face exposure to changing foreign exchange rates, even if they are not actively trading overseas (Naylor & Greenwood 2008).

The objective of this chapter is to analyse the current theories on foreign exchange exposure which consider 'competition' as a determinant of foreign exchange rate exposure. The major streams of research covered are firm value and foreign exchange rate exposure, along with analysing how the sensitivity of foreign exchange rate competition. Chapter 4 explains existing theory concerning the exposure foreign exchange rates and 'competition' as a determinant of foreign exchange exposure. The chapter also describes types of foreign exchange rate exposure and explains the relationship between exchange rates, purchasing power parity and competition.

Figure 4.1: Outline of Chapter 4



4.2 Theory and Determinants of this Study

Finance theory indicates that hedging increases firm value by reducing expected taxes, expected costs of financial distress, or other agency costs (Nance, Smith & Smithson 1993). Textbooks identify two categories of exchange rate exposure: translation exposure and economic exposure. The economic exposure can further be divided into operating exposure and transaction exposure since it can impact on the cash flow of the firm. Transaction exposure occurs when a firm enters into a contract to be settled in the future and the denomination is in terms of foreign currency. If the domestic currency of a country decreases, there is an increase in the value of future inflows and outflows. Such measures are considered explicit and this situation does not represent the entire exposure that the firm is subjected to. Firms are only able to hedge against such exposure and it is usually found that the transaction exposure is the only aspect that can be efficiently hedged from the total exposure.

Exposures which are related to changes in foreign exchange and have an effect on the financial or operational contracts of a firm are known as operational exposures. This is a kind of economic exposure. The exchange rate has the ability to determine the price of domestic products being sold in international markets since it is the price of the currency. Domestic products being sold abroad will have less value relative to the value of foreign products. A higher margin may be attained by a firm if it keeps the level of foreign exchange higher than before. The competitiveness of domestic firms working internationally is very much affected by the exchange rate. Depreciation will increase the cash flows of a firm that produces domestically and exports to international markets. The cash flows will, however, suffer if the firm imports products from other countries and sells them in the domestic market.

There are two reasons why firms not involved in foreign exchange transactions are nonetheless affected by the operating exchange rate. Firstly, with changes in exchange rates the competitive environment also changes. Many firms have international competitors, which is why the change in exchange rate affects their earnings. The firm's value may increase if the domestic currency value decreases.

The second reason is that exchange rates may also affect the price of inputs. The export industry gains advantage when the domestic currency depreciates. At this point, exporting firms demand more inputs which, in turn, increases the price of products. Firms present in the protected industries have a specific source of input; and profitability may decline as the prices for these specific sources also increase. Exchange rate depreciation does not have a negative effect on the firm's cash flows and that the operating exposure is negative.

This study investigates the foreign exchange exposure of domestic UAE corporations. Foreign exchange exposure has been found to have several determinants (see the previous chapter). A theoretical explanation for the expected relationship between each determinant and foreign exchange exposure can be provided. This study will estimate a multiple regression model that contains the following variables:

1. Size of firm
2. Average debt ratio
3. MkBk as average market-to-book ratio
4. Turnover as average asset turnover
5. R&D is research and development
6. SICj as industry dummy variables

7. ROE is return on equity
8. Asset tangibility
9. IndHerf as the average industry Herfindahl index
10. PCM is price cost margins
11. PrMargin is profit margin
12. GrMargin is Gross margin

It is likely that the existence of firm related factors does affect a firm's overall exposure to exchange rate risk, as the risk is defined as variation in the firm's value owing to exchange rate fluctuation. Both the financial and operational factors are of relevance here and should be considered separately. The prime reason for undertaking this study is to investigate the level of currency risk across different industries and firms. To date, findings show that the extent of contribution to overseas operations determines the level of that firm's or industry's exposure to exchange rate risk. On the other side, the level of exposure mentioned above is also mitigated through hedging tools; hence, hedging theories forecast the extent of risk exposure of any firm or industry by evaluation of its deployment of hedging techniques.

According to Hekman (1985) the currency rate risk is the variation in value of a particular investment (denominated in a defined reference currency) because of deviation in predicted exchange rates. In his framework for valuing corporations, macroeconomic factors and theory of expectations have been integrated. His model richly describes the economic and corporate factors determining exchange rate exposure. The results can thus be used to explain the discrepancies of exchange rate risk responses across different industries, firms and product lines.

A two-country framework has been used by Shapiro (1975) to focus on the profitability side. According to Shapiro, the allocation of sales amongst local and foreign markets, the substitution level between imported and local components of production and the degree of competition it faces for imports locally are key elements that affect the currency rate exposure of any multinational company. The aforementioned findings have been validated by Jain (2000), who further asserts that sales location, industry characteristics, site of value addition and the level of firm specialisation are factors upon which any US firm's exposure is dependent.

Hedging activities of a firm significantly determine their level of exposure to currency rate risk as predicted by optimal theories of hedging. In a world of market imperfections, firms have incentives to employ derivative instruments to hedge against currency risk. According to He and Ng (1998), derivative instruments should reduce the risk exposure of firms who deploy them on a large scale. This study is seeking to establish whether exchange-rate exposure is determined by a firm's financial and operational variables. Existing studies have found these variables to be important in explaining a firm's hedging policy against exchange rate exposure and the firm's *competitiveness*.

A theoretical explanation for the expected relationship between each of these determinant variables and the foreign exchange exposure of domestic firms is offered by Aggarwal and Harper (2010). The financial strength of any corporation could be determined by considering its appropriate debt ratio, defined as the total debt divided by total assets (total debt/total assets), as identified by Benavente, Johnson and Morandé (2003). In addition, it may be expected that firms with a high level of debt and leverage experience more exposure to additional financial risk. Therefore, these firms may be susceptible to a positive relationship to exposure of foreign exchange.

However, foreign debt can play a useful role in hedging foreign currency exposure as in the case of foreign currency derivatives.

Other tools and ratios relating to a firm's operational performance include price cost margins, asset share, and asset turnover. The high number is better for measuring the asset turnover of a firm because it indicates the firm's efficiency in using its assets to generate revenue or sales. It is defined as the amount of sales generated for every unit of currency worth of assets. It is also calculated as sales of the firm divided by the total assets of the firm ($\text{sales}/\text{total assets}$). Productivity and growth can also be impacted by fluctuations in the exchange rates, as identified by Landon and Smith (2006). Aggarwal and Harper (2010) indicated that all those firms that encompass higher asset turnover should have stronger hedging and protection against pricing and competition issues; moreover, the exposure of exchange rate should be relatively lower where asset turnover is high.

Return on Equity (ROE) is the amount of net income returned as a percentage of shareholder equity ($\text{net income}/\text{shareholder's equity}$). This metric can be used to compare a company with its competitors and is also useful for comparing the profitability of a company to that of other firms in the same industry. Additionally, MktBk is the average market-to-book ratio ($\text{book value of firm}/\text{market value of firm}$), a ratio used to find the value of a company by comparing the book value of a firm to its market value; while growth opportunities are measured using the average market to book ratio (as measured at fiscal yearend).

The size of firms is measured by the log of equity market value. However, large firms are more likely to hedge themselves against currency and operations exposure than small firms as most large firms have a greater capacity than small firms to

compete and have diverse clients or products. In addition, research and development (R&D) is a segment of any corporation (R&D/Sales). Determining the degree of R&D is important in determining the degree of competition. R&D is defined as discovery of new products or development of new products. Moreover, R&D investment reduces the exposure of any firm to foreign exchange rates. Therefore, R&D expenses enable a firm to avoid experiencing exchange rate variations. In addition, the insulation of the firm from both foreign and local competition depends on the firm investing in unique services and products.

From the empirical literature, several popular methods are used to measure competition in particular markets such as price cost margins (PCM) and the Herfindahl index (BooneVan OursVan Der Wiel Planbureau 2007). The Herfindahl index is computed for each year and reflects the competitive environment within an industry for each firm in the sample. This factor is a commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers. The HHI number can range from close to zero to 10,000.

The Learner Index or the Price-Cost Margin (PCM) is an important indicator of the market power of a country. The PCM evaluates the difference that exists in the country in the price of goods sold and the cost of these products. The PCM is mainly dependent on the demand elasticity in the country which dictates whether the margin is high or low. If the margin is high then it is considered that there is a large gap between the price and the competitive price of the goods being sold.

There are many methods that have been employed by researchers to calculate the PCM. Some researchers such as Aghion et al (2002) and Nickell (1996) have

calculated it by the profits to sales ratio, while other have calculated the demand and the cost factors separately before making the calculations for the PCM. All the methods, however, point to the same conclusion that if there is higher concentration in the market then the prices will be high and there will be low competition and the PCM will be high. (Scherer & Ross 1990), in their research paper, provide a detailed example of the process.

Gross margin is measured as total sales revenue minus its cost of goods sold, divided by the total sales revenue. Moreover, this element is an important financial factor in analysing firms and evaluating their financial performance. Furthermore, gross margin is useful in ascertaining what firms are earning after costs. It represents a basic analysis of firms' profitability. In general, higher gross margins shield a company from its competition in the market because the higher gross margin provides a financial resource for the company to improve their product research.

Tangibility of assets is a substantial factor that impacts the operational characteristics of any corporation, as identified by Aggarwal and Harper (2010). High asset tangibility is associated with the current ratios of any firm (long-term assets/total assets); and is defined as an asset that has a physical form such as machinery, buildings and land. In addition, lower levels of current assets relative to total assets (high asset tangibility) insulates the firm from changing input costs as current assets, especially inventory and raw materials, are replaced in the firm's operations. It could be seen that investment in inventory and raw materials can mitigate the risks associated with fluctuations in exchange rates.

Profit margin is measured as net profits divided by sales, or net income divided by revenues. This factor is very important, especially when comparing firms in similar

industries. Firms with higher profit margins have better control than their competitors. In addition, firms with lower costs have higher profit margins and market share (Aghion & Schankerman 2004).

Another factor of substantial importance is SICj (a dummy variable), which is usually evaluated by financial analysts for almost all companies prevailing in the economic market. Nevertheless, the most critical aspect of exchange rates is that firms operating in industries like petrochemicals and other manufacturing and production firms will experience considerable fluctuations and service firms will be swayed much less by the global implications of the international economy.

4.3 Foreign Currency Exposure

Adler and Dumas (1984) featured in the literature on early research into the impact of exchange rate changes exposure on firm value. They suggest that if foreign exchange rate changes are able to revert to the returns of the home currency, the correlation coefficient is able to measure the sensitivity levels of the returns to foreign exchange rate movements. An investor projects the return of the cash flows and the approach is conveyed to them after the situation is considered.

When a specific investment in a reference currency is affected by the exchange rate forecasts, the sensitivity is known as exchange rate exposure (Hekman 1985). The model presented by the researcher integrates the general model of corporate macroeconomic relationships, theory of expectations and the general corporate valuation framework together. Different responses occur when the exchange rate affects product lines, industries or different companies. To explain these responses, descriptors are used and it is found that the valuation of a firm is highly affected by the exposure of the firm to exchange rate uncertainty (Choi 1986). Stock prices may be

negatively, positively or not at all affected by exchange rates. These effects basically depend upon the home and foreign market effects and the economic and accounting effects comparison.

From January 1979 to December 1988, Bodnar and Gentry (1993) carried out research that studied the relationship between exchange rate changes in industry portfolios in Japan, United States and Canada. Keeping a 10% level, less than half the industries in the three countries showed a significant exposure to exchange rates. To explain the returns of industry at an economic level, the exchange rate is an essential determinant. It has also been identified as an industry characteristic. The economic theory has been found to be consistent with industry characteristics and exposure in all three countries.

The profitability of a firm may be affected by several channels. For example, if the local currency of a country depreciates, the firms who are exporting products receive benefit as the product becomes cheaper in the international market. However, firms importing products suffer a greater loss since their cost of production increases. Firms who are not engaged in imports or exports are also affected due to the international competition present in the economy. Most of trade and non-trade firms compete for production factors which are highly affected by exchange rate changes (Dominguez & Tesar 2001).

4.4 Types of Foreign Exchange Rate Exposure

Contemporary studies reveal that corporate currency exposure consists of three distinct forms: transaction, translation and economic exposure (Bae, Kwon & Li 2008). For Australian firms managing these transactions, translation and economic exposure are evident (Batten, Mellor & Wan 1993). UK multinational organizations were also

studied to understand the importance of transaction exposure and how it is managed (Belk & Glaum 1990).

4.4.1 Economic Exposure

Economic exposure is defined as the ability of exchange rate fluctuations to affect the present value of the expected future cash flows of a firm (Eiteman, Stonehill & Moffett 2009). The operating cash flows, costs and future revenues are all affected by movements in currency which is why economic exposure requires analysis (Grant & Soenen 2004). The reason why economic exposure arises can be due to one or more reasons. The reasons can include the international operations of the firm, foreign competition or the product nature or service brought forward by the company (Booth & Rotenberg 1990).

A change in price level and aggregate demand has the ability to cause exchange rate fluctuations (Rodriguez 1979). According to accounting practices, the book value of the company is taken into account when there is accounting or translation exposure. On the other hand, the cash flows of the exchange transactions of the specific time period are observed when conversion or transaction exposure is analysed. The firm's variability and future values determine the economic value of the firm and both measures are unable to justify this ideal. The firm value is not affected by exchange rate fluctuations if the operating policies have the ability to compensate the exchange rate fluctuations. The gaps created by the exchange rate fluctuations will only be harmful if the firm cannot adjust the risks in its operations. After assuming that the economic value of a firm is dependent on the expected future cash flows, economic exposure may be termed as the management concept.

By managing the difference between the conversion and competitive effects, the framework for the firm's competitive position to the economic exposure is explained (Flood & Lessard 1986). The source of inputs and the market where the products are sold have the ability to determine the competitive effects on the firm's structure. The sensitivity of costs or prices may be high or low when the exchange rate changes. The highest level of economic exposure is to those firms who cannot manage their price and cost sensitivities. This fact has been observed in import/export firms by Flood and Lessard (1986). Economic exposure has been characterised as a functional structure by Luehrman (1990), Pringle (1991), and Moffett and Karlsen (1994), among others, and regard it as indirect exposure. The ability of the firm to sell its product in the international market shows its extent of diversification and its competitive environment.

Flood and Lessard (1986) brought forward a competitive effect similar to the aforementioned component. Hence, economic exposure includes direct and indirect elements. The economic exposure is based on the firm's operations and structure, as well as the competition present in the market due to fluctuations in the exchange rate (Moffett & Karlsen 1994).

A significant determinant of economic exposure is the international competition that is faced by organisations. Firms operating domestically may also face similar issues due to foreign products being available in domestic markets (Lessard & Lightstone 1986). Changes in the firm's cash flows due to exchange rate fluctuations cause economic exposure. Hence, the relative stock price is based upon the changes in exchange rates and the rate level. If the currency of an exporting country appreciates, it suffers a loss in the domestic stock market since the competitiveness of their product loses value in the international market. At the same time, for an import

dominant country, the stock market is positively affected since the costs of inputs are lowered.

Industry structure is also regarded as an important determinant of economic exposure since this kind of competition has the ability to affect exchange rates on cash flows. Firms who enjoy a monopoly or firms who face competition are affected by economic exposure in a different manner. Competition is in a symmetric manner; and competitions in an industry where there are many firms but only one is dominant also have different economic exposure (Marston 2001). When the costs or revenues of an organisation are in a foreign currency, the economic currency exposure can be easily determined. The effects can also be managed or organised easily. Also, firms who operate internationally are subjected to translation exposures which occur due to consolidation. On the other hand, domestic and international firms are also subjected to indirect effects which are difficult to observe. Any unexpected movement in foreign exchange rates causes indirect economic currency exposure affecting the value, cash flows and competitive situation of the organization (Bradley & Moles 1998).

By highlighting the difference between conversion and competitive exposure, Flood and Lessard (1986) have been able to provide a framework for the competitive position of economic exposure of the firm. The market where the end product is sold has the ability to affect the competitive position of the firm. Any changes in exchange rate in terms of prices or costs (or both) result in low or high sensitivity levels. Economic exposure is highest when firms do not have a balance between their cost and prices sensitivities. Flood and Lessard (1986) terminology recognized them as importer and exported firms.

4.4.2 Translation Exposure

When a firm is required to convert its assets, liabilities and trading accounts of foreign subsidiaries' denomination in the local currency into the domestic currency, it faces translation exposure. Such exposure is also known as accounting exposure since the conversion from one currency to another is a basic accounting requirement. Managing foreign exchange exposure requires special consideration of accounting aspects (Davis & Militello 1995). The exchange rate ruling at the time of transaction or the average rate at the specific period is used for account translation; the trading results would still depend on the use of exchange rate. This is still valid even though the year end arbitrary relative strength of currency values may be used (Buckley 2004).

The exposures due to accounting statements have been presented in the literature. This literature focuses on explaining the difference between translation effects and other outstanding transactions (Ankrom 1974). Translation, economic risks and transactions were first used by (Kenyon 1991). Kenyon also analysed the balance sheet and determined the transaction and translation risks, along with future purchases and sales. This analysis is done when the organization has the ability to manage the exchange rate changes by adjusting prices. After removing double counting-like inventory, Ankrom states that economic exposure is the total of translation and transaction exposure.

4.4.3 Transaction Exposure

Fluctuations which take place in fixed price contracts that use home currency value of foreign currency denomination are regarded as transaction exposure (Grant & Soenen 2004). The exposure basically arises since there is a difference between the rate at the time the contract was signed and the exchange rate when the transaction

occurs. In a financial statement, the transaction is observed in account payables or account receivables. If imports take place based on foreign currency and this foreign currency appreciates at the time of payment, it is required that the extra cash be provided to the importers for their product.

This kind of exposure consists of cash consequences which is why it is taxable in the home country. Four sources of transaction sources have been identified by Eiteman, Stonehill and Moffett (2009). They are participating in unperformed currency forward contracts, acquiring assets and incurring liabilities, borrowing or lending funds and purchasing or selling on credit. Within a specific time period, and taking into account specific transactions, the transaction exposure can measure the impact of exchange rate changes on cash flows. Any past contracts are reflected in the exposure since they are outstanding and have the ability to generate future cash flows.

Cash is present in transaction exposure and the value of the parent company's cash flows is affected. The value of the domestic currency is not decided until it is calculated in that currency based on the amount to be received or paid. The uncertain date that lies between the conversion and the present date will be used for the nominal exchange rate.

4.5 Exchange Rates, Purchasing Power Parity and Competition

With the move to flexible exchange rates in the early 1970s, it was generally assumed that the exchange rate would quickly adjust to changes in relative price levels (Lan 2001). The theory of purchasing power parity (PPP) is one of the fundamental principles in international finance. The PPP theory of the exchange rate looks at the relationship between a country's foreign exchange rate and its price level,

as well as the relationship between the changes in those variables (Allen & Gandiya 2004).

PPP is the exchange rate between two currencies that would equate the two relevant national price levels if expressed in a common currency at that rate; the purchasing power of a unit of one currency would be the same in both economies. This concept of PPP is often termed absolute PPP. Relative PPP is said to hold when the rate of depreciation of one currency relative to another matches the difference in aggregate price inflation between the two countries concerned (Lan 2001). If the nominal exchange rate is defined simply as the price of one currency in terms of another, then the real exchange rate is the nominal exchange rate adjusted for relative national price level differences. When PPP holds, the real exchange rate is a constant, so that movements in the real exchange rate represent deviations from PPP. Hence, a discussion of the real exchange rate is tantamount to a discussion of PPP (Sarno & Taylor 2002).

The relative PPP theory focuses on the change over time in the relative prices of trade baskets of similar goods and services in two countries. At any given time, the exchange rate between the two currencies is related to the rate of change in the price of the similar market baskets. According to relative PPP theory, as prices change in one country relative to those prices in another country for a traded basket of similar goods and services, the exchange rate will tend to change proportionately but in the opposite direction.

Non-stationarity in the levels of spot exchange rates and domestic and foreign price indices makes the use of conventional tests of the absolute version of purchasing power parity (PPP) inappropriate. If PPP is true, inter-country commodity arbitrage

ensures that deviations from a linear combination of spot exchange rates and domestic and foreign price levels should be stationary. Under these conditions, exchange rates and price levels should form a co-integrated system.

The rationale for this theory is that if one country experiences rising prices while its international trading partners do not, its exports will become less competitive. Similarly, imports will become more attractive because of their relatively lower price. The exchange rate will change as citizens' purchase in the currency of the country with falling prices and sell in the currency of the country with rising prices (Gallagher & Andrew 2000).

The volatility occurs for both nominal and real exchange rates. Real exchange rate changes translate into deviations from PPP which, for domestic firms of local competitors, should have a direct effect on firm value. A local competitor is a firm that faces substantial foreign and domestic competition. In the simple case of an exporter with costs denominated in its home currency and sales in a local market with local competition, the firm's cash flows will be affected by changes in foreign currency. The sensitivity of a firm's cash flow in its home currency to changes in exchange rates is primarily a function of the elasticity of demand for a firm's product. Therefore, the first of those revenue exposures is the exposure of the corporation to changes in its revenues resulting from a change in demand. The assumption is that a firm facing a high level of foreign and local competition will also face high demand elasticity. Therefore, a useful test for the existence of exchange rate would be to employ a sample of firms that have both high levels of local sales and face foreign and local competition (Williamson 2001).

To evaluate the effect of an exchange rate shock on the value of a firm it should be possible to identify those shocks that are permanent and unanticipated. In the presence of operations where firms sell and purchase domestically, a firm may be exposed to changes in exchange rates via competition or economic exposure. As Lessard and Lightstone (1986) have observed, firms do not need foreign activity to have currency exposure; they need only more foreign competition in their home markets. The relative exposure to changes in the competitors' home currency is estimated by the rate in the home country of its competitors. If the firm is a simple exporter and denominates costs in local currency as well as selling in a local market with foreign and domestic competitors, the value of the firm in this case will be affected by a change in the exchange rate.

In spite of the absence of foreign assets or liabilities, in the sample of this study a nominal change in exchange rates, if offset by a change in the price level in two countries, should affect the real value of the firm. This offsetting effect of the price level with the exchange rate change would be consistent with the existence of purchasing power parity. Therefore, the exchange rate change that should determine the effect of a rate change on a firm's value is the real exchange rate change. The real exchange rate change implies deviation from PPP condition. These deviations occur as a result of competition between firms and as a result of the strength of demand and supply (e.g., wage inflation and cost of final goods).

If a currency holds of high purchasing power in its own country, there exists undervaluation in terms of relative price levels and the existing exchange rate. It is preferable to buy domestic currency in exchange for foreign currency so the high purchasing power advantage can be utilised. Hence, an upward pressure would be applied to the domestic currency. On the other hand, the currency is overvalued if it

has low purchasing power in its own country. In this case, it is preferable to buy the foreign exchange instead of the domestic currency to purchase cheaper goods abroad. The domestic currency is now applied with a downward pressure. There will be no change in the competitive positions of two countries if the exchange rates move according to the PPP rate. Products presented by firms in countries with high inflation will still be able to present themselves in the international market since the exchange rate will offset the rise in domestic prices. If the exchange rate adjusts itself with the PPP exchange rate it is known as the constant real exchange rate.

According to financial theory, most of value of an industry or firm is affected by the exchange rate. Previous theories have not supported this idea, even though there have been large fluctuations in exchange rates over the past three decades. There is no conclusion to the empirical evidence presented on the exchange rate impact on firm value. Many studies have also taken into account the valuation consequences which arise due to exchange rate change exposure (El-Masry 2006).

Most previous studies have maintained a focus on the US, although some have diverted to other foreign nations. To date, no empirical study has been identified that analyses the foreign exchange rate exposure on the value of a firm. The purpose of this study is to take into account the foreign exchange rate exposure of nonfinancial organisations of UAE at an industry level over the period 2005-2011.

Using the regression coefficient of change in firm value due to the change in exchange rate, it is possible to measure the sensitivity of the value of the firm to exchange rate randomness. This aspect presumes no causal link is present and is represented by exposure (Jorion 1990). Interesting and strong results would be acquired if firms were categorised according to attributes since their exposure differs

on the basis of operations. Thus, the exchange rate characteristics or determinants need to be analysed. The exchange rate affects firms engaged in foreign competitive markets or those that face domestic competition from foreign products.

4.5.1 Competitive Exposure

Competition has the ability to affect sales and purchases. It is due to competition that the two forms of conventional economic exposure occur. They are known as demand side competition and supply side competition. It is not necessary for an organisation to have foreign operations to suffer from currency exposure. It may also be affected by the foreign competition present in the domestic market (Lessard & Lightstone 1986). A broad cross-section of global corporations was analysed to check for differences between the theoretical predictions and the observed levels. Exchange rate exposure affects foreign production and sales. Exposure can only be managed if it is hedged operationally. It is usually found that European firms suffer from foreign exchange exposure due to their import competition (Bartram, Brown & Minton 2010).

Competitive and contagion are two opposite effects which display a relative strength in establishing the net effect of a negative firm-specific event on other firms within its industry (Lang & Stulz 1992). When an organisation suffers from a negative effect such as bankruptcy, many of the other organisations with similar cash flows are also affected as the market value declines. On the other hand, competitive effects occur when the negative effect is not a problem and there is an increase in the market value of the firm.

If the value of an organisation is affected due to exchange rate changes it is known as economic or operating exchange rate exposure. Indirect economic exposure occurs if

the competitors or suppliers are directly exposed; and it also includes transaction exposure which takes into account foreign payables or receivables (Hutson & O'Driscoll 2010).

Due to import competition, foreign currencies affect domestic prices and the changes in exchange rate will affect the domestic products being sold in the domestic market. Firms may lower or increase their prices, depending on changes in the exchange rate (Bartram, Dufey & Frenkel 2005). The exposure determinants include domestic competition, the domestic or foreign input substitutability and export sales (Shapiro 1975; Griffin & Stulz 2001). The competitive structure of an industry is the key determinant of cash flow exposure (Marston 2001).

4.5.2 Competitive Demand Exposure

The demand exposure of competition occurs when an organisation has a different currency profile from its competitors and, in this case, competitive demand exposure arises. The organisation's market share may increase or decrease depending on the price realignments caused by the exchange rate changes. The company may suffer or gain from this activity since the prices for this corporation are different from their competitors due to differences in currency. The scale of operations is also different for the organisation in specific markets, but at times the prices may be similar to its competitors in specific markets and they are still affected.

The market structure means the difference between prices of the firm and that of its competitors when the quantity demanded may fall. The sensitivity of price to demand differences is based on the number of competitors and the differences between the products offered (Grant & Soenen 2004). If a homogenous product exists with a large number of competitors, then the ratio elasticity of quantity demanded with

respect to relative price might approach infinity. Here, if even a small price differential exists, the quantity demanded would become zero. The elasticity may be zero for differentiated products in a concentrated market.

Williamson (2001) explained that foreign currency variations will eventually affect the organisation's cash flows, especially in cases where the exporter's costs are denominated in its local currency and in cases of foreign market sales with no local competition. The elasticity of the demand of a certain product will primarily determine the sensitivity of the organisation's cash flow in terms of the local currency and with respect to the changes in exchange rates. With the increase in competition of the foreign market due to local investments, the sensitivity of the cash flow increases due to the changes in exchange rates. Local competition will affect the exporter's ability to increase prices with respect to the depreciation in the local currency. Hence, as the competition of the overseas markets increases so will the sensitivity of the exporter's cash flows to exchange rates. The sensitivity of cash flows can be reduced by denominating the costs in terms of the local currency. With the depreciation of the local currency, the organisation's costs in the domestic currency will also decrease. The decrease in the local currency will offset the decrease in revenues; hence, the domestic cash flows will be sensitive to foreign currency value changes.

4.5.3 Competitive Supply Exposure

When a business incurs expenses or purchases inputs from suppliers, the competitive exposure will be increase due to competition in the market. Having a different currency profile of costs from its competitors, firms in this case have a change in their market share. If the organisation does not manage these cost changes in its

margin exposure, the costs of the firms relative to its competitors are altered due to exchange rate changes.

The profits received from export sales in foreign currency are affected due to the higher exchange rate risk. Some of the risk-averse exporters are required to supply fewer exports to reduce the amount of risk. The utility functions now require restrictive assumptions and the volatility effect is also affected by this exposure. The latter consists of the possibility of hedging, imported input availability, denominated currency contracts and several other factors (Côté 1994).

4.5.4 Elasticity of Demand Exposure

Elasticity of Demand Exposure takes place when the devaluation or revaluation in the customers' currency takes place and the corporation prices are in the domestic currency. The demand changes with the price change and the price elasticity of demand. If the corporation prices are in a foreign currency and devaluation or revaluation takes place in the foreign currency price, the corporation is required to adjust its margins as it is subjected to exposure. Thus, foreign demand is affected by the exposure.

Production location, foreign and domestic market competitors, demand elasticity of products by the organisation and net foreign revenues are all part of the exchange rate exposure of the firm (Marston 2001). High demand elasticity exists for firms that have high levels of foreign competition. The cross elasticity of demand with competitors, own price elasticity of demand and the net foreign currency revenue are all responsible for the domestic firm's profits according to Marston's (2001) model. The derivatives for cost and demand functions, as well as marginal costs, affect the profit function.

Elasticity of Demand exposure depends on whether domestic firms' products can be substituted with an imported product. Hence, the firms' exchange rate exposure is also affected by substitutability. In the case of an exporting firm, the costs in home currency are part of the exposure and the exchange rate present at that point in time.

The elasticity of demand function is a firm's exposure to the different exchange rates and the competition faced by the firm in the market in which it sells its products or services (Dornbusch 1987). The exposure may be due to the presence of the firm in the foreign market or the foreign firm in the domestic market, or both.

Depending on the industry competitiveness and the net foreign currency of firm operations, the extent of the exchange rate exposure varies (Williamson 2001). Any changes in foreign currency will affect the cash flow of an exporter who has costs in the domestic currency and sales in the international market with no local competition. A firm's elasticity of demand for the product is determined by the sensitivity of a firm's cash flow in its home currency to changes in the exchange rate. Low exposure may be present for firms with low elasticity and high export sales. For such firms, if the local currency value depreciates, the firm may be able to increase its local market prices and reduce the home currency cash flow impact.

4.6 Chapter summary

This chapter provides and develops a workable definition of the exposure of foreign exchange rate in the presence of competition. A theoretical explanation for the expected relationship between each determinant and foreign exchange exposure is provided in this chapter. In addition, this chapter illustrated how companies can be affected by exchange rates through competition with other foreign companies in the local market. The discussion of the theory of PPP and the kinds of exposure outlined

in this chapter provide a good picture for this relationship. The basis is that if one country experiences rising prices while its international trading partners do not, its exports will become less competitive. Similarly, imports will become more attractive because of their relatively lower prices. This chapter also provides a detailed discussion of types of foreign exchange rate exposure (transaction, translation and economic exposure). Therefore, the exchange rate change that should determine the effect of a rate change on firm value is the real exchange rate change. The real exchange rate change implies deviation from PPP condition. These deviations occur as a result of the competition between the firm and as a result of the strength of demand and supply (e.g., wages, inflation and cost of final goods).

CHAPTER 5: DATA SOURCES, SAMPLING AND RESEARCH METHODOLOGY

5.1 Introduction

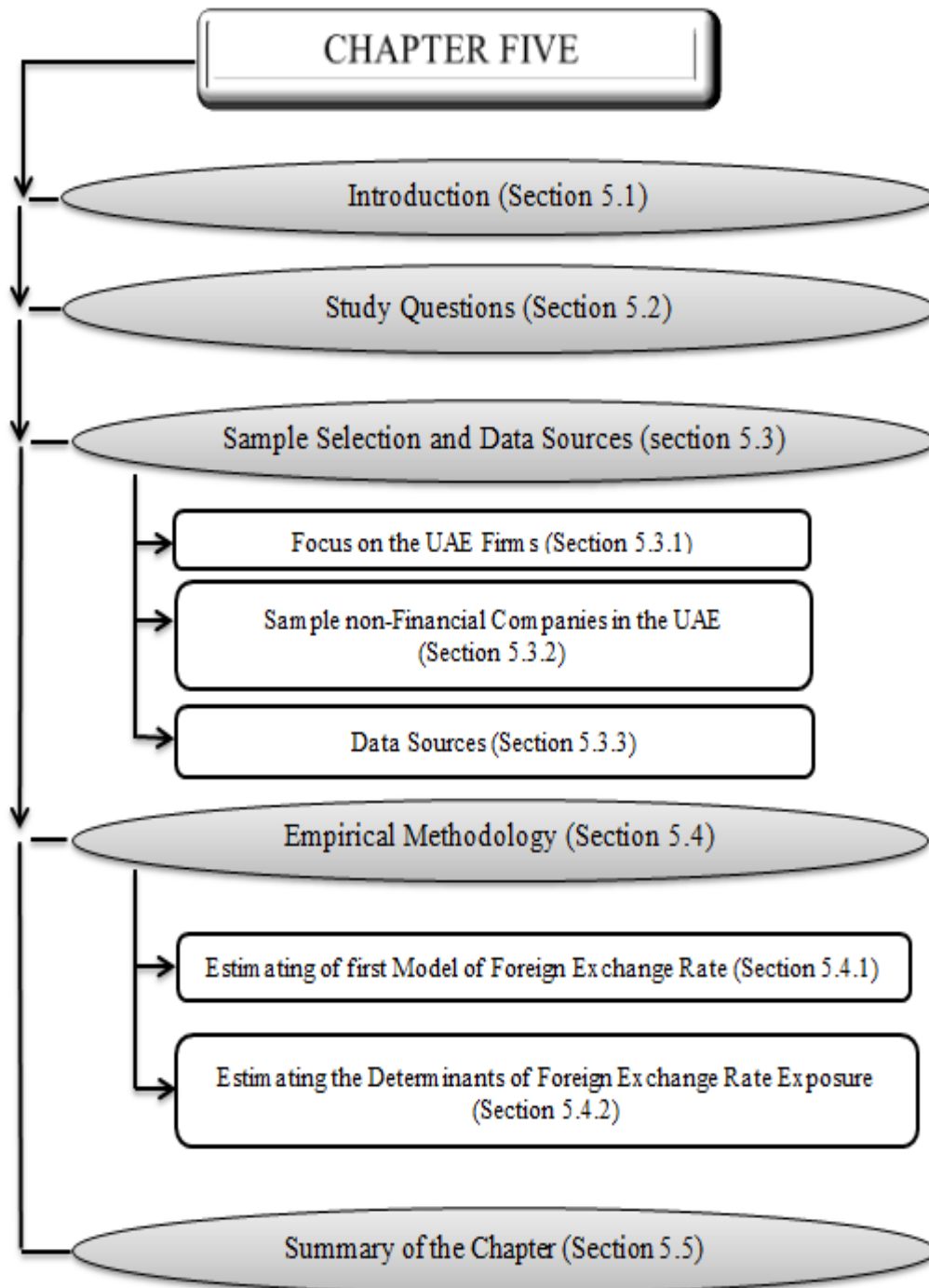
This chapter introduces the sampling procedures and the data sources. Details relevant to the methodology used throughout the thesis are provided, together with an explanation of the research design. The variables considered in this research are defined in this chapter also. Following Adler and Dumas (1984), the concept of exposure measurement is based on the sensitivity of the firm's value to changes in the exchange rate. Therefore, this study considers the effect of the change in the exchange rate exposure on industries and firms. Moreover, the study directly tests the effect of competition on the exposure of the firm to exchange rates. The thesis also considers the movements in both bilateral exchange rates among six currencies against the UAE currency. Subsequently, chapter 6 reports on three categories: (i) for all firms, (ii) for only those with positive exposure and (iii) those with negative exposures. Chapter 7 provides a comparative study between services firms and industrial firms.

Financial strategies, operating strategies, hedging strategies, and similar variables may be used to manage exchange risk. Therefore, the implications of a firm's or industry's ability to modify its exposure to changes in exchange rates are considered. This study investigates whether firm and industry specific characteristics affect exposure to exchange rate changes.

This chapter on the research methodology is organised as follows. Section 5.2 discusses the data sources and sampling procedures. Section 5.3 outlines the research

questions. Section 5.4 discusses the detail of variable definitions and measurements, while Section 5.5 provides a detailed discussion of the empirical methodology. The chapter ends with a brief summary in Section 5.6.

Figure 5.1: Outline of Chapter 5



5.1 Study Questions

According to results documented by Jorion (1990), the exchange rate exposure is related to the extent of foreign market involvement. This implies that a firm is sensitive to exchange rate fluctuations if it is more exposed to foreign currencies. These predicaments are not entirely ascertained, as according to the results of Chow, Lee and Solt (1997), there is a weak connection between the foreign sales ratio and the cross-sectional differences in exchange rate exposure, but a strong connection with firm size. In addition, hedging activity can play a vital role in mitigating the exposure to foreign exchange rates. For instance, according to observations made by Allayannis, Ihrig and Weston (2001), exchange rate exposures are found to have less effect on the hedging activities of large organisations. Research conducted by Pantzalis, Simkins and Laux (2001) produced similar findings to Allayannis and Ofek (2001).

These authors have discovered that there is strong evidence that the firm's ability to build operational hedges is measured by determinants (e.g., breadth and depth of MNC network) that affect the firm's exchange rate risk exposure. Moreover, Aabo, Høgg and Kuhn (2010) emphasised the need to identify the risks involved in foreign currency exposure from variables such as foreign activities, foreign debt or an increased concentration of foreign competitors in their industry. In brief, and consistent with the literature, movements in exchange rates can also affect domestic companies that do not operate in the international market but face international competition in their local market or are indirectly exposed. For example they may be importing raw materials from suppliers who use foreign material that is used by domestic companies (Dominguez & Tesar 2006). Another study has been presented by Marston (2001) suggesting that a domestic firm (i.e., one that neither imports nor exports) can also experience changes in value when changes in the exchange rate

occur. This domestic firm may compete with overseas firms in the local market or may have input purchases that are highly dependent on the exchange rates.

Following Adler and Dumas (1984), the concept of exposure measurement is based on the sensitivity of the firm's value to changes in the exchange rate. Some studies find limited evidence of a significant relationship between firms' values and changes in exchange rates, whereas others find that the exchange rate exposure is significant. Similarly, weak evidence is found at a firm level and at an industrial level. Therefore, as with other macroeconomic factors, not all firms feel the same effect from their exchange rate exposure. Financial strategies, operating strategies, hedging strategies, and similar variables may be used to manage exchange exposure. Therefore, this study aims to contribute to understanding of the determinants of foreign exchange exposure of domestic corporations. The study takes one additional step by examining the implications of foreign exchange exposure for the market value of domestic corporations.

As a result, domestic firms may have significant exposure to foreign exchange rates. UAE has a small open economy with a high degree of exchange rate pass-through (as the small market size ensures that the main competitor is normally an importer). Therefore, most of the domestic companies face exposure to changing FX rates even if they are not actively trading overseas (Naylor & Greenwood 2008). The literature and theoretical financial economics provides the basis for a formal model that can be used to address the following research question:

What are the determinants of the exchange rate exposure of domestic corporations in the UAE and what are the implications of this exposure for the market value of those corporations?

Three sub-questions have formulated in order to investigate the general research problem:

- 1- What is the extent of the exposure of UAEs' domestic firms to fluctuation in foreign exchange rates?
- 2- What factors determine a domestic firm's exposure to foreign exchange rates and what is the role of competition as a determinant?
- 3- Do services firms experienced greater exposure to foreign exchange rates than industrial firms?
- 4- Is there a difference in the determinants of foreign exchange exposure when comparing services firms to industrial firms?

There was an expectation at the beginning of this research that a significant relationship would be found between each of the determinants of foreign exchange exposure (including competition) and the foreign exchange exposure of domestic UAE firms. This expectation can be confirmed (or rejected) by undertaking a formal analysis in which the degree of variation in the foreign exchange exposure of domestic UAE firms that is explained by variation in each of determinants (including competition) is determined. This formal analysis is described in the following section.

5.3 Sample selection and data sources

5.3.1 Focus on UAE Firms

As local firms are primarily based in the local markets, their businesses are not threatened by currency movements. The exchange rate has no effect on their prices or their costs changes. Local firms may, however, not be protected in the case of international competition and will have to face the risks. The UAE has an open

economy with a high per capita income and a sizable annual trade surplus with a high degree of competition in the market. The World Economic Forum issued its Global Competitiveness report for the year 2010-2011 in which the UAE was the only Arab country that was included in the innovations driven economies category. It is the second time that the UAE has been included in the 'Innovation-driven economies' category along with global powerhouses like Germany, Sweden, Japan, Australia, Canada, Switzerland, the USA, the UK and Singapore. The UAE was ranked 25th in this report for having been active in enhancing its economy through innovative ideas (Sala-i-MartinBlankeHanouzGeiger Mia 2010).

Many other economic factors also show that the country has become a competitive market for investment in recent years. The UAE was classified in the top 10 countries in more than 18 indicators of competitiveness globally in the report on the basis of examination of different economic factors. Within the 139 countries that were classified, the UAE was positioned in the top countries. The quality of infrastructure category had the UAE in third spot, while in the stability and security category the country was placed fourth. The government's participation category also placed the UAE in fourth spot, while the UAE's air traffic infrastructure was classified as the fourth best in the world (ABBPRS 2010).

The Global Competitiveness Report is issued by the World Economic Forum and determines which countries are more suitable for economic development. For this purpose the report utilizes the evaluation of 12 indicators of economic development for each country included in the survey. All the indicators have their importance and contribute to the total competitiveness of the country. In the category of good market efficiency the UAE has progressed from being 10th in the world to 6th in this year's

listing. Likewise, UAE maintained sixth position in ‘foreign direct investment’ and ‘technology transfer’ indicators.

5.3.2 Sample of non-Financial Companies in the UAE

The type of companies must be defined to identify the companies as subjects for this research. Domestic firms in this study may be defined as only those firms with sales and purchases on the local market. Some firms may also come under the category of domestic companies that purchase their goods from a wholesaler or a supplier from foreign countries, and may have indirect exposure to the foreign exchange rates.

The sample of this study is selected from the Emirates Securities Market and OSIRIS publicly listed companies worldwide. The total firms in this research registered in the market are 133 according to the UAE securities market. This study includes all domestic non-financial firms in the market. The category of companies used in this study is non-financial companies. This study has not used financial firms such as banks and insurance firms. The reason behind this decision is that, firstly, financial firms have extensive dealings with international financial firms. Secondly, this study is looking for indirect exposure for local companies, whereas, financial companies may have direct exposure and deal with international financial firms.

Earlier studies were also restricted to non-financial firms, which gives this study the added advantage of being comparable to earlier studies. A full yearly return observation for the period must exist for the firms included in this study. The sector is classified into four sections by the Emirates Securities Market; namely, the banking sector, the service sector, the insurance sector and the industrial sector. This study focuses only on the service and the industrial sector as the other two sectors are associated with the financial market. There are 80 companies in the industrial and

service sectors out of the 133 companies in the Emirates Securities Market. There were 31 firms with incomplete data. Therefore, 49 firms are included in the final sample. Table 4.1 provides a summary of the sample selection stages.

Table 4.1: The sample selection of firms

Emirates Securities Market firms	Number of firms included	Total number of firms
The total number of extracted firms from the market		133
Financial companies	-25	108
Insurance companies	-28	80
Total number of companies that do not have sufficient information	-31	49

Note: This table shows how the data is collected from Osiris program and the securities and commodities of UAE. Financial firms (banks and insurances) are excluded from the sample. From the remaining firms, only those with full data from January 2005 to 2011 onward are included. The total number of firms that qualified for final inclusion is associated with the seven-year study period (2005-2011).

Only those firms which provided complete data for the 7 year period were included in the research. This method led to the selection of 49 non-financial UAE domestic firms. The data for the period was from January 2005 to December 2011 that means that every company of the sample has 84 months' of data. Therefore, the total number of companies that did not have sufficient information is 31.

5.3.3 Data Source

The OSIRIS-publicly listed companies worldwide were the source of the data obtained for the research. About 46,000 listed companies from 190 countries are included in the database of Osiris. It is a definitive source for companies listed worldwide as it provides data pertaining to the ownership, news, subsidiaries, ratings, earnings estimates and stock data, in addition to income statements, balance sheets, cash flow ratios and statements. About 120 countries are included in Osiris which includes 22,500 publicly listed companies, 1,500 publicly listed banks and over 350 publicly listed insurance companies. This data can be accessed through the internet, intranet feed and on CD. Some firms offer it as the BvD SUITE. The researcher also

referred to the annual reports of the firms as the second source of data, if the data pertaining to that company was not found on the Osiris database.

5.3.3.1 The Source of Exchange Rates Data

The collection data of foreign exchange rates is monthly for the period January 2005 to December 2011. The question of a suitable measure for changes in foreign exchange rates to use in the model has been answered by using a basket of foreign currencies, generally trade-weighted in the UAE market. The exchange rate currencies of this study use the major trade partners with the UAE (see chapter 2 which provides an introduction to the UAE). These currencies include Euro (EUR), Sterling (GBP), Australian Dollar (AUD), Japanese Yen (JPY), Indian rupee (INR) and equally weighted exchange rate (EQW). The official UAE currency is the dirham (AED), valued at Dh 3.67 per US\$1 and stable at this rate since November 1997.

The historical data of foreign exchange rate against UAE's AED is obtained from the Central Bank of UAE. A diagram of exchange rates can be obtained in the next two chapters for each of the major currencies for the monthly period for 2005-2011 to explain the data of exchange rate in this study.

Harris, Wayne Marr and Spivey (1991) explained that the change in the equally weighted exchange rate index is constructed by taking an equally weighted average. This study uses a similar method to take the equally weighted exchange rate index for monthly percentage changes in the value of the six major currencies against the AED.

5.4 Empirical Methodology

Data was collected from several different sectors in relation to the foreign exchange rate and the value of firm. This study uses two models to measure the foreign exchange rate: the first model is based on Jorion (1991), who uses a market index in addition to the exchange rate as an independent variable and adds a currency change variable: Euro (EUR), Sterling (GBP), Australian Dollar (AUD), Japanese Yen (JPY)), Indian rupee (INR) and equally weighted exchange rate (EQW). The second model is based on that of Aggarwal and Harper (2010).

This study investigates the foreign exchange exposure of domestic UAE corporations. Foreign exchange exposure has been found to have at least several determinants (see the previous section on the literature review). A theoretical explanation for the expected relationship between each determinant and foreign exchange exposure can be provided. This study estimates a multiple regression model that contains the following variables. It is likely that the existence of firm related factors do affect its overall exposure to exchange rate risk, as the risk is defined as variation in the firm's value owing to exchange rate fluctuations. Both the financial and operational factors are of relevance here and should be considered separately. To investigate the level of currency risk across different industries and firms is the prime reason for undertaking this study.

5.4.1 Estimating a Model of Foreign Exchange Rate Exposure

The changes in foreign exchange rates have an impact on domestic and international corporations that can be defined as the 'exposure' of the corporation to fluctuating foreign exchange rates. The exposure to foreign exchange rate fluctuations usually manifests itself as an impact on: (i) 'the value of net monetary assets with fixed

nominal payoffs’ and (ii) ‘the value of real assets held by the firm’ (Jorion 1990, p. 333). Corporations are exposed to the risk of changing exchange rates through many channels. For example, if any firm relies on international or cross-border sales, the firm exposes itself to the risk of FX rates fluctuations. The change in exchange rates will have an impact on the value of international sales revenue. However, exposure to exchange rates can be decreased or managed. For example, if the firm sources raw materials from abroad or any cross-border location, it may ensure that its imports and exports both are in the same currency.

Generally, however, such a type of firm may have assets and liabilities at any cross-border locations. This can play a vital role in increasing the firm’s exposure to changing exchange rates. Furthermore, it should be noted that it is not necessarily the case that only those firms that are involved in exporting or importing activities or are classified as multinational corporations experience exposure to changing exchange rates. Local companies, firms and corporations that do not have any international revenue or are not involved in cross-border sales may also be impacted by changing exchange rates, possibly indirectly through their competition with other importing companies (Jong, Ligterink & Macrae 2006). Therefore, many local organisations find their income statements and business performance affected by fluctuating exchange rates, in spite of their having only indirect financial exposure (Parsley & Popper 2006). As a result, domestic firms may have significant exposure to foreign exchange rates.

This study employs a regression model in the foreign exchange rate exposure area theoretically introduced by Adler and Dumas (1984), and later empirically applied by Jorion (1991), Harris, Wayne Marr and Spivey (1991), Amihud (1994), Choi and Prasad (1995), Williamson (2001) and Aggarwal and Harper (2010).

$$R_{i,t} = \alpha + \beta_i R_{m,t} + \gamma_i XR_{j,t} + \varepsilon_i \dots \dots \dots (5.1)$$

From the equation (1) where:

α = the constant term;

$R_{i,t}$ = the return of firm i , over time period t ;

$R_{m,t}$ = the return on the market index;

$XR_{j,t}$ = the exchange rate change of currency or currency index that represent six currencies used in this study j over time period t ;

γ_i = measures the firm's residual foreign exchange exposure to the foreign exchange exposure of the market.

This study investigates the impact of foreign exchange rates on a monthly basis. The average of monthly foreign exchange rates (Europe euro, Japanese yen, UK pound, Australian dollar, and Indian rupee currencies, as well as equally weighted exchange rate) will be used to determine its impact on the return for the full sample of firms. This study uses the two-factor model to measure foreign exchange exposure; and based on the work of Jorion (1991), this model uses a market index in addition to the exchange rate as an independent variable.

$$R_{i,t} = \alpha + \beta_i R_{m,t} + \gamma_i GBP_{j,t} + \varepsilon_i \dots \dots \dots (5.2)$$

$$R_{i,t} = \alpha + \beta_i R_{m,t} + \gamma_i EUR_{j,t} + \varepsilon_i \dots \dots \dots (5.3)$$

$$R_{i,t} = \alpha + \beta_i R_{m,t} + \gamma_i JPY_{j,t} + \varepsilon_i \dots \dots \dots (5.4)$$

$$R_{i,t} = \alpha + \beta_i R_{m,t} + \gamma_i AUD_{j,t} + \varepsilon_i \dots \dots \dots (5.5)$$

$$R_{i,t} = \alpha + \beta_i R_{m,t} + \gamma_i IND_{j,t} + \varepsilon_i \dots \dots \dots (5.6)$$

$$R_{i,t} = \alpha + \beta_i R_{m,t} + \gamma_i EQW_{j,t} + \varepsilon_i \dots \dots \dots (5.7)$$

The motivation in choosing this model is that the exchange rate risk in this model is the residual risk after the control of the market's own exchange rate exposure. In addition, this model is the most preferred approach by researchers to measure the exposure of foreign exchange (Bodnar & Wong (2003)). According to previous studies, the analysis starts with a two-factor model: (1) the return on the market index; and (2) the exchange rate changes as independent variable. The dependent variable in this regression will be the return of the firm. From the model (1) this study can receive six (6) regressions models for every currency used in this study.

In this study, the exchange rate sensitivity of 49 nonfinancial companies is estimated over the period from January 2005 to December 2011 for monthly data, that is, the mean each 49 nonfinancial companies has 84 observations. The coefficient of the regression is the exchange rate exposure measure because it describes the sensitivity of stock returns to changes in exchange rates. The method that is used to analyse the data and generate results may be summarised as follows:

1. A two-factor market model is used to determine the exchange rate exposure for each firm in the sample.
2. The values for the exchange exposure coefficient (γ_i) in Equations (2-7) become the dependent variable for the multivariate regressions undertaken in the subsequent steps of the analysis.
3. The results of the regression analysis provide an indication of the nature of foreign exchange exposure of domestic UAE firms.

The above model states that returns are a function of changes in exchange rates and a market index with firm-specific intercept and slope coefficients. The error term is the disturbance term assumed to be normally and independently distributed with mean

zero and constant variance. The market variable is intended to capture the influence of the general market on individual stock returns. The estimated exchange rate coefficient will provide a measure of the effect of exchange rate changes on the stock returns given its relation to the market index.

The main equation (1-7) is estimated by using the Ordinary Least Squares (OLS) method to obtain the exchange rate exposure coefficients for the study sample. The exchange rate exposure coefficients obtained using the above equation is used in several cross-sectional regressions at the firms. This study uses only raw data.

5.4.1.1 Exchange Rate Change: Definition and Measurement

$XR_{j,t}$ is the exchange rate change of currency or currency index j over time period t , from equation (1). The exchange rate of currencies in this study is the current market price for one currency to another currency. The UAE is using the nominal exchange rate, defined by the foreign currency value of one unit of local currency. This means that the appreciation of the Arab Emirates Dirham (AED) and depreciation of the foreign currency value is implied by the increase in the exchange rate. The nominal exchange rate is evaluated as the weighted basket of other currencies, which is expressed in terms of the index. The value of currency is measured against the trade weighted basket of other currencies as the nominal rate. The official UAE currency is valued at Dh 3.67 per US\$1 and stable at this rate since November 1997.

The value of the UAE's trade associated with the respective countries is used to evaluate weighted-average of the AED exchange rates against other major currencies. This rate is referred to as the nominal trade weighted effective exchange rate. Domestic and foreign rate fluctuations affect the international competition as well as the exchange rate. When the inflation rates of the competing exporting

companies become more than the rates of UAE, the competitiveness of the UAE goods will also increase, irrespective of the constant nominal effective exchange rate of the AED. The inflation rate differences are, therefore, included in the nominal effective exchange rate, which is then referred to as the ‘real trade weighted effective exchange rate’. The change in the percentage of the exchange rate may be calculated for every foreign currency in this study as follows:

$$\Delta \left\langle \frac{FX}{AED} \right\rangle = 1n \left\langle \frac{\left\langle \frac{FX}{AED} \right\rangle_t}{\left\langle \frac{FX}{AED} \right\rangle_{t-1}} \right\rangle \dots \dots \dots (5.8)$$

Where:

$$\left\langle \frac{FX}{AED} \right\rangle = \text{foreign currencies per AED}$$

The question of a suitable measure for changes in foreign exchange rates to use in the model, $XR_{j,t}$ has been answered by using a basket of foreign currencies, generally trade-weighted in the UAE market. A majority of studies have used the trade-weighted basket of currencies; the difference in results is not considerably noticeable (Bartram 2004). In this study, the currencies chosen are European euro, Japanese yen, UK pound, Australian dollar, Indian rupee and equally weighted exchange rate. The benefit in using an index more than a single currency is that it represents the economy-wide and total change in the value of home currency, and signifies the environment of currency that a firm would face on average. Perhaps several firms may be exposed to one currency while others are exposed to more currencies that may not be completely linked to the index used to evaluate exposure, giving rise to confusion in evaluating the exposure to foreign exchange rates (Aggarwal & Harper 2010).

5.4.1.2 Equally Weighted Exchange Rate

This study, in addition to using broad currencies, has considered the use of equally weighted indices. The reason for choosing Equally Weighted exchange rate is that, this study just focused on the value of domestic firms with sales and purchases in the local market (as the domestic market ensures that the main firms are normally Small and medium size). However, the value weighted index can introduce a bias by giving more weight to firms that are large. Bodnar and Wong (2003) suggested that the value-weighted market return is dominated by large firms that are more likely to be involved in international activity and as a consequence are more likely to experience negative cash flow reactions to dollar appreciations than other US firms. Therefore, including the value-weighted return in an exposure test not only removes the macroeconomic effects, but also the more negative effect of exchange rates on cash flow in larger firms. This would likely bias tests toward finding no exposure. Alternatively, one could argue that in a world of perfectly integrated capital markets the market return might better be proxied by a global portfolio of stocks rather than a national portfolio.

Moreover, studies such as those Harris, Wayne Marr and Spivey (1991), Joseph (2002) and Dominguez and Tesar (2006) prefer to use an equally weighted exchange rate. The researchers mentioned that the use of unequal weights may suggest a competitive advantage resulting from average exchange rate changes would favour the more heavily weighted countries.

According to Harris, Wayne Marr and Spivey (1991) model, the change in the equally weighted exchange rate index is constructed by taking an equally weighted average of monthly percentage changes in the value of the five major currencies used

in this study: Europe euro (EUR), Japanese yen (JYP), UK pound (GBP), Australian dollar (AUD), and Indian rupee (INR). Therefore, the percentage of the exchange rate change is calculated for each foreign currency as follows:

$$\Delta \left\langle \frac{FX}{AED} \right\rangle = 1n \left\langle \frac{\left\langle \frac{FX}{AED} \right\rangle_t}{\left\langle \frac{FX}{AED} \right\rangle_{t-1}} \right\rangle \dots \dots \dots (5.9)$$

Where:

$\left\langle \frac{FX}{AED} \right\rangle$ is foreign exchange currency per AED.

The weighted exchange rate equally is derived by taking an equal average of the change in the five foreign currencies against the AED as follows:

$$EQW_t = \frac{\Delta \left\langle \frac{GBP}{AED} \right\rangle + \Delta \left\langle \frac{EUR}{AED} \right\rangle + \Delta \left\langle \frac{JPY}{AED} \right\rangle + \Delta \left\langle \frac{AUD}{AED} \right\rangle + \Delta \left\langle \frac{INR}{AED} \right\rangle}{5} \dots \dots \dots (5.10)$$

Where: EQW_t represents the equally weighted exchange rate index at time t. In this study all exchange rates are defined as foreign currencies to 1 AED.

5.4.1.3 The Return of Firm ($R_{i,t}$): Definition and Measurement

The return of firm is a financial ratio that shows the percentage of profit that a company earns in relation to its asset. where, $R_{i,t}$ is the return of firm i , over time period t was computed as equation

$$R_{i,t} = RI_{t-1} * \frac{PI_t}{PI_{t-1}} * \left(1 + \frac{DY_t}{100} * \frac{1}{N} \right) \dots \dots \dots (5.11)$$

where:

$R_{i,t}$ = the return index on day t;

RI_{t-1} = is the return index on previous day;

PI_t =the price index on day t;

PI_{t-1} = the price on previous day;

DY_t = the dividend yield % on the day t and N is the number of working days in the year.

Then, RI_t is calculated as:

$$RI = RI_{t-1} * \frac{P_t}{P_{t-1}} \dots\dots\dots(5.12)$$

Monthly stock returns (R_{it}) are computed according to the following model:

$$R_{it} = \ln \left\langle \frac{RI_t}{RI_{it-1}} \right\rangle \dots\dots\dots(5.13)$$

5.4.1.4 Return on Market Index ($R_{m,t}$): Definition and Measurement

Where $R_{m,t}$ is the return on the market index, the choice of market index is important in evaluating the foreign exchange exposure. The equity index tracking of the capital gains of a group of stocks over time is through the equity index. Cash distribution of any sort is assumed to be reinvested back into the index. The index's performance is clearly indicated by the index's total returns that reinvest the earnings within the underlying company instead of issuing dividends (Investopedia 2011). The analysis uses Emirates Securities Market Index (ESM index) as a proxy for the market portfolio because it covers a large portion of the market value of public firms.

Table 3.2 shows the ESM index of the UAE market from the period 2001 to 2010 and also clarifies the collection of data from the Emirates Securities Market. In most of the studies targetting the UAE market, this index serves as the usual proxy.

Table 3.2 Advancement of ESM index

Year	ESM index	Market value (AED)	Traded volume (share)	Traded volume (AED)	No. Of trades	No. Of listed Co.
2001	111668	50,130,930,613	77,253,923	1,515,071,809	19,334	27
2002	125336	109,784,090,882	209,230,202	3,861,378,020	36,341	37
2003	165724	145,631,820,623	561,439,842	7,457,778,820	50,712	44
2004	325157	305,803,235,070	6,069,276,451	66,786,465,772	229,280	53
2005	683997	839,683,136,512	33,811,933,303	509,868,016,048	2,300,452	89
2006	403101	514,697,464,200	50,939,871,239	418,149,306,407	3,138,749	106
2007	601621	824,629,199,856	157,318,141,814	554,333,583,214	3,354,617	120
2008	255223	363,872,030,000	126,439,280,603	537,134,415,081	3,257,450	130
2009	277156	404,702,513,093	148,297,352,509	243,489,889,472	2,728,964	133
2010	265532	385,429,934,198	56,003,360,875	103,804,933,675	1,258,505	129

Source: (Emirates Securities Market Authority 2010).

Table 3.2 shows the advancement of ESM index, market value (capitalisation), and trading volume, trading value, number of traders and number of listed companies from 2001 to 2010.

The following details show how to calculate the market returns.

$$R_{mt} = \ln \left(\frac{m_t}{m_{t-1}} \right) \dots \dots \dots (5.14)$$

Where:

R_{mt} = market return at time t.

M_t = market index at time t.

The monthly observations from January 2005 to December 2011 are used to estimate the regression models. The continuous returns for the individual firms and portfolios and market returns are used in this study. The annual values of the Emirates Securities Market Performance are used as proxy for the market portfolio in this study. This index covers the major portions of the market value of public firms and hence is ideally selected for this analysis as a proxy. Most of the studies initiated currently also use the index as the usual proxy. The influence of the general market on firm stock returns will be captured by the market returns used in this study.

5.4.2 Estimating the Determinants of Foreign Exchange Rate Exposure

To test the relationship between foreign exchange rate exposure for firms and the financial and operational variables (the determinants of foreign exchange rate) that influence a firm's exposure, this study employs the following regression model drawn from Aggarwal and Harper (2010) with some modifications. This study adds to this model return on equity (ROE), price cost margins (PCM), and gross margin (GrMargin). This section of chapter five focuses on whether the level of the firm's financial and operational variables are responsible for determining the exchange rate exposure, taking into account that competition is one of the determinants of exchange rate exposure. The firm's hedging policy is significantly explained by these variables as compared to the exchange rate exposure and the firm's competitiveness, as is evident from recent studies.

$$\hat{\gamma}_i = \alpha + \beta_1 \text{Debt} + \beta_2 \text{Turnover} + \beta_3 \text{ROE} + \beta_4 \text{Size} + \beta_5 \text{MkBk} + \beta_6 \text{IndHerf} + \beta_7 \text{AssetTangibility} + \beta_8 \text{R\&D} + \beta_9 \text{PCM} + \beta_{10} \text{profit margin} + \beta_{11} \text{Gross margin} + \sum_{j=2}^n b_j \text{SIC}_j + \varepsilon \dots \dots \dots (5.15)$$

where **Debt** = the average debt ratio, **Turnover** = the average asset turnover, **ROE**= Return on Equity, **Size** = the averaged log equity market value of the firm, **MkBk** = the average market-to-book ratio, **IndHerf** = the average industry Herfindahl index, **AssetTangibility** = the average long-term assets to total assets ratio, **R&D** = the R&D expense ratio, **PCM** = Price cost margins and **SICj** is the industry dummy variables, **PrMrargin** = profit margin, and **GrMargin** = Gross margin.

It is likely that firm related factors do affect overall exposure to exchange rate risk, as the risk is defined as variation in the firm's value owing to exchange rate fluctuation. Both the financial and operational factors are of relevance here and should be considered separately. To investigate the level of currency risk across

different industries and firms is the prime reason for undertaking this study. To date, findings depict that the extent of contribution to overseas operations determines the level of that firm's or industry's exposure to exchange rate risk. On the other side, the level of exposure mentioned above is also mitigated through hedging tools; hence, hedging theories forecast the extent of risk exposure of any firm or industry by evaluation of its deployment of hedging techniques. The theoretical explanation for the expected relationship between each of these determinant variables and the foreign exchange exposure of domestic firms is provided by Aggarwal and Harper (2010).

5.4.2.1 The Average Debt Ratio (Debt): Definition and Measurement

The financial strength of any corporation could be determined by considering its appropriate debt ratio, defined as the total debt divided total assets (total debt/total assets), as identified by Benavente, Johnson and Morandé (2003). In addition, it may be expected that firms with a high level of debt and leverage experience more exposure to additional financial risk. Therefore, these firms may be susceptible to a positive relationship to exposure of foreign exchange. However, foreign debt can play a useful role in hedging foreign currency exposure as in the case of foreign currency derivatives.

5.4.2.2 The Average Asset Turnover (Turnover): Definition and Measurement

The asset turnover of a firm indicates the firm's efficiency in using its assets to make revenue or sales. It is defined as the amount of sales generated for every unit of currency worth of assets. It is also calculated as firm's sales divided by total assets of the firm (sales/total assets). Productivity and growth can also be impacted by fluctuations in the exchange rates, as identified by (Landon & Smith 2006).

Aggarwal and Harper (2010) indicated that all those firms that encompass higher asset turnover should have stronger hedging and protection against pricing and competition issues; moreover, the exposure of exchange rate should be relatively lower where asset turnover is high.

5.4.2.3 Return on Equity (ROE): Definition and Measurement

Return on Equity (ROE) is the amount of net income returned as a percentage of shareholder equity (net income/shareholder's equity). This metric can be used to compare a company with its competitors and is also useful for comparing the profitability of a company to other firms in the same industry. According to Cappiello and De Santis (2005), a relationship exists between exchange rates and the stock prices. This perception is one of the new approaches that are now emerging on the relationship between the stock market and exchange rates. The currency related to the stock market with higher expected returns is expected to depreciate in the presence of higher equity returns of a country as compared to other countries. The exchange rate is expected to equalize the expected equity returns in the stocks, represented in different currencies in the same manner as the Uncovered Interest Parity (UIP) where the return differences resulting from the interest differentials is expected to be equalized by the exchange rate.

Katechos (2011) emphasised that there is a relationship between the global stock market and exchange rates. The characteristic of the currency examined will determine the sign of the relationship. The value of the lower yielding currency is negatively related to the global stock market, while the value of the higher yielding currency is positively linked to the global stock market. The relative interest differentials will determine the strength of the relationship. In the presence of higher

interest differentials, the relationship is strong. Narrow interest rate differentials will give reduced explanatory power to the model.

5.4.2.4 Size of Firm (Size): Definition and Measurement

The size of the firm is measured by the log of sales. However, large firms are more likely to hedge themselves against currency and operations exposure than small firms. In addition, large firms have a greater ability to compete than small firms and have diverse clients or products. Allayannis and Ofek (2001) emphasised this definition, and firm size (e.g., foreign income and trade) was a significant determinant factor in a firm's decision to utilize foreign currency derivatives. Larger firms are more prone to hedging than smaller firms. Moreover, a study by Dominguez and Tesar (2006) examined the connection between the exchange rate and the firm value. The exchange rate exposure of firms publicly listed was observed in 8 countries in both industrialised and emerging markets. The results revealed the link between exposure and other variables such as the size of the firm as indicated by an example of their regression where exposure was observed more in small firms as compared to the large and medium firms. According to Aggarwal and Harper (2010) firm size affects foreign exchange exposure. Moreover, their findings indicate that smaller firms have more exposure than larger firms.

5.4.2.5 Average Market-to-Book Ratio (MkBk): Definition and Measurement

MkBk is the average market-to-book ratio (book value of firm/market value of firm), a ratio used to find the value of a company by comparing the book value of a firm to its market value, while growth opportunities are measured using the average market to book ratio (as measured at fiscal yearend). Aggarwal and Harper (2010) observed that local firms in highly competitive industries that have a high market-to-book ratio

are more likely to have high exposure to foreign exchange rates. Moreover, a study by Apergis, Artikis and, Sorros (2011) indicated that small firms experience more sensitivity than larger firms to foreign exchange rate fluctuations; and the value stocks of firm with high level of market-to-book ratio have larger coefficients of foreign exchange.

5.4.2.6 The Asset Tangibility: Definition and Measurement

Tangibility of assets is a substantial factor that impacts the operational characteristics of any corporation, as identified by Aggarwal and Harper (2010). The high asset tangibility is associated with the current ratios of any firm (long-term assets/total assets); defined as an asset that has a physical form such as machinery, buildings and land. In addition, lower levels of current assets relative to total assets (high asset tangibility) insulates the firm from changing input costs as current assets, especially inventory and raw materials, are replaced in the firm's operations. It could be seen that the investment in inventory and raw materials can mitigate the risks associated with fluctuations in exchange rates. According to Dietrich (2007) the external financier will value the firm's transferable assets in a default case by the tangibility of the assets. The opportunistic behaviours and the asymmetric information issues are dealt with in the liquidation of the company assets by the financiers. The upper bound of the firm's total debt capacity is determined by the degree of the overall asset tangibility.

5.4.2.7 Research and Development Expense (R&D): Definition and Measurement

Research and development (R&D) is a segment of any corporation (R&D/Sales). Determining the degree of R&D is important in determining the degree of competition. R&D is defined as discovery or development of new products.

Moreover, R&D investments reduce the exposure of any firm to foreign exchange rates. Therefore, R&D expenses enable a firm to avoid experiencing exchange rate variations. In addition, the insulation of firms from both foreign and local competition depends on a firm's willingness to invest in unique services and products. Opler and Titman (1994) found that customers would be somewhat reluctant to engage with firms spending more on R&D owing to their perception that a high R&D expenditure means that the firms are specialised in certain products. The R&D expenditures are important determinants for the firm in deciding the usage of foreign currency derivatives.

Firms' R&D expenditures are important determinants in their decision to use foreign currency derivatives. Smaller firms have fewer opportunities to hedge than the larger firms. Growth options for a firm's investment opportunity are set using the R&D expenditure as proxy. Firms with higher R&D expenditure will more likely invest compared to those with lower R&D expenditure, especially in the case where hedging is absent from the situation. The derivatives prove less helpful as compared to R&D investments.

5.4.2.8 Gross margin (GrMargin): Definition and Measurement

Gross margin is measured as total sales revenue minus the cost of goods sold, divided by the total sales revenue. Moreover, this element is one of the important financial factors used to analyse firms and evaluate their financial performance. Furthermore, gross margin is useful for ascertaining what firms are earning after costs. It represents a basic analysis for firms' profitability. In general, higher gross margin shields a company from its competition in the market because the higher gross margin provides financial resources for the company to improve their research product.

5.4.2.9 Average of Herfindahl Index (IndHerf): Definition and Measurement

The Herfindahl index is computed for each year and then averaged over the sample period to reflect the competitive environment within an industry for each firm in the sample. This factor is a commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers. The HHI number can range from close to zero to 10,000. Moreover, the average industry Herfindahl index, is a factor that usually measures market concentration. It is calculated by squaring the market share of each firm competing in a market, which captures information about the number of firms in the industry and the distribution of their market share. The calculation of the Market Share is essential for the calculation of the Herfindahl index and PCM. The market share is the firms sales divided by total industry sales,

$$s_i = \frac{y_i}{\sum y_i} \dots\dots\dots (5.16)$$

Where $y_i = p_i q_i$, is firm revenues where.

P_i = price of share (goods)

Q_i = Volume of share (goods)

Herfindahl: is calculated from the sum of the squared market shares, which captures information about the number of firms in the industry and the distribution of their market share.

$$H = \sum_i s_i^2 \dots\dots\dots (5.17)$$

5.4.2.10 Price Cost Margins (PCM): Definition and Measurement

The Learner index or the Price-Cost Margin (PCM) is an important indicator of the market power of a country. The PCM evaluates the difference that exists in the country in the price of goods sold and the cost of these products. The PCM is mainly dependent on the demand elasticity in the country which dictates whether the margin is high or low. If the margin is high then it is considered that there is a large gap between the price and the competitive price of the goods being sold. Furthermore, PCM is an important indicator of the competitiveness of the market and the market power in any country because it determines the difference in the price and the marginal cost of the goods that are traded in the market.

Price-cost margin: The weighted (by market share) price-cost margin is

$$PCM = \sum_i s_i \frac{y_i - CGS_i}{y_i} \dots\dots\dots (5.18)$$

Where i indexes firms and $CGS_i = c_i q_i$ is total variable costs to the firm, which includes labour and intermediate costs. In this study, the total variable costs (TVC) were not found in Osiris database or in the annual reports of all firms for all periods of the study. In this case, the researcher has taken *costs of goods sold* for total variable costs to measure PCM, because the costs of goods include most of the variable costs.

There are many methods that have been employed by researchers in the calculation of the PCM. Some researchers have calculated it by the profits to sales ratio (Aghion et al (2002) Nickell (1996), while others have calculated the demand and the cost factors separately before making the calculations for the PCM. All of the methods, however, point to the same conclusion that if there is higher concentration in the

market then the prices will be high and there will be low competition due to which the PCM will be high. A research paper by Scherer and Ross (1990) gives a detailed example of the process.

5.4.2.11 Profit margin (PrMrargin): Definition and Measurement

Profit margin is measured as net profits divided by sales, or net income divided by revenues. This factor is very important, especially when comparing firms in similar industries. Firms with higher profit margin have better control than their competitors. In addition, firms holding good position with lower costs have higher profit margins and market than their competitors (Aghion & Schankerman 2004).

5.4.2.12 Industry Dummy Variables (SICj): Definition and Measurement

The SICj (a dummy variable) is usually evaluated by financial analysts for almost all companies prevailing in the economic market. Nevertheless, the most critical aspect of exchange rates is that firms operating in industries like petrochemicals and other manufacturing and production firms will experience considerable fluctuations in exchange rates, whereas service firms will be swayed much less by the global implications of the international economy.

5.5 Summary

The data sources utilized and the procedures used to select the samples were presented in this chapter. The variables considered for this study were also discussed in detail, together with their definitions and measurements. The model of the study was tested through the empirical methodologies that were also presented in the chapter. The study uses quantitative research techniques and describes the analysis methods used. The description of the exchange rate exposure practices in the UAE

were analysed through these techniques. To identify the variables that determine the foreign exchange rate exposure for differences of a firm's and industry's exchange rate for non-financial companies of the UAE, the study examined the effects of the exchange rate exposure on the stock returns of domestic firms. The exposures on the specific currencies were directly tested, which further contributes to the literature. The competitive components for the firms' exchange rate sensitivity and components of the firms' exposure will be tested directly to contribute to the research on this topic.

The next two chapters (six and seven) of this thesis describe and investigate the sensitivity of the return value of domestic firms to exchange rate movements during the period of this study to answer the research questions.

CHAPTER 6: ESTIMATING DETERMINANTS OF FOREIGN EXCHANGE RATE EXPOSURE OF UAE NON-FINANCIAL COMPANIES

6.1 Introduction

One of the phenomena in financial economics that has recently attracted significant interest is the fact that nonfinancial firms do not seem to be appreciably affected by foreign exchange rate risk, even when they have substantial international business interests or are competitive (He & Ng 1998; Griffin & Stulz 2001; Bodnar & Wong 2003). In this context, it is important to note that virtually all existing empirical studies estimate currency exposures on the basis of stock prices. In contrast, the estimation of cash flow of stock price exposures pursued in this study represents a practical alternative to the common analysis of stock price exposures.

This section of the study aims to investigate the sensitivity of firms' value to foreign exchange rate exposure for six currencies on a sample of domestic UAE non-financial companies over the period 2005–2011. The second aim is to investigate the sensitivity of foreign exchange rate exposure to the determinants of foreign exchange rates. Since the total period of this study covers 84 months for every firm for the total sample of 49 firms, the exchange rate exposure coefficients are likely to vary over the period due to the dynamic nature of international economies and changes in firms' foreign and domestic operations and exposure to exchange rate changes. One of the main objectives of this study is to investigate the sensitivity of the value of returns of domestic firms to exchange rate movements during the period of this study.

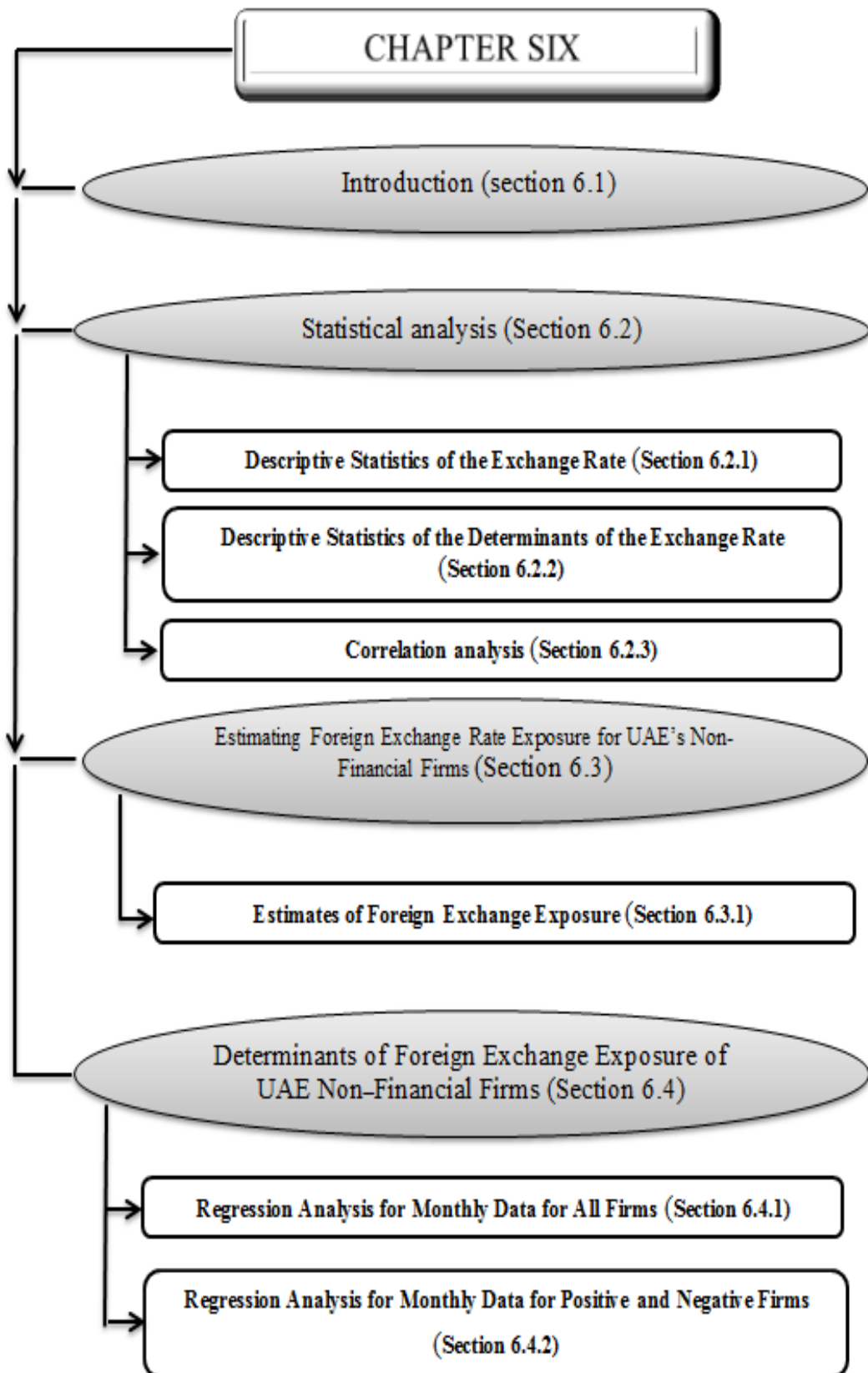
A positive and significant coefficient in this study would mean that changes in an exchange rate tend to positively affect the firms' stock returns. The depreciation of the UAE AED would tend to benefit domestic firms against foreign firms due to it enabling local companies to meet foreign competition, while an appreciation would tend to be harmful to domestic firms. On the other hand, a negative and significant exposure coefficient would mean that changes in an exchange rate tend to negatively affect the firms' stock returns. If a firm is primarily import-oriented, then a depreciation of the UAE AED would tend to be harmful and an appreciation would tend to be beneficial to this firm. The coefficients of this study are obtained from estimated methods of OLS.

This study has used only raw data. The justification to used raw data is that, as with other macroeconomic factors, not all firms feel the same effect from their exchange rate exposure. For this reason some firms have clear linear relationships and some do not have these relationships.⁵

This chapter is organised as follows. Section 6.2 provides a summary of descriptive statistics for the variables used in the analysis. Section 6.3 presents the estimated foreign exchange rate exposure for UAE non-financial companies. The results are reported in each table in three categories: (i) for all firms, (ii) for only those with positive exposure, and (iii) those with negative exposures. The final section is 6.4, which details the determinants of foreign exchange exposure of UAE non-financial companies.

⁵ Analysis of the equation 1 may lead to some econometric problem such as perfect collinearity. To solve this problem many authors used the technique of "orthogonalisation". For instance, Choi et al. (1995) orthogonalize the impact of foreign exchange rate on market rate. On the other hand, "orthogonalization" may result in biased student t statistics (Gilberto, 1985). However, orthogonalisation may not provide a better finding. This study has not used the orthogonalisation technique to solve econometric problem.

Figure 6.1: Outline of Chapter 6



6.2 Statistical analysis

The first section of this chapter describes the exposure of the exchange rate for every firm separately, and the second section will cover the determined factors of the exchange rate. These steps help to investigate and answer the main question of this thesis.

6.2.1 Descriptive Statistics of the Exchange Rate

Table 6.1 shows the descriptive statistics for the average change in each exchange rate for monthly data used in this study for the period 2005 to 2011. The change in volatility of monthly data of foreign exchange rate (Europe euro, Japanese yen, UK pound, Australian dollar, and Indian rupee currencies, as well as equally weighted exchange rate) will be used to determine its impact on the return for the full sample of firms. The statistics represent the raw data rather than logged values. The data in Table 6.1 shows that the mean change for the Sterling exchange rate ranges from a minimum of -0.061 to a maximum of 0.100 . Moreover, as shown in Table 6.1, the mean for the Euro exchange rate ranges from a minimum of -0.065 to a maximum of 0.064 .

The mean of AUD rate ranges from a minimum of -0.063 to a maximum 0.179 . The mean in Table 6.1 for AED/INR exchange rate ranges from a minimum of -0.036 to a maximum of 0.094 . Furthermore, the mean maximum of JPY is 0.088 , whereas the minimum is -0.099 . The mean of equally weighted exchange rate is -0.040 , whereas the maximum of this currency is 0.073 . In addition, the highest maximum is noted for the AUD exchange rate (0.179) and the lowest maximum is noted for the EUR exchange rate (0.064). Table 6.1 also shows that the JPY exchange rate records the highest mean change (0.008) with median (-0.010) and the EUR exchange rate index

records the lowest mean change (0.000) with median (−0.002). From Table 6.1 it can be observed that the highest volatility is the AUD exchange rate with standard division (0.0326), while the lowest standard deviation is EQW exchange rate (0.019).

Table (6.1) Descriptive statistics of changes in exchange rate measured over the period 2005–2011 for 84 months

	<i>Mean</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Std. Dev.</i>
<i>GBP</i>	0.003	0.001	−0.061	0.01	0.026092
<i>EUR</i>	0.00	−0.002	−0.065	0.064	0.02548
<i>AUD</i>	−0.003	−0.006	−0.063	0.179	0.03261
<i>INR</i>	0.003	0.000	−0.036	0.094	0.02225
<i>JPY</i>	0.008	−0.01	−0.099	0.088	0.03108
<i>EQW</i>	0.00	0.000	−0.04	0.073	0.01906

Note: The average of monthly and quarterly of foreign exchange rate are used to determine its impact on the return for the full sample of firms. UK pound= GBP, Europe euro= EUR, Australian dollar = AUD, Indian rupee = INR, Japanese yen = JPY, and as equally weighted exchange rate = EQW

The mean or the centre point of the six foreign exchange rates (GPB, EUR, AUD, INR, JPY and EQW) are (0.003, 0.000, −0.003, 0.003, −0.008 and 0.00) respectively. These are approximately the medians of the six foreign exchange rates (GPB, EUR, AUD, INR, JPY and EQW) with median (0.001, −0.002, −0.006, 0.000, −0.010 and −0.000) respectively.

6.2.2 Descriptive Statistics of the Determinants of the Exchange Rate

Table (6.2) presents the descriptive statistics for the determinants of the exchange rate that are used in this study. It is clear that SIZE of firm has the highest mean for the determinants of the exchange rate with mean (median) 5.720 (5.83). On the other hand, the lowest value of the mean of determinants of the exchange rate in industry is the Herfindahl index with a mean (median) of 0.011 (0.01). The highest standard deviations in Table (6.2) are for ROE and MkBk at 9.497 and 2.124 respectively; whereas the lowest standard deviation in this table is Herfindahl index with a value of 0.010. In addition, Table (6.2) shows that gross margin, asset tangibility and profit margin have the lowest determinate value with maximum values of 0.639, 0.67 and

0.87 respectively.

Table (6.2) A summary of descriptive statistics for the determinants of the exchange rate

	Mean	Median	Std. Dev.	Minimum	Maximum
SIZE	5.720204	5.83	0.729445	3.5	7.3
DEBT_RATIO	0.360204	0.36	0.211083	0.02	0.89
MKBK	1.499592	1.03	2.124534	0.2	14.81
ASSET_TURNOVER	0.493061	0.4	0.420903	0.03	1.92
ROE	10.05	11.42	9.479785	-23.73	27.27
ASSET_TANGIBILITY	0.281837	0.26	0.203036	0	0.67
INDHERF	0.011671	0.01	0.010792	6.14E-09	0.060435
PCM	0.029729	0.011937	0.053484	9.28E-05	0.267955
PROFIT_MARGIN	0.318059	0.2333	0.217283	0.1003	0.874
GROSS_MARGIN	0.335571	0.3084	0.125754	0.1215	0.6391

Debt is the average debt ratio, Turnover is the average asset turnover, ROE is Return on Equity, Size is the averaged log equity market value of the firm, Mkbk is the average market-to-book ratio, IndHerf is the average industry Herfindahl index, Asset Tangibility is the average long-term assets to total assets ratio, PCM is Price cost margins, Profit margin is the average profit margin, and Gr Margin is the average Gross margin.

On the other hand, the lowest value of the mean of determinants of the exchange rate in industry is Herfindahl index with a mean (median) of 0.011 (0.01). The highest standard deviations in Table (6.2) are for ROE and Mkbk at 9.497 and 2.124 respectively; whereas the lowest standard deviation in this table is Herfindahl index with a value of 0.010. In addition, Table (6.2) shows that gross margin, asset tangibility and profit margin have the lowest determinate value with maximum values of 0.639, 0.67 and 0.87 respectively.

6.2.3 Correlation Analysis

The simple descriptive statistic of the correlation coefficient is measurement of the strength of the linear relationship between two or more interval factors. The range of the correlation coefficient is +1 to -1. The correlation coefficients of the monthly exchange rate currencies (Europe euro, Japanese yen, UK pound, Australian dollar, and Indian rupee currencies, as well as equally weighted exchange rate) have been organised and reported in Table (6.3). As can be seen from Table (6.3), most of the

independent variables in the first model for monthly data are significantly and positively correlated with return of firms and the exchange rates that are used in this study.

Table (6.3) Correlation coefficients of the exchange rate variables used in the study

		return of firm	GBP	EUR	JPY	AUD	INR	EQW
return of firm	PR Correlation	1						
	Sig. (2-tailed)							
	NO	84						
GBP	PR Correlation	−0.288**	1					
	Sig. (2-tailed)	0.008						
	NO	84	84					
EUR	PR Correlation	−0.249*	.686**	1				
	Sig. (2-tailed)	0.023	0.000					
	NO	84	84	84				
JPY	PR Correlation	0.105	0.103	.357**	1			
	Sig. (2-tailed)	0.34	0.35	0.001				
	NO	84	84	84	84			
AUD	PR Correlation	−0.222*	.687**	.661**	0.017	1		
	Sig. (2-tailed)	0.043	0.000	0.000	0.879			
	NO	84	84	84	84	84		
INR	PR Correlation	−0.224*	.406**	.405**	0.084	.625**	1	
	Sig. (2-tailed)	0.04	0.000	0.000	0.448	0.000		
	NO	84	84	84	84	84	84	
EQW	PR Correlation	−0.126	0.233*	.386**	0.087	.400**	0.386**	1
	Sig. (2-tailed)	0.252	0.033	0.000	0.431	0.000	0.000	
	NO	84	84	84	84	84	84	84

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (1-tailed).

The perceived influence of GBP, EUR, AUD and INR have higher correlation with return of firm (−0.288, P -value < 0.01), EUR (−0.249, P -value < 0.05), AUD (−0.222, P -value < 0.05) and INR (−0.224, P -value < 0.05) respectively. In a similar vein, the exchange rate of GBP also has a higher correlation with EUR, AUD, INR and EQW (0.686 P -value < 0.01, 0.687 P -value < 0.01, 0.406 P -value < 0.01 and 0.233 P -value < 0.05) respectively. Moreover, Pearson correlation shows a high positive relationship between EUR and JPY, AUD, INR and EQW, with a coefficient of (0.357 P -value < 0.01, 0.661 P -value < 0.01, 0.405 P -value < 0.01 and 0.386 P -value < 0.01) respectively. Pearson correlations also show that there is a high

positive relationship, with a coefficient of 0.625 P -value < 0.01 and 0.400 P -value < 0.01 observed between the AUD currency and INR and EQW exchange rate. Furthermore, it is positively and significantly associated with INR and EQW based on Pearson correlations with 0.686 P -value 0.01. The equally weighted exchange rate (EQW) has significance with four of six exchange rate currencies used in this study. The four currencies are GBP, EUR, AUD, and INR with value (0.233, P -value < 0.05 , 0.386, P -value < 0.01 , 0.400, P -value < 0.01 , and 0.386, P -value < 0.01) respectively.

Consequently, these findings of Pearson correlations between value of domestic firms and foreign exchange rate exposure indicate introductory support for the first sub question in this study which asked if there is existence of an association between the value of domestic firms and foreign exchange rate exposure. This result is also supported by financial and exposure theories that the value of an industry or firm is affected by the exchange rate exposure. Exposure theory explains that as the local firms are primarily based in the local markets the weak relationship (insignificant correlation) among the value of domestic firms and JPY, and EQW indicates that there is potential for multicollinearity between the value of firms and those currencies. To sum up, a negative and significant exposure coefficient would mean that changes in an exchange rate tend to negatively affect the firms' stock returns. If a firm is primarily import-oriented, then a depreciation of the UAE AED would tend to be harmful and an appreciation would tend to be beneficial to this firm.

6.3 Estimating Foreign Exchange Rate Exposure for UAE Non-financial Companies

Movements in foreign exchange rates can be measured in nominal and real terms, however, most previous studies on the relationship between stock returns and changes in exchange rates have used nominal exchange rates. Few studies have used both trade-weighted nominal and real exchange rate indices. Khoo (1994) argues that, for consistency, if the changes in exchange rates are measured in real terms then all variables in the regression equations must also be adjusted for inflation. Atindéhou and Gueyie (2001) claim that there is little difference between nominal and real exchange rates because they are highly correlated. Thus, if the changes for nominal and real exchange rates were almost perfectly correlated, then the use of either one would have a similar impact on stock returns. In an effort to find additional empirical support for the arguments put forward by previous studies, the nominal foreign exchange rate exposure of UAE nonfinancial firms is estimated in this thesis.

Within this study, the slope coefficient is the exposure of exchange rate in a multifactor regression model of stock returns; market returns and changes in exchange rates. This coefficient was estimated for the level of exchange rate exposure for every firm in this study. This study employs a regression model in the foreign exchange rate exposure area theoretically introduced by Adler and Dumas (1984), and later empirically applied by Jorion (1991), Harris, Wayne Marr and Spivey (1991), (Amihud 1994), Choi and Prasad (1995), Williamson (2001), and Aggarwal and Harper (2010). The relationship of the empirical analyses between change in the exchange rate and an individual firm's stock returns was conducted with various exchange rates. The OLS is used to estimate the following regression models.

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i XR_{j,t} + \varepsilon_i \dots \dots \dots (6.1)$$

From the equation (1) where: α is the constant term; $R_{i,t}$ is the return of firm i, over time period t; $R_{m,t}$ is the return on the market index; $XR_{j,t}$ is the exchange rate change of currency or currency index that represent six currencies used in this study j over time period t; and γ measures the firm's residual foreign exchange exposure to the foreign exchange exposure for every firm.

This study investigated the impact of foreign exchange rates on a monthly basis. Due to the exposure of foreign exchange rates the impact comes from the competitive situation and is primarily indirect. The average monthly foreign exchange rate (Europe euro, Japanese yen, UK pound, Australian dollar, and Indian rupee currencies as well as equally weighted exchange rate) will be used to determine its impact on the return for the full sample of firms. The measures of change in exchange rate coefficients will provide the relationship to the index through the effect of the exchange rate on stock return.

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i GBP_{j,t} + \varepsilon_i \dots \dots \dots (6.2)$$

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i EUR_{j,t} + \varepsilon_i \dots \dots \dots (6.3)$$

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i JPY_{j,t} + \varepsilon_i \dots \dots \dots (6.4)$$

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i AUD_{j,t} + \varepsilon_i \dots \dots \dots (6.5)$$

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i IND_{j,t} + \varepsilon_i \dots \dots \dots (6.6)$$

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i EQW_{j,t} + \varepsilon_i \dots \dots \dots (6.7)$$

Figure 6.2 AED/GBP

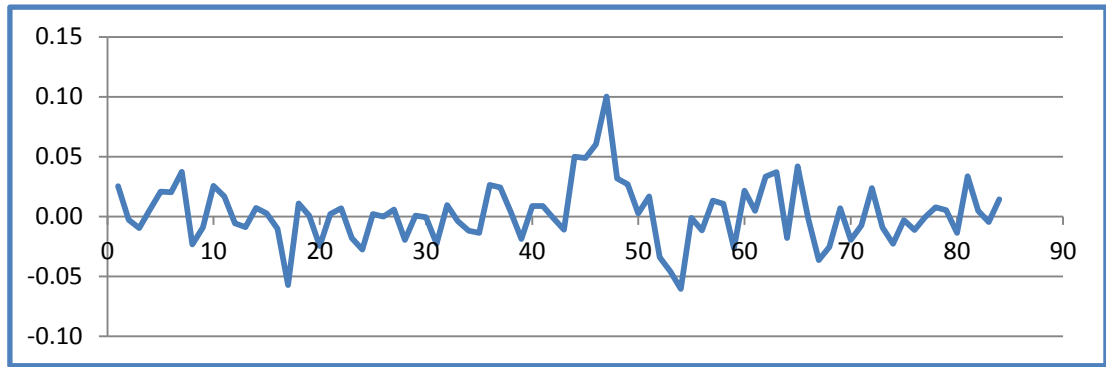


Figure 6.3 AED/EUR

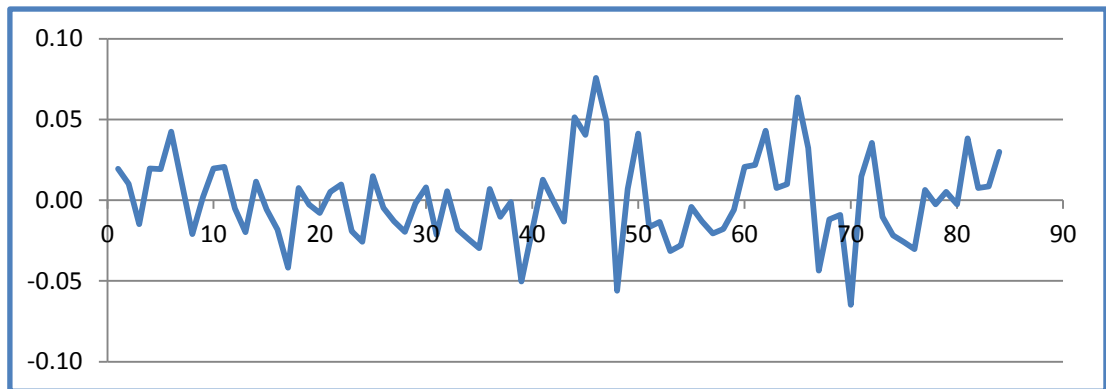


Figure 6.4 AED/AUD

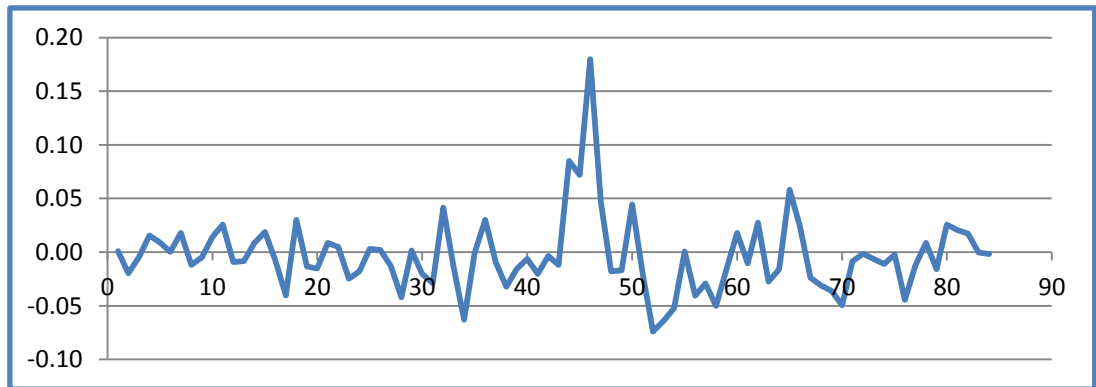


Figure 6.5 AED/JPY

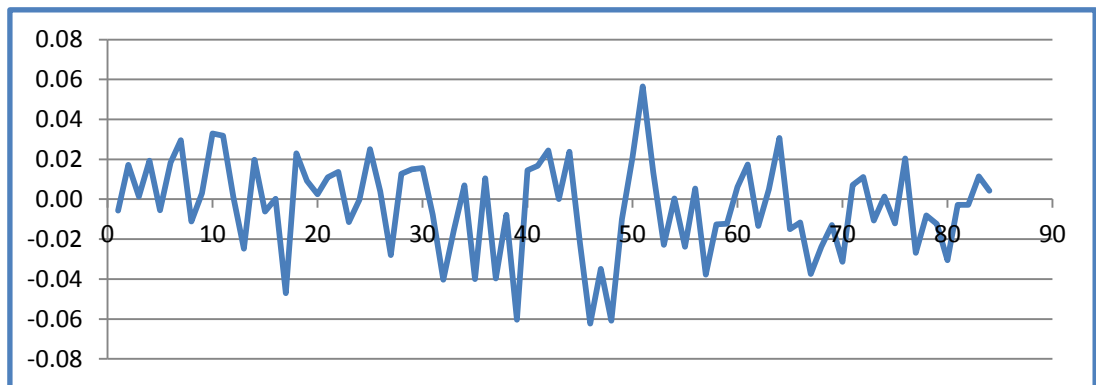


Figure 6.6 AED/INR

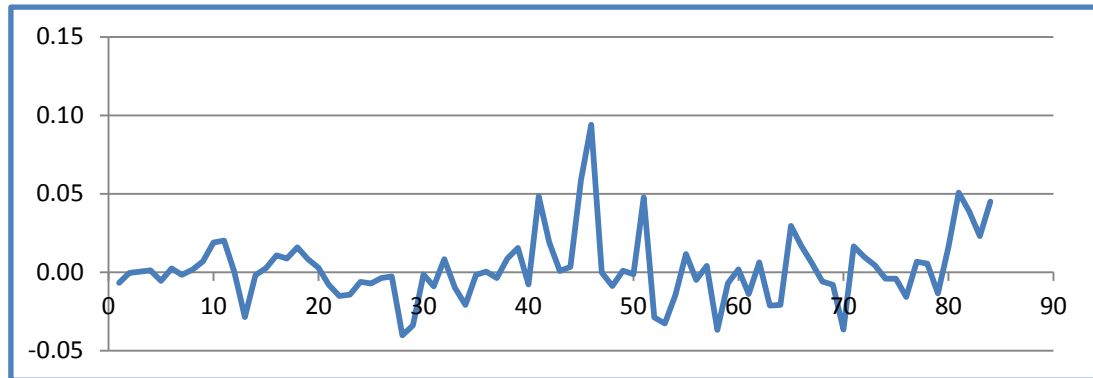
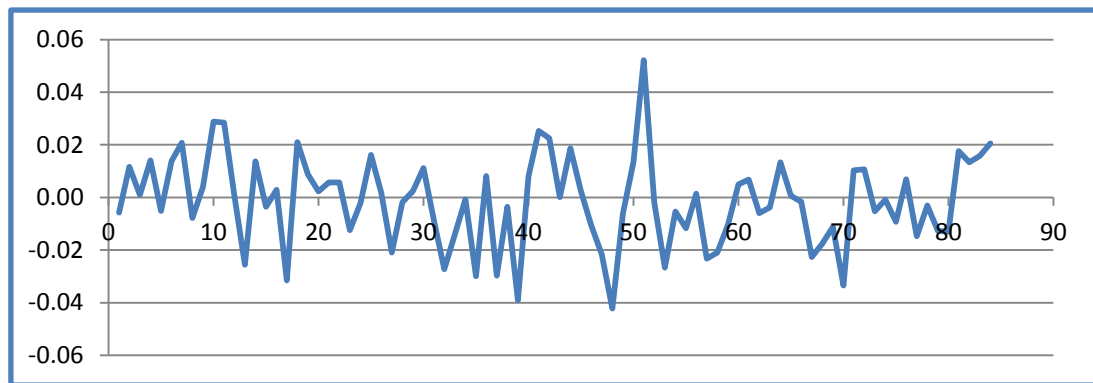


Figure 6.7 AED/EQW



The motivation in choosing this model is that the exchange rate risk in this model is the residual risk after the control of the market's own exchange rate exposure. In addition, this model is the most preferred approach by researchers to measure the exposure of foreign exchange (Bodnar & Wong 2003). Ordinary least squares are used for the equations (2 to 7) to obtain the exposure of exchange rate coefficients for the study sample.

The return of firms is present as a function in the above model in market index and foreign exchange rate with slope coefficients. With constant variance and mean zero, the error term should be normally and independently distributed. To solve this problem of multicollinearity between the six of foreign exchange rate (independent variables), the monthly correlation matrix is calculated (Table 6.3). Most of the six

foreign exchange rates show high correlation among each other. For this reason, this study used separate multiple regression approach.

Foreign exchange rate exposure for domestic companies for monthly data is presented in Table (6.4). These estimates are the estimated regression coefficient for the predictor variable from the fitted multiple regression model. Estimates are reported for all the currencies and also for weighted index. Table (6.4) also gives information about the number of firms with exposure to levels of exchange rate exposure at 0.10 and 0.05 levels.

6.3.1 Estimates of Foreign Exchange Exposure

The UAE is using the nominal exchange rate, defined by the foreign currency value of one unit of local currency. This means that the appreciation of the Arab Emirates Dirham (AED) and depreciation of the foreign currency value is implied by the increase in the exchange rate. This means local currency to foreign exchange rate currencies is used to measure exposure in this study due to some firms are affected to foreign exchange rate by competitive.

The sample of 49 UAE domestic firms is reported and estimated in table (6.4) with three categories (i) with all firms (ii) positive firms and (iii) negative firms, for the period 2005-2011 for monthly data. For GBP exchange rate, 39% of companies had positive exposure with mean 0.594 and standard deviation 0.477. The remaining 61% reported negative exposure (mean = -0.754, SD = 0.581) for the full sample. Approximately 8% of the companies reported statistically significant exposure to GBP exchange rate estimates at 0.05 or 0.10 levels. This ratio of 8 percent represents the full value of exposure for positive and negative exposure to GBP exchange rate. Generally speaking, for positive exposures just two firms were exposed to GBP

exchange rate at 0.10 level representing 4%; and two negative firms significantly exposed to GBP exchange rate at 0.05 level representing 4% of the sample. A noticeable point from Table 6.4 is that firms with significant positive exposures are the same firms with significant negative exposures but at different levels of exposure.

Similar results have been taken from EUR exchange rates; only 3 companies out of 49 companies (1 firm at 10% level is significantly exposed to the EUR exchange rates and 2 firms at 5% level are significantly exposed to the EUR exchange rates) reported statistically significant foreign exchange estimates at 0.05 or 0.10 levels with EUR exchange rates. At positive and negative coefficient, 41% of companies had positive exposures (mean= 0.429, SD= 0.300) for the full sample. The remaining 59% reported negative exposure with a mean = -0.659, SD = 0.898. Generally, the numbers of firms statistically significant to exchange rate exposure of the GBP exchange rate are somewhat similar to those reported in the EUR exchange rates.

For Japanese Yen, 67% of companies had positive exposure (mean = 0.851, SD = 0.753) for monthly data. The remaining 33% reported negative exposure with a mean (-0.767) and SD (0.644). Only 6 companies reported statistically significant foreign exchange estimates at 0.05 or 0.10 levels which represent 12% of UAE nonfinancial companies in this study. Table (6.4) also provides some descriptive statistics on companies' positive or negative significant levels. For instance, UAE nonfinancial companies have 4 positive companies and 2 negative companies with exposure to the Japanese Yen (JPY) at 0.10 and 0.05 levels. The number of positive and negative firms represents 12% of the total firms with exposure to JPY exchange rate. The results in Table 6.4 show that the positive percentage of exposure coefficients of JPY is more than negative percentage of exposure coefficients. This indicates an appreciation of the UAE AED against the Japanese Yen on the value of firms; for this

reason it is expected to find positive relationship for firms dealing directly or indirectly for their inputs with Japanese Yen.

Table (6.4) Descriptive statistics of estimates of foreign exchange exposure for monthly data with positive and negative exposure

	with positive and negative exposure									Significant at	Significant at		
	Full sample			Positives			Negative			the 0.10 level	the 0.05 level		
	N	Mean	STDEVA	N	Mean	STDEVA	N	Mean	STDEVA	Total	+/-	Total	+/-
GBP	49	-0.231	0.854	19	0.594	0.477	30	-0.754	0.581	2	2/0	2	0/2
EUR	49	-0.215	0.893	20	0.429	0.300	29	-0.659	0.89	1	0/1	2	0/2
JPY	49	0.323	1.046	33	0.851	0.753	16	-0.767	0.644	4	2/2	2	2/0
AUD	49	-0.196	0.779	19	0.545	0.492	30	-0.665	0.516	4	3/1	6	0/6
INR	49	-0.427	1.232	18	0.700	0.790	31	-1.081	0.932	4	1/3	7	1/6
EQW	49	0.419	0.316	12	0.536	0.302	37	-0.974	0.160	3	1/2	1	0/1

Averaged estimates of residual exchange rate exposure for the 49 domestic firms used in the sample the two factor residual exchange rate model. Estimates are for each of the foreign exchange rate measures for monthly horizons. The full sample is divided between negative and positive exposures and reported separately. GBP = UK pound, EUR= Europe euro, JPY = Japanese yen, AUD = Australian dollar, INR = Indian rupee, EQW = equally weighted exchange rate. This table estimated by this model

$$R_{i,t} = a + \beta_i R_{m,t} + \gamma_i XR_{j,t} + \varepsilon_i$$

For the Australian dollar (AUD), 19 of nonfinancial companies representing 39% of all firms had positive exposure with a mean 0.545, and SD = 0.492 for monthly data. The remaining 61% reported negative exposure (mean = -1.061, SD = 0.924). Out of 49 companies, 10 reported statistically significant foreign exchange estimates at 0.05 or 0.10 levels. Moreover, three companies were significantly positive at 0.10 levels, whereas six companies were significantly negative at 0.05 levels. In other words, table 6.4 show a high proportion (14%) of negative significant exposure (7 firms of 49) between AUD exchange rate and value of domestic companies. These results indicate that UAE domestic firms having negative exposure suffer from an appreciation of the UAE AED against the Australian Dollar or these firms take advantage of a depreciation of the UAE AED against the Australian Dollar.

For the Indian Rupee (INR), 37% of companies had positive exposure (mean = 0.70,

SD = 0.790), as shown in Table (6.4). The remaining 63% reported negative exposure with a mean -1.081 and SD 0.932. Approximately 22% of nonfinancial companies reported statistically significant levels to foreign exchange rate exposure at 0.10 or 0.05 levels. In addition, most companies were significantly negative at 0.10 and 0.05 levels; with significant exposure in the INR tending to have negatively effect on the value of domestic firms. More specifically, the value of domestic firms that have negative exposure with INR decreases when the INR appreciates and increase when the INR depreciates.

For equally weighted index (EQW), 24% of companies had positive exposure (mean = 0.536, SD = 0.302) for monthly data. The remaining 76% reported negative exposure (mean = -0.974 , SD = 0.160). Approximately 6% of the companies reported statistically significant foreign exchange estimates at 0.05 or 0.10 level. The equally weighted exchange rate index is constructed by taking an equally weighted average of monthly percentage changes in the value of the five major currencies (GBP, UER, JPY, AUD, and INR) against the UAE dirham. Table 6.4 further shows that three companies with EQW exchange rate have negative significant correlation on the value of domestic firms; the value of these companies that have negative exposure with EQW suffer when the EQW appreciates and vice versa when the EQW exchange rate depreciates.

Table (6.5) and figure (6.8) show negative and positive firms that are exposed to foreign exchange rates at the 0.10 and 0.05 significance levels. For the 0.10 level significance, there are between 18 positive and negative companies significantly exposed to different foreign exchange rate currencies, while 20 companies between positive and negative are significantly exposed at 0.05. These companies represent approximately 37% of all firms exposed to different foreign exchange rates at the

0.10 levels; and also approximately 41% from all firms exposed to different foreign exchange rates at the 0.05 levels. The results further show that 26 firms have negative exposure at 5 and 10 percent and 12 firms have positive exposure at 5% and 10% the same as reported earlier in Table 6.4. Furthermore, firms with negative exchange rate exposure coefficient outweigh firms with positive exposure coefficients.

Figure 6.8 Number of firms' exposure to foreign exchange rate

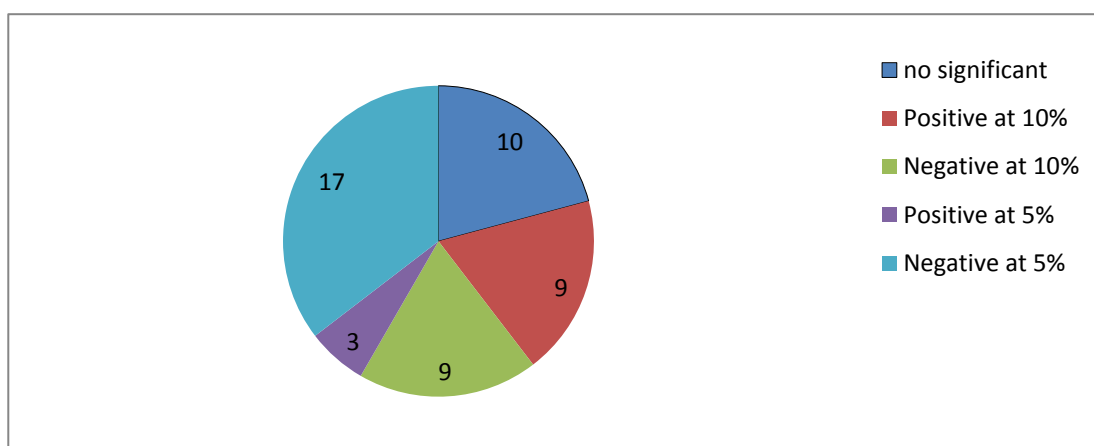


Table 6.5 Descriptive statistics for coefficient and exposure firms

Currencies	No of firms	coefficient		Significant at 10%		Significant at 5%	
		Positive	Negative	Positive	Negative	Positive	Negative
GBP	49	19	30	2	0	0	2
EUR	49	20	29	0	1	0	2
JPY	49	33	16	2	2	2	0
AUD	49	19	30	3	1	0	6
INR	49	18	31	1	3	1	6
EQW	49	12	37	1	2	0	1
Total of significant exposure for all firms				9	9	3	17

The UAE firms show, on average, a negative relationship with the movement of the Australian dollar (AUD) and the Indian Rupee (INR) and positively related with the movement of the Japanese Yen (JPY). These findings indicate that the value of UAE firms decrease against the Australian dollar (AUD) and the Indian Rupee (INR) and increase when the Japanese Yen appreciates. Furthermore, companies will be more at risk when the fluctuations in the exchange rate have a negative effect. The fact that

the estimated exposures are mostly negative implies that the sample of domestic firms face significant indirect competition from the Australian dollar (AUD) and the Indian Rupee (INR). In contrast, the positive estimated exposure with the Japanese Yen (JPY) indicates a pass-through of change in exchange rate to pricing by foreign competitors.

6.4 Determinants of Foreign Exchange Exposure of UAE Non-Financial Companies

The results are reported in each of the three categories: (i) for all firms, (ii) for only those with positive exposure and (iii) those with negative exposure. Unstandardized estimates of model parameters are reported and standardized estimates of parameters are reported within the parentheses.

$$\begin{aligned} \hat{\gamma}_i = & \alpha + \beta_1 \text{Debt} + \beta_2 \text{Turnover} + \beta_3 \text{ROE} + \beta_4 \text{Size} + \beta_5 \text{MkBk} + \beta_6 \text{IndHerf} + \beta_7 \text{AssetTangibility} + \\ & \beta_8 \text{R\&D} + \beta_9 \text{PCM} + \beta_{10} \text{profit margin} + \beta_{11} \text{Gross margin} + \sum_{j=2}^n b_j \text{SIC}_j + \varepsilon \dots \dots \dots (6.8) \end{aligned}$$

Where Debt = the average debt ratio, Turnover = the average asset turnover, the Turnover represents the amount of sales generated for each currency's worth of assets. Size = the averaged log equity market value of the firm. This study has avoided the average gross profit margin, which has insignificant exposure and is not related to industry competitive structures in the study of Aggarwal and Harper (2010), and replaced it with (ROE). ROE= Return on Equity. The amount of net income is returned as a percentage of shareholder equity.

This metric can be used to compare a company with its competitors and is also useful for comparing the profitability of a company to that of other firms in the same industry. MkBk = the average market-to-book ratio, a ratio used to find the value of

a company by comparing the book value of a firm to its market value, and Asset Tangibility = the average long-term assets to total assets ratio, and the long-term assets represent the value of a company's property, equipment, and other capital assets, such as stocks, bonds or other assets that an investor plans to hold for a long period of time. IndHerf = the average industry Herfindahl index, a factor that usually measures market concentration. It is calculated by squaring the market share of each firm competing in a market, which captures information about the number of firms in the industry and the distribution of their market share. Price cost margins (PCM) is an important indicator of the competitiveness of the market and the market power in any country because it determines the difference in the price and the marginal cost of the goods that are traded in the market.

Profit margin is the ratio of profitability calculated as net income divided by revenue, or net profits divided by sales. It measures how much out of every dollar of sales a company actually keeps in earnings. Profit margin is very useful when comparing companies in similar industries. A higher profit margin indicates a more profitable company that has better control over its costs compared to its competitors. Gross margin is a company's total sales revenue minus its cost of goods sold, divided by the total sales revenue, expressed as a percentage. The gross margin represents the percent of total sales revenue that the company retains after incurring the direct costs associated with producing the goods and services sold by a company. The higher the percentage, the more the company retains in each dollar of sales to service its other costs and obligations.

Tables 6.6 – 6.8 present the factors determining foreign exchange exposure. These tables also present estimates of Eq. (8) for monthly data. While consistencies between the results for each firm exist, there are marked differences, illustrating how firms are

affected by exchange rate risk. Tables 6, 7 and 8 present the results for the monthly data horizon for the determinants of the absolute value of the foreign exchange exposure for each of the six currencies measured for all firms; and for firms with positive and negative exposures separately. Particularly, positive and negative exposure may be estimated by γ , because the size of exposure may not be explained. For this reason, the measurements of the size of positive and negative exposure are estimated by the absolute values of γ .

For all firm estimates in each table, the absolute value of the exposure is used as the dependent variable, so the coefficients of the independent variables indicate what causes the most risk without indicating the direction of exposure. To control for induced autocorrelation and heteroskedasticity, the equations are estimated using the Newey–West HAC approach (Newey & Kenneth 1987). In addition, some factors have been eliminated from the estimate to reduce noise such as collinearity and to improve the precision of the estimation of determining foreign exchange exposure⁶.

6.4.1 Regression Analysis for Monthly Data for All Firms

With respect to all firms' monthly data (see Table 6.6), the overall model fit was significant with Japanese JPY, Australian AUD, and equally weighted index EQW ($F = 1.775$, $P > 0.05$, $F = 2.703$, $P > 0.01$, and $F = 1.901$, $P > 0.05$) respectively. Debt ratio was found to be a significant predictor of exposure. The result of debt ratio was positively significantly related to GBP exposure and the estimated coefficient was (1.183, $P < 0.01$). In addition, the debt ratio was found to be positively significantly related with JPY exposure with coefficient (1.818, $P < 0.01$). This indicates that for

⁶ Orthogonalization technique is not used in this study to solve the economic problem such as collinearity problem as many authors do. Rather dimensional technology is applied to some of the elements to improve noise reduction and regression. The OLS standard errors are corrected for Autocorrelation and Heteroskedasticity by Newey and West Method (1987).

each percent (1%) appreciation in the debt ratio of a firm, the corresponding exposure increases on an average by 1.183 for GBP and 1.818 JPY respectively. On the other hand, the debt ratio was found to be negatively significantly related to EUR exposure with coefficient (-0.322 , $P > 0.05$). This means that as the debt ratio increases by one unit, the corresponding exposure decreases by -0.322 units. As seen in Table (6.6) the debt ratio is positively significant for the GBP and JPY exchange rate, and is negatively significant for the EUR exchange rate. This result indicates that firms with higher debt ratio would expect to face higher costs of bankruptcy and financial risk. In this case, firms should have more impetus to hedge compared to companies that have lower debt ratios. Domestic firms are more likely to use accounting hedge than other technique because this hedge is one of the most prevalent hedging tools available in the market.

In this study, the result of asset turnover was found to be negatively significantly related to exposure with GBP, EUR and JPY with significance (-0.453 , $P < 0.05$, -0.437 , $P < 0.01$, and -0.371 , $P < 0.01$). However, the negative significance of asset turnover means that as the asset turnover increases by one percent, the corresponding exposure decreases by -0.453 , -0.437 and -0.371 respectively with GBP, EUR and JPY. In addition, the coefficient of asset turnover with these currencies indicates that companies with higher asset turnover have lower exposure. In contrast, firms with lower asset turnover have higher exposure to foreign exchange rates. Wherever significant predictors were reported, the pattern found was that debt ratio was positively related and asset turnover was negatively related to exposure, indicating that domestic firms with higher debt ratio and lower asset turnover are likely have higher exposure to foreign exchange risk as compared to firms with lower debt ratio and higher asset turnover. In this study, the GBP and JPY exchange rate have positive

exposure with debt ratio and negative with asset turnover (as shown in Table 6.6).

When using model 8, Table 6.6 shows that the ROE has a positive significant relationship with JPY and negative significant correlation with EQW. The coefficient of ROE was found to be (0.017, $P < 0.05$ and -0.007, $P > 0.05$). This indicates that for each percent increase (1 %) in the ROE of a firm, the corresponding exposure increases on an average by 0.007 for JPY and for each percent increase (1 %) in the ROE of a firm, the corresponding exposure decreases on an average by -0.007 for EQW. The correlated analysis between ROE and exchange rate currency should have a positive relationship, because high ROE indicates lower competition with other companies that work in the same market. This finding is consistent with the finding in table 6.5 that some companies are positively significant with JPY and have higher competition with firms or goods coming from Japan.

Sizes of firm and market-to-book ratio were found to have significant exposure with some currencies of the exchange rate exposure. While the size of firm was negatively significantly related to exposure, the size of firm has a negative effect on the foreign exchange exposure of JPY and AUD. The estimated coefficient was (-0.333, $P > 0.001$ and -0.446, $P < 0.001$). This indicates that larger firms have smaller exposure; in contrast, small firms have greater exposure, because larger firms have more ability to compete with other firms producing similar goods and also have more ability to hedge themselves from exposure to foreign exchange rates. This result is consistent with Aggarwal and Harper (2010) that smaller firms are more likely to be exposed to foreign exchange rates, due to bigger firms being more efficient in managing their currency exposure.

Table (6.6) Determinants of foreign exchange exposure for all firms for monthly data

	<i>N</i>	<i>Intercept</i>	<i>Debt</i>	<i>Asset turnover</i>	<i>ROE</i>	<i>Size</i>	<i>Market to book</i>	<i>Asset tangibility</i>	<i>INDHERF</i>	<i>PCM</i>	<i>Profit margin</i>	<i>Gross margin</i>	<i>R-squared</i>	<i>F – Stat</i>	<i>Durbin Watson</i>
<i>GBP</i>	<i>49</i>	<i>1.155</i>	<i>1.183</i>	<i>-0.453</i>	<i>0.005</i>	<i>-0.087</i>	<i>-0.045</i>	<i>0.501</i>	<i>-32.077</i>	<i>6.125</i>	<i>-0.006</i>	<i>0.003</i>	<i>0.24</i>	<i>1.062</i>	<i>2.399</i>
		<i>0.971</i>	<i>(0.320)***</i>	<i>(0.197)**</i>	<i>0.008</i>	<i>0.152</i>	<i>(0.020)**</i>	<i>0.469</i>	<i>(11.35)***</i>	<i>(2.748)**</i>	<i>0.006</i>	<i>0.005</i>			
<i>EUR</i>	<i>49</i>	<i>2.002</i>	<i>-0.322</i>	<i>-0.437</i>	<i>0.001</i>	<i>-0.102</i>	<i>-0.043</i>	<i>-0.490</i>	<i>-31.575</i>	<i>-2.578</i>	<i>-0.023</i>	<i>0.002</i>	<i>0.15</i>	<i>0.62</i>	<i>1.902</i>
		<i>(0.522)***</i>	<i>(0.181)*</i>	<i>(0.111)***</i>	<i>0.005</i>	<i>0.092</i>	<i>(0.011)***</i>	<i>(0.142)***</i>	<i>(17.612)*</i>	<i>4.142</i>	<i>(0.008)***</i>	<i>0.003</i>			
<i>JPY</i>	<i>49</i>	<i>1.827</i>	<i>1.818</i>	<i>-0.371</i>	<i>0.017</i>	<i>-0.333</i>	<i>-0.007</i>	<i>-0.602</i>	<i>-28.69</i>	<i>5.30</i>	<i>-0.002</i>	<i>0.008</i>	<i>0.34</i>	<i>1.77*</i>	<i>2.524</i>
		<i>(0.683)**</i>	<i>(0.503)***</i>	<i>(0.115)***</i>	<i>(0.007)**</i>	<i>(0.144)**</i>	<i>0.021</i>	<i>0.837</i>	<i>(11.46)**</i>	<i>3.607</i>	<i>0.006</i>	<i>0.004</i>			
<i>AUD</i>	<i>49</i>	<i>3.198</i>	<i>0.082</i>	<i>-0.060</i>	<i>0.004</i>	<i>-0.446</i>	<i>-0.030</i>	<i>-0.299</i>	<i>21.466</i>	<i>3.964</i>	<i>-0.009</i>	<i>0.002</i>	<i>0.44</i>	<i>2.703**</i>	<i>1.970</i>
		<i>(0.840)***</i>	<i>0.188</i>	<i>0.171</i>	<i>0.007</i>	<i>(0.136)***</i>	<i>(0.017)*</i>	<i>0.347</i>	<i>(9.807)**</i>	<i>(2.066)*</i>	<i>(0.005)*</i>	<i>0.005</i>			
<i>INR</i>	<i>49</i>	<i>1.334</i>	<i>-0.486</i>	<i>0.101</i>	<i>0.010</i>	<i>-0.103</i>	<i>-0.058</i>	<i>-0.380</i>	<i>-0.412</i>	<i>3.238</i>	<i>-0.001</i>	<i>0.009</i>	<i>0.075</i>	<i>0.27</i>	<i>1.962</i>
		<i>1.171</i>	<i>0.723</i>	<i>0.252</i>	<i>0.010</i>	<i>0.241</i>	<i>(0.033)*</i>	<i>0.495</i>	<i>26.247</i>	<i>5.310</i>	<i>0.011</i>	<i>0.007</i>			
<i>EQW</i>	<i>49</i>	<i>-0.237</i>	<i>-0.872</i>	<i>0.337</i>	<i>-0.007</i>	<i>0.165</i>	<i>0.044</i>	<i>-0.396</i>	<i>-7.763</i>	<i>0.682</i>	<i>0.015</i>	<i>-0.004</i>	<i>0.36</i>	<i>1.901</i>	<i>1.62</i>
		<i>1.627</i>	<i>0.511</i>	<i>0.520</i>	<i>(0.003)*</i>	<i>0.228</i>	<i>0.028</i>	<i>0.664</i>	<i>17.123</i>	<i>5.020</i>	<i>(0.007)*</i>	<i>(0.001)**</i>			

Estimates in the determination in exposure for the absolute value of positive and negative exposure of exchange rate exposure estimated based on the work of Jorion Model (1991). Debt is the average debt ratio, Turnover is the average asset turnover, ROE is Return on Equity, Size is the averaged log equity market value of the firm, MkBk is the average market-to-book ratio, IndHerf is the average industry Herfindahl index, Asset Tangibility is the average long-term assets to total assets ratio, PCM is Price cost margins, Profit margin is the average profit margin, Gr Margin is the average Gross margin, and SICj is the industry dummy variables. Newey–West corrected standard errors in parentheses. Estimates of the R&D to Assets coefficients are not reported in the table because UAE firms have not used this ratio.

$$|\hat{\gamma}_i| = \alpha + \beta_1 \text{Debt} + \beta_2 \text{Turnover} + \beta_3 \text{ROE} + \beta_4 \text{Size} + \beta_5 \text{MkBk} + \beta_6 \text{IndHerf} + \beta_7 \text{AssetTangibility} + \beta_8 \text{PCM} + \beta_9 \text{profit margin} + \beta_{10} \text{Gross margin} + \sum_{j=10}^n \beta_j \text{SIC}_j + \varepsilon$$

***, **, and * indicate significance at the 0.01, 0.05 and 0.10 level, respectively.

(—) perfect collinearity

The results reveal that the market-to-book ratio has a negative relationship with 4 of 6 exchange rates exposure, GBP, EUR, AUD and INR, with different significance at the 0.01, 0.05 and 0.10 levels. The estimated coefficients for these currencies were $(-0.045, P > 0.01, -0.043, P < 0.01, -0.030, P > 0.05 \text{ and } -0.058, P > 0.05)$ respectively. The negative exposure of market-to-book ratio means that with the increase of the market-to-book ratio by one unit (1 percent), the corresponding exposure decreased by $(-0.045, -0.043, -0.030 \text{ and } -0.058)$ respectively. In addition, the higher proportion of the company in market-to-book ratio, lead to more access to new opportunities for investment and a greater chance of investment ratios increase incentives to hedge. More specifically, this finding suggests that the market-to-book ratio on domestic firms is substantially affects GBP, EUR, AUD, and INR exchange rates exposure.

For asset tangibility and industry Herfindahl index the results reveal that asset tangibility has a negative significant relationship with EUR exchange rate. In addition, the sign of asset tangibility to EUR exchange rate is $-0.490, P < 0.01$, indicating that the exchange rates have a higher effect of firms with lower asset tangibility because the lower asset tangibility insulates the firm from changing input costs as current assets. Thus firms with low asset tangibility are more likely to facing higher exposure.

For industry, Herfindahl is computed for each year to reflect the competitive environment within companies that work in the same market. This factor is a commonly accepted measure of market concentration. It is calculated by squaring the market share of each firm competing in a market, and then summing the resulting numbers. The Herfindahl of 1 is a perfect monopoly with competition increasing as

the index approaches 0. This factor should have a negative relationship to exchange rate. The Herfindahl index has a negative and significant exposure coefficient with GBP EUR and JPY with value $(-32.077, P < 0.01)$ and $(-31.575, P > 0.05)$ and $(-28.69, P < 0.05)$. The value of negative coefficient in this factor means that companies with the GBP, EUR and JPY exchange rate reflect the competitive environment with other firm destination countries of these currencies in the market. In contrast, Herfindahl has positive significant with GBP and AUD exchange rate. The coefficients of the AUD was $(21.466, P < 0.05)$ respectively.

The monthly data also shows the result for Price cost margins (PCM), Profit margin and Gross margin. For PCM, the analysis found a positive relationship with AUD exchange rate. The positive relationship of PCM with this currency was $(3.964, P > 0.05)$. The positive sign of the coefficient of the exchange rate in the PCM means that with the increase in the PCM ratio by one unit (1 percent), the corresponding exposure increases by 3.964 for AUD. Moreover, the positive sign exposure of the PCM with the exchange rate of AUD indicating that UAE domestic firms are in a competitive situation with destination country of this currency. This finding is consistent with the finding of (Ito & Krueger 1999). UAE domestic firms with a higher degree of high price elasticity of imports increase the effect of imports on PCM. Furthermore, the findings reveal that for UAE firms' production structure on imported inputs, the appreciation of real exchange rate seems to significantly lower PCM through reducing input costs. On the other hand, the PCM has negative exposure with GBP exchange rate with coefficient $-6.125, P < 0.05$.

Operational strength is proxied by profit margin and gross margin. The finding suggests that profit margins are negatively correlated with EUR and AUD exchange rate, whereas profit margin has a positive relationship with EQW exchange rate. For

the negative sign, Profit margin is found to be negatively significantly with EUR and AUD exchange rate with coefficients (-0.023 , $P < 0.01$ and -0.009 , $P > 0.05$) respectively. In contrast, the profit margin is found to be positively significant with EQW exchange rate with coefficient (0.015 , $P > 0.05$). On the one hand, gross margin has only a negative sign with EQW exchange rate with coefficient (-0.004 , $P < 0.05$). The negative sign of profit margin and gross margin indicates that UAE domestic firms are in a competitive situation with destination countries of these currencies, because companies with lower profit margins and gross margins do not have greater flexibility to produce their goods. For clarifying the positive of profit margins and gross margins, companies with higher profit margins and gross margins have more flexibility than companies with lower profit margins and gross margins because these factors gives corporations two advantages: (i) flexibility for pricing of goods and services that can absorb shocks resulting from the market, and (ii) companies with higher profit margins and gross margins are able to compete more effectively than companies with lower profit margins and gross margins.

6.4.2 Regression Analysis for Monthly Data for Positive and Negative Firms

Change in foreign exchange rates can be measured by positive and negative exposure. With respect to monthly data and firms with only positive and negative exposures, the determinants of foreign exchange exposure of UAE non-financial companies were significant in some cases. In Equation (8), the slope coefficient of the variables of interest examines the influence of firms' foreign operations on their exchange rate exposure coefficient. If these coefficients are significant it implies that firms' foreign operations measures have a significant impact on their exchange rate exposure coefficient. For example, if it is negative for a particular explanatory

variable, an increase in this variable will make exchange rate depreciation more damaging for firm value.

Tables (6.7) and (6.8) present a summary of determinants of foreign exchange exposure for positive and negative at the firm level. In the case of positive, debt ratio was found to be a significant predictor of exposure. The result of debt ratio was positively significantly related to GBP, EUR and JPY exposure and the estimated coefficients were (0.41, $P > 0.05$, 0.587, $P < 0.01$, and 2.432, $P < 0.01$) respectively. This indicates that with an increase of debt ratio by one percent, the corresponding exposure increases on an average by 0.41 for GBP 0.587 for EUR, and 2.432 for JPY respectively. This finding of table 6.7 is similar to that reported earlier in Table 6.8 which shows GBP and JPY have a positive significant relationship with debt ratio. The results reveal that domestic firms with a high level of debt ratio have a higher level of financial risk, which should have positive exposure to foreign exchange rates, indicating that UAE domestic firms with high debt ratios have greater exposure with destination countries of these currencies (GBP, EUR and JPY). According to Haushalter (2000), total debt ratio has a positive relationship with the percentage of production hedged. This finding is consistent with theories of transaction costs of financial distress.

The results for the asset turnover coefficient varied between positive and negative estimated. Table (6.7) reports that the significant exposure coefficients of the asset turnover in the case of positive relate with EUR, JPY, AUD and INR with coefficient ($-0.157 P < 0.05$, $-0.540 P < 0.01$, $0.305 P > 0.05$ and $0.576 P > 0.05$) respectively, whereas, the significant exposure coefficients of the asset turnover in the case of negative in table (6.8) have a relationship with JPY and AUD with coefficients

(0.404 $P < 0.01$ and $-0.308 P > 0.05$) respectively. The negative sign of the results indicate that domestic firms with lower asset turnover are likely to have additional exposure to foreign exchange rates.

The results also revealed that ROE was found to have a positively significantly exposure with GBP, EUR, JPY and AUD exchange rate at the significance level of 0.10, 0.05, and 0.01 level (0.065 $P < 0.01$, 0.031 $P < 0.01$, 0.013 $P > 0.05$, and 0.018 < 0.05), while in the case of negative analysis coefficient (table 6.8), the ROE reported a significant positive relationship with JPY and INR with coefficient (0.058, $P < 0.01$, and 0.032, $P < 0.05$) with significance at 0.01 and 0.05. This indicates that as the ROE of a firm increases by one percent, the corresponding exposure of the firm, on average, increases by (0.065, 0.031, 0.013, 0.018, 0.058, and 0.032) respectively in the case of positive and negative condition. As can be seen in the tables (6.7 and 6.8) the relationship between ROE and the coefficient of exchange rate exposure of positive and negative firms are positive exposure. This finding may be explained as those firms with higher ROE experience lower competition with other currencies of companies that work in the same market.

Size of firms in the case of positive and negative estimate reported negatively significant for the most part. For positive estimated, size of firm was found to have just negatively significant exposure with GBP, JPY, AUD and INR with significance at 0.05, and 0.01 levels. The coefficient of the exposure of GBP, JPY, AUD and INR were ($-0.181, P < 0.01$, $-0.537, P < 0.01$, $-0.799, P < 0.01$ and, $-0.652, P > 0.01$) respectively. However, for the negative estimate, the size of firms reported significance with AUD, INR, and EQW exchange rate. The coefficients in the negative estimate of these exchange rates were AUD = $-0.482, P < 0.01$, INR = $-0.431 P > 0.05$, EQW = $0.274, P > 0.05$. This indicates that as the size of a firm

increase by one percent in the case of positive and negative estimated, the corresponding exposure of the size of firm on an average will decrease by the value of negative coefficient. This result indicates that all the significant coefficients of size of firms have a negative relationship with the exchange rate. In this case, small firms have higher exposure than large firms, due to large firms having methods to manage and hedge their exposure. This finding is consistent with that of (Aggarwal & Harper 2010) and (He & Ng 1998). Furthermore, the result shown in the two tables (6.7 and 6.8) is consistent with the last table (6.6).

The results for the monthly data of positive and negative also show that market-to-book ratio reported positive and negative significance with the exposure of foreign exchange rate. For the positive measurement, market-to-book ratio was found to have significant exposure to GBP and EUR exchange rates. The coefficients of these currencies were (0.020 P -value > 0.05 and $- 0.245$ P -value < 0.01). The phenomenon of negative and positive exposure of market-to-book ratio indicates that if the market-to-book ratio increases by one percent in the case of positive, the corresponding exposure of the market-to-book ratio also increases. In contrast, if the market-to-book ratio of a firm increases by one percent in the case of negative, the corresponding exposure of the market-to-book ratio firm on average will decrease by the value of the coefficient. On the other hand, market-to-book ratio reported positive and negative significance with the exposure of foreign exchange rate for the case of negative firms with five of six exchange rates used in this study. The coefficients of market-to-book ratio were positive and negative with EUR, JPY, AUD, INR and EQW with value ($- 0.054$, $P < 0.05$, 0.038 , $P < 0.01$, $- 0.057$, $P < 0.01$, $- 0.14$, $P < 0.035$ and 0.037 , $P < 0.01$). The result of this analysis indicates that the market-to-book ratio on domestic firms is substantially harmed by appreciation of the EUR,

AUD, and INR exchange rates exposure. On the other hand, the market-to-book ratio was found to be positively significant with JPY and EQW exchange rates, indicating that the market-to-book ratio on domestic firms depreciates the JPY and EQW exchange rate.

In order to clarify the effect of exchange rate exposure on asset tangibility and Herfindahl index (INDHERF), the result of the regression model indicated that there were relationships between the exposure of exchange rate of GBP, EUR, AUD, INR and asset tangibility in the case of positive firms. In contrast, there were relationships between the exposure of exchange rate of JPY, INR and asset tangibility in the case of negative firms. The coefficients of asset tangibility in the case of positive were GBP = 0.493 P -value < 0.01, EUR = 0.338 P -value < 0.05, AUD = 0.728 P -value < 0.10, INR = 1.276 P -value < 0.05; on the other hand, the coefficients of asset tangibility in the case of negative were JPY = -1.085 P -value < 0.05 and INR = -1.874 P -value < 0.05. The positive sign of this factor indicates that exchange rates have a lower effect with higher asset tangibility and discourages the firm from changing input costs as current assets. Thus, firms with high asset tangibility are less likely to face higher exposure. In contrast, firms with negative sign of the exposure to exchange rate on asset tangibility have higher effects than firms with lower asset tangibility because the lower asset tangibility insulates the firm from changing input costs as current assets. Thus, firms with low asset tangibility are more likely to face higher exposure.

The finding of Herfindahl index (INDHERF) in the regression model indicated that the Herfindahl index has a relationship with EUR exchange rate in the case of positive estimated with coefficient 13.669 P -value < 0.05, whereas this factor has exposure with EQW with coefficient -9.755 P -value < 0.05 in the case of negative

estimated. The sign of this factor should be negatively correlated to the exchange rate. If there is negative coefficient with this factor, in this case firms reflect the competitive environment with other firm destination countries of these currencies in the market.

The results of the analysis in tables 6.7 and 6.8 indicate that the price cost margins (PCM) in positive estimates show that PCM have positive exposure to foreign exchange rate to different currencies. The PCM was found to have a positively significant exposure with GBP, AUD, and INR with significance (3.932, $P > 0.05$, 11.082, $P < 0.01$, and 13.115, $P < 0.01$). This means that with the increase of the PCM ratio by one percent, the corresponding exposure increased by (3.932, 11.082, and 13.115) respectively. For the negative estimated, PCM was found to have positive and negative exposure with EUR, JPY, AUD and INR respectively. For the positive exposure, PCM was found to have a positively significant relationship with EUR, AUD and INR. The coefficients for these were (EUR = 3.789, P -value < 0.01 , AUD = 9.561, P -value < 0.01 and INR= 4.999 P -value > 0.05).

In contrast, PCM was found to be negatively significant with JPY exchange rate exposure with the coefficient being (-5.026, P -value < 0.05). Moreover, for positive impact, the PCM was found to be negatively significant with JPY with coefficient (-0.703 P -value < 0.05). In contrast, for negative coefficient estimated, the profit margin was found to be negatively significantly with GBP and INR with coefficient (-1.351, P -value < 0.01 and -1.886, P -value < 0.05). This study, on average, the PCM was positively and significant exposure to foreign exchange rate in the two estimates (positive and negative firms).

Table (6.7) Determinants of foreign exchange exposure positive firms for monthly data															
	<i>N</i>	<i>Intercept</i>	<i>Debt</i>	<i>Asset turn over</i>	<i>ROE</i>	<i>Size</i>	<i>Market to book</i>	<i>Asset tangibility</i>	<i>INDHERF</i>	<i>PCM</i>	<i>Profit margin</i>	<i>Gross margin</i>	<i>R-squared</i>	<i>F – Stat</i>	<i>Durbin Watson</i>
<i>GBP</i>	<i>19</i>	<i>0.267</i>	<i>0.41</i>	<i>-0.057</i>	<i>0.065</i>	<i>-0.181</i>	<i>0.02</i>	<i>0.493</i>	<i>-16.335</i>	<i>3.932</i>	<i>1.063</i>	<i>-0.435</i>	<i>0.73</i>	<i>2.17</i>	<i>2.310</i>
		<i>0.325</i>	<i>(0.210)*</i>	<i>0.148</i>	<i>(0.014)***</i>	<i>(0.021)***</i>	<i>(0.01)*</i>	<i>(0.124)***</i>	<i>10.933</i>	<i>(2.101)*</i>	<i>(0.521)*</i>	<i>0.904</i>			
<i>EUR</i>	<i>20</i>	<i>0.082</i>	<i>0.587</i>	<i>-0.157</i>	<i>0.031</i>	<i>-0.027</i>	<i>-0.245</i>	<i>0.338</i>	<i>13.669</i>	<i>-1.894</i>	<i>-0.084</i>	—	<i>0.80</i>	<i>4.603</i>	<i>2.14</i>
		<i>0.437</i>	<i>(0.105)***</i>	<i>(0.069)**</i>	<i>(0.005)***</i>	<i>0.082</i>	<i>(0.049)***</i>	<i>(0.120)**</i>	<i>(5.151)**</i>	<i>1.465</i>	<i>0.096</i>	—			
<i>JPY</i>	<i>33</i>	<i>3.631</i>	<i>2.432</i>	<i>-0.54</i>	<i>0.013</i>	<i>-0.537</i>	<i>0.036</i>	<i>-0.788</i>	<i>6.64</i>	<i>3.186</i>	<i>-0.703</i>	<i>-0.78</i>	<i>0.55</i>	<i>2.74**</i>	<i>2.12</i>
		<i>(0.960)***</i>	<i>(0.429)***</i>	<i>(0.177)***</i>	<i>(0.007)*</i>	<i>(0.182)***</i>	<i>0.075</i>	<i>0.525</i>	<i>7.037</i>	<i>1.988</i>	<i>(0.298)**</i>	<i>(0.379)*</i>			
<i>AUD</i>	<i>19</i>	<i>3.475</i>	<i>-0.255</i>	<i>0.305</i>	<i>0.018</i>	<i>-0.799</i>	<i>0.02</i>	<i>0.728</i>	<i>-3.151</i>	<i>11.082</i>	<i>0.899</i>	<i>1.468</i>	<i>0.823</i>	<i>3.744**</i>	<i>2.138</i>
		<i>(0.464)***</i>	<i>0.319</i>	<i>(0.158)*</i>	<i>(0.006)**</i>	<i>(0.054)***</i>	<i>0.071</i>	<i>(0.339)*</i>	<i>5.04</i>	<i>(1.385)***</i>	<i>0.75</i>	<i>(0.197)***</i>			
<i>INR</i>	<i>18</i>	<i>2.454</i>	<i>-1.187</i>	<i>0.576</i>	—	<i>-0.652</i>	—	<i>1.276</i>	<i>-23.654</i>	<i>13.115</i>	<i>2.001</i>	<i>3.252</i>	<i>0.512</i>	<i>1.184</i>	<i>1.957</i>
		<i>(0.913)**</i>	<i>0.787</i>	<i>(0.283)*</i>	—	<i>(0.263)**</i>	—	<i>(0.464)**</i>	<i>15.236</i>	<i>(3.485)***</i>	<i>(0.675)**</i>	<i>1.962</i>			
<i>EQW</i>	<i>12</i>	<i>near singular matrix in per whitening regressing</i>													

Estimates in the determination in exposure for the absolute value of positive exposure of exchange rate exposure estimated based on the work of Jorion Model (1991). Definitions of the variable in this table are the same as in Table (6.6). Newey–West corrected standard errors in parentheses.

$$|\hat{\gamma}_i| = \alpha + \beta_1 \text{Debt} + \beta_2 \text{Turnover} + \beta_3 \text{ROE} + \beta_4 \text{Size} + \beta_5 \text{MkBk} + \beta_6 \text{IndHerf} + \beta_7 \text{AssetTangibility} + \beta_8 \text{PCM} + \beta_9 \text{profit margin} + \beta_{10} \text{Gross margin} + \sum_{j=10}^n \beta_j \text{SIC}_j + \varepsilon$$

***, **, and * indicate significance at the 0.01, 0.05 and 0.10 level, respectively.
(—) perfect collinearity

The positive sign exposure of the PCM with the exchange rate of GBP, AUD and INR for positive estimated for monthly data and the positive sign exposure of the PCM with the exchange rate of EUR, AUD and INR in the case of negative firms indicates that UAE domestic firms are in a competitive situation with destination countries of these currencies. In particular, UAE domestic firms with a higher degree of high price elasticity of imports increase the effect of imports on PCM. In addition, the findings reveal that with the UAE firms' production structure on imported inputs, the appreciation of real exchange rate seems to significantly lower for PCM through reducing of input costs.

The final two factors are profit margin and gross margin. The finding of the determinants model in the case of positive firms indicates that the profit margin was significant with JPY and INR foreign exchange rates with coefficient (-0.703 , $P\text{-value} < 0.05$ and 2.001 , $P\text{-value} > 0.01$) respectively. In case of negative firms estimated the profit margin was found to be significant with negative sign with GBP and INR with value (-1.351 , $P\text{-value} < 0.01$ and -1.886 $P\text{-value} > 0.01$) respectively. It can be seen the profit margins have a negative sign more than positive sign with the exchange rate exposure.

The results seem to suggest that firms with negative sign with some exchange rate currencies are in a competitive situation with destination countries of these currencies, because whenever decreased market share of firms due to competition with other companies occurred it decreased the value of their profits margin. The opposite is true in this situation; firms with positive sign with exchange rate have low risk of competition because of their flexibility in pricing of goods and services in the market.

Table (6.8) Determinants of foreign exchange exposure Negative firms for one month horizon															
	<i>N</i>	<i>Intercept</i>	<i>Debt</i>	<i>Asset turnover</i>	<i>ROE</i>	<i>Size</i>	<i>Market to book</i>	<i>Asset tangibility</i>	<i>INDHERF</i>	<i>PCM</i>	<i>Profit margin</i>	<i>Gross margin</i>	<i>R-squared</i>	<i>F – Stat</i>	<i>Durbin Watson</i>
<i>GBP</i>	<i>30</i>	<i>3.182</i>	<i>1.55</i>	<i>-0.128</i>	—	<i>-0.386</i>	<i>0.066</i>	—	<i>-15.291</i>	<i>4.494</i>	<i>-1.351</i>	<i>-0.852</i>	<i>0.38</i>	<i>1.61</i>	<i>2.32</i>
		<i>2.602</i>	<i>(0.0600)**</i>	<i>0.146</i>	—	<i>0.413</i>	<i>0.06</i>	—	<i>13.827</i>	<i>4.41</i>	<i>0.415)***</i>	<i>1.102</i>			
<i>EUR</i>	<i>29</i>	<i>1.901</i>	<i>-0.934</i>	—	—	—	<i>-0.054</i>	<i>-0.585</i>	<i>-18.527</i>	<i>3.789</i>	<i>-0.722</i>	<i>-0.973</i>	<i>0.16</i>	<i>0.602</i>	<i>2.16</i>
		<i>(0.863)**</i>	<i>0.6</i>	—	—	—	<i>(0.027)**</i>	<i>0.378</i>	<i>15.05</i>	<i>(1.079)***</i>	<i>0.511</i>	<i>1.005</i>			
<i>JPY</i>	<i>16</i>	<i>-2.321</i>	<i>0.05</i>	<i>0.404</i>	<i>0.058</i>	<i>0.132</i>	<i>0.038</i>	<i>-1.085</i>	<i>3.378</i>	<i>-5.026</i>	—	<i>5.044</i>	<i>0.87</i>	<i>4.71**</i>	<i>0.49</i>
		<i>(0.308)***</i>	<i>0.178</i>	<i>(0.100)***</i>	<i>(0.009)***</i>	<i>0.075</i>	<i>(0.005)***</i>	<i>(0.348)**</i>	<i>4.775</i>	<i>(1.626)**</i>	—	<i>(0.519)***</i>			
<i>AUD</i>	<i>30</i>	<i>3.712</i>	<i>-0.153</i>	<i>-0.308</i>	<i>0.002</i>	<i>-0.482</i>	<i>-0.057</i>	<i>-0.207</i>	<i>-9.181</i>	<i>9.561</i>	—	<i>-0.389</i>	<i>0.42</i>	<i>1.63</i>	<i>1.95</i>
		<i>(0.611)***</i>	<i>0.393</i>	<i>(0.174)*</i>	<i>0.005</i>	<i>(0.077)***</i>	<i>(0.011)***</i>	<i>0.394</i>	<i>11.909</i>	<i>(1.495)***</i>	—	<i>0.558</i>			
<i>INR</i>	<i>31</i>	<i>4.274</i>	<i>0.985</i>	—	<i>0.032</i>	<i>-0.431</i>	<i>-0.14</i>	<i>-1.874</i>	—	<i>4.999</i>	<i>-1.886</i>	<i>-1.289</i>	<i>0.31</i>	<i>1.056</i>	<i>2.72</i>
		<i>(1.433)***</i>	<i>1.175</i>	—	<i>(0.013)**</i>	<i>(0.191)**</i>	<i>(0.035)***</i>	<i>(0.709)**</i>	—	<i>(2.835)*</i>	<i>(0.840)**</i>	<i>1.491</i>			
<i>EQW</i>	<i>37</i>	<i>-0.118</i>	<i>-1.176</i>	<i>-0.132</i>		<i>0.274</i>	<i>0.037</i>	<i>-0.457</i>	<i>-9.755</i>	<i>0.624</i>	—	<i>-0.642</i>	<i>0.36</i>	<i>2.002*</i>	<i>2.48</i>
		<i>0.627</i>	<i>(0.381)***</i>	<i>0.157</i>		<i>(0.142)*</i>	<i>(0.008)***</i>	<i>0.327</i>	<i>(4.466)**</i>	<i>1.312</i>		<i>0.355</i>			

Estimates in the determination in exposure for the absolute value of negative exposure of exchange rate exposure estimated based on the work of Jorion Model (1991). Definitions of the variable in this table are the same as in Table (6.6). Newey–West corrected standard errors in parentheses.

$$|\hat{\gamma}_i| = \alpha + \beta_1 \text{Debt} + \beta_2 \text{Turnover} + \beta_3 \text{ROE} + \beta_4 \text{Size} + \beta_5 \text{MkBk} + \beta_6 \text{IndHerf} + \beta_7 \text{AssetTangibility} + \beta_8 \text{PCM} + \beta_9 \text{profit margin} + \beta_{10} \text{Gross margin} + \sum_{j=10}^n \beta_j \text{SIC}_j + \varepsilon$$

***, **, and * indicate significance at the 0.01, 0.05 and 0.10 level, respectively.

(—) perfect collinearity

The gross margin was found to have a negative effect on positive firms with JPY exchange rate with value (-0.780, P-value > 0.05) and positive effect on INR exchange rate with value (1.468, P-value < 0.01). However, the gross margin have just correlated with JPY exchange rate with value 5.044, P-value < 0.01 in the case of negative firms. This result can be explained as follow: firms with positive sign of gross margin are able to compete more effectively than companies with lower gross margins.

6.5 Summary

This chapter assumed that domestic firms are exposed to foreign exchange rate with different sign for all currencies. In fact, the exposure for foreign exchange rate to UAE domestic firms depends on terms of trade between the two countries and the fluctuation between local currency and foreign exchange rate. This chapter illustrates the outcomes of the analysed data obtained from secondary data. The chapter provides a summary of descriptive statistics for the variables used in the analysis. In addition, this chapter presents the estimated foreign exchange rate exposure for UAE non-financial companies. The results are reported in each table in three categories: (i) for all firms, (ii) for only those with positive exposure, and (iii) those with negative exposure. The results of the analysis indicate that domestic firms are exposed to foreign exchange rate in many cases.

In fact, domestic firms' exposure to foreign exchange rate is not significantly different from the exposure faced by multinational firms. The result of the exposure of exchange rate lists negative and positive firms at the 0.10 and 0.05 significance levels. However, the estimates indicate that most of the exposures for domestic firms

have negative significant coefficients, implying that domestic firms face significant indirect competition. The result has revealed different mixed results for the three categories (for all firms, for those with positive exposure, and those with negative exposure) for the financial and operational strength for most of the currency exchange rates.

CHAPTER 7 FOREIGN EXCHANGE RATE OF SERVICES FIRMS vs. FOREIGN EXCHANGE RATE OF INDUSTRIAL FIRMS

7.1 Introduction

At the industry level, changes in the exchange rate with foreign companies can affect the terms of competition for local importers and exporters. Domestic companies using international price inputs for purchase and resales will see their transaction value affected by changes in foreign currencies (El-Masry 2006). The change in the value of local stock returns associated with a change in the exchange rate is determined by the extent to which an industry imports, exports or competes with each other in the same market. Bartram, Dufey and Frenkel (2005) argued that change in foreign exchange rate exposure is determined by an environment of competition.

Dominguez and Tesar (2006) explained that industry activities have a relationship with exposure to exchange rates. For example, the depreciation or the appreciation of the United Arab Emirates' dirham can be beneficial for some industries and detrimental for others. The depreciation may be beneficial for exporting companies in competing with foreign companies; and detrimental for importing companies that compete with domestic companies. For this reason, the effect on a company of exchange rate exposure will depend on the extent of importing, exporting and the competitive environment.

An industry's competitive structure is a very important factor in the determination of a firm's exposure. Firms that have high levels of exports (import) may suffer (benefit) from local home currency appreciation (depreciation) due to its products facing less (more) competition, hence, the firm's exposure should either be positive

or negative. More specifically, an analysis of the industry is very important in determining the level of exposure. In addition, the sensitivity of the exchange rate exposure is dependent on conditions such as demand elasticity, local and international competition, and firm characteristics. Consequently, the study of these firm characteristics allows a comparison of the level of exposure between industries (Feinberg 1989). In other words, the increase (appreciation) of the local home currency sometimes has an adverse effect on the competitive situation for exporters and importers in competing industries. In contrast, the positive impact on the competitive situation occurs when the local currency is decreased (depreciation).

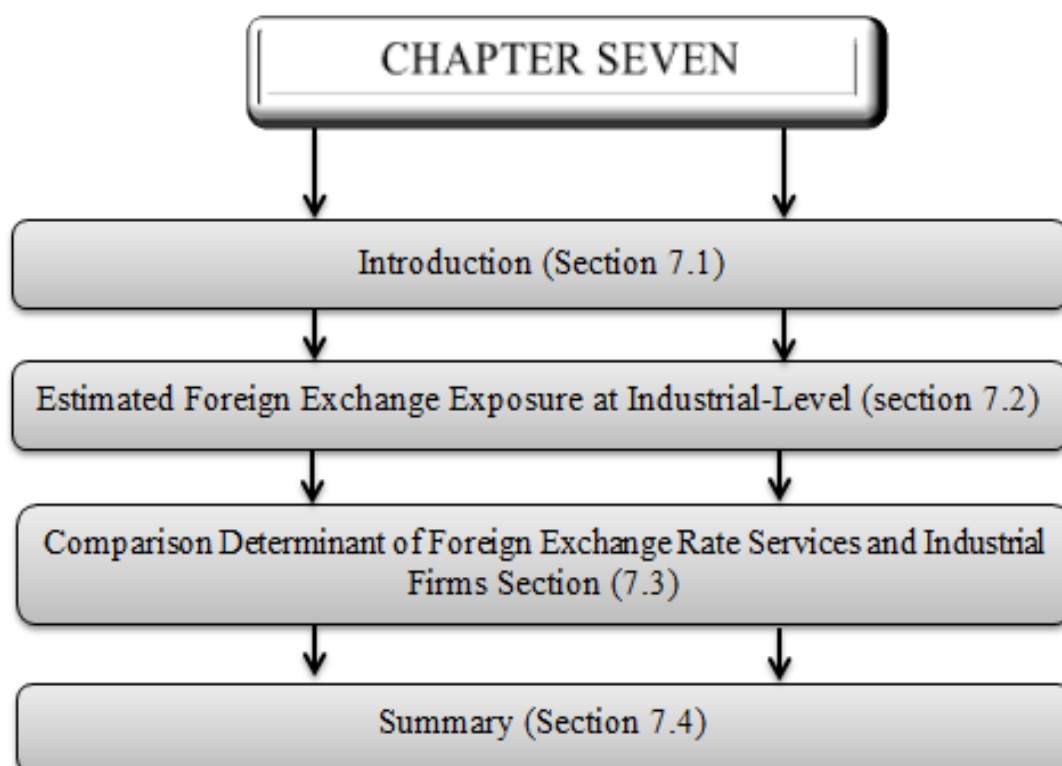
The depreciation of the UAE AED would tend to benefit domestic firms against foreign firms due to it enabling local companies to meet foreign competition, while an appreciation would tend to be harmful to domestic firms. On the other hand, a negative and significant exposure coefficient would mean that changes in an exchange rate tend to negatively affect firms' stock returns. If a firm is primarily import-oriented, then a depreciation of the UAE AED would tend to be detrimental and an appreciation would tend to be beneficial to this firm.

The remainder of this chapter looks at the exposure of the exchange rate between services and industrial domestic UAE firms and the extent of the level of sensitivity of the exposure. Thus, the assumption of this chapter is that companies in different sectors experience dissimilar competition and, therefore, have different exposure. Within this study, the slope coefficient in the equation (1) in the previous chapter represents the exposure of exchange rate in two factor regression model of a firm's monthly stock returns; monthly market returns and monthly changes in exchange rates for six currencies (Europe euro, Japanese yen, UK pound, Australian dollar, and

Indian rupee as well as equally weighted exchange rate). This coefficient was estimated for the level of exchange rate exposure for every firm in this study. The values for the residual exchange exposure in equation (1) become the dependent variable for the multivariate regressions undertaken in the subsequent steps of the analysis in the equations (2-7). All models (1-8) have been estimated by OLS.

This chapter is organised as follows: Section 7.2 describes the estimated foreign exchange rate exposure for industry-level (services and industrial); and Section 7.3 establishes determinants of foreign exchange exposure for services firms vs. the determinants of foreign exchange exposure for industrial firms of UAE non-financial companies. The results are reported in each table in three categories (i) foreign exchange rate exposure in the services and industrial sector; (ii) for services firms; and (iii) for industrial firms of UAE non-financial companies.

Figure 7.1: Outline of Chapter 7



7.2 Estimated Foreign Exchange Exposure at Industry-Level (Services and Industrial)

The curves in Figure 7.2 to 7.6 indicate the fluctuation of total exposure to the foreign exchange rate (Europe euro, Japanese yen, UK pound, Australian dollar, and Indian rupee, as well as equally weighted exchange rate) against the UAE AED for services and industrial firms.

Figure 7.2: Exposure of GBP on UAEs' Firms

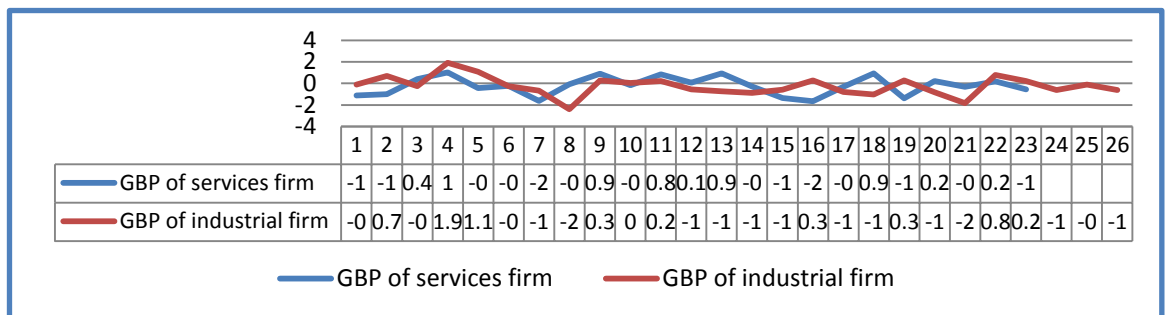


Figure 7.3: Exposure of EUR on UAEs' Firms

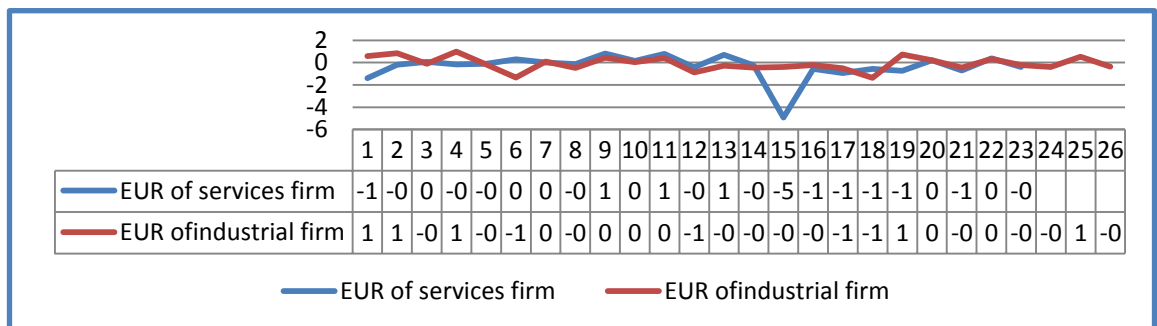


Figure 7.4: Exposure of JPY on UAEs' Firms

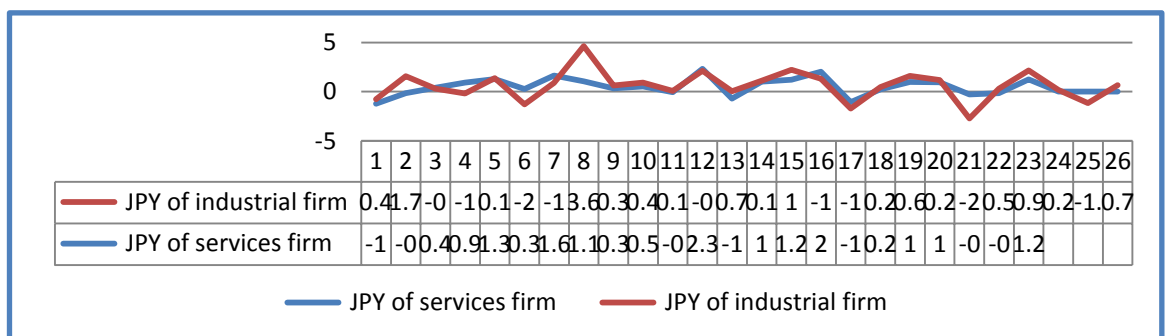


Figure 7.5: Exposure of AUD on UAEs' Firms

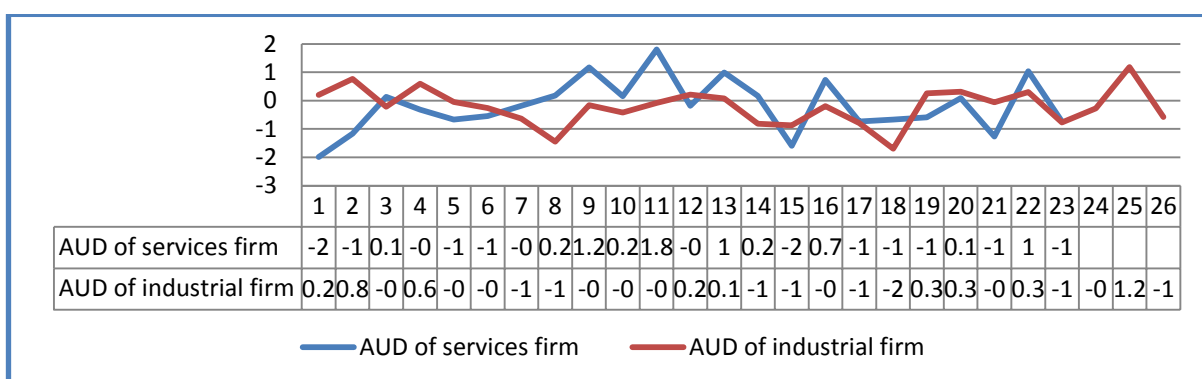


Figure 7.6: Exposure of INR on UAEs' Firms

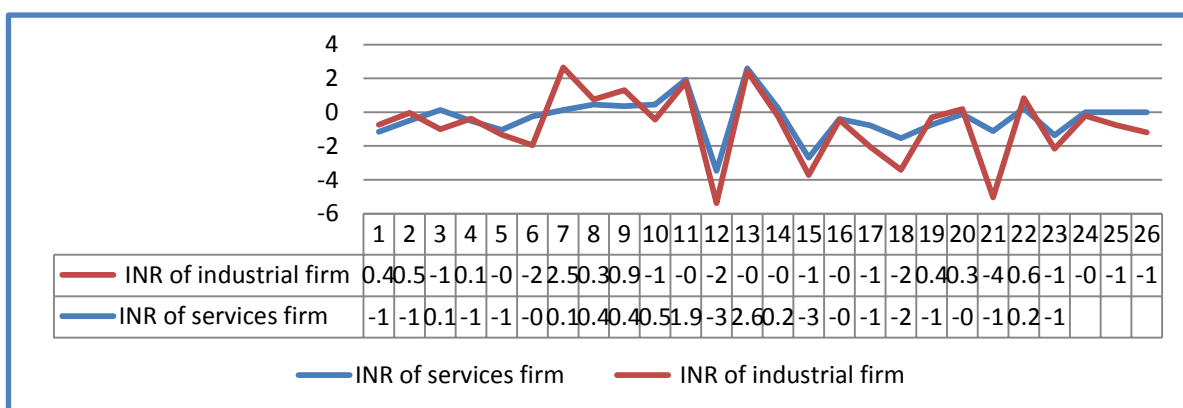
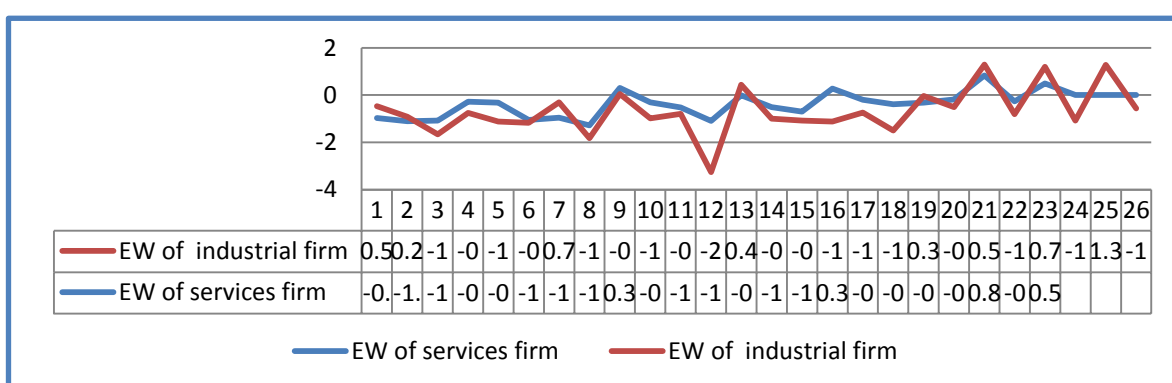


Figure 7.7: Exposure of EQW on UAEs' Firms



Tables 7.1 and 7.2 provide a description of industry-level (services and industrial) exchange rate exposure for domestic companies for monthly data. These estimates are the estimated regression coefficient for the predictor variable from the fitted multiple regression model. Estimates are reported for all currencies, as well as for

weighted index. These tables provide information about the exposures to different currencies used in this study. The tables also provide details on the number of services and industrial firms that have been estimated. In addition, tables 7.1 and 7.2 show the descriptive statistics of estimates of foreign exchange exposure for services and industrial firms with positive and negative exposure.

For GBP exchange rate exposure, 39% of services companies had positive coefficient with a mean of 0.614 and standard deviation of 0.387. The remaining 61% reported negative exposure (mean = -0.744, SD = 0.579) for services firm. The number of positive and negative service firms that have exposure with GBP exchange rate exposure is 15 firms. This number represents 65% of service firms having exposure with GBP currency at 0.10 and 0.05 levels. To divide the number of exposure to GBP between positive firms and negative firms, the result show 5 firms have positive significant exposure, whereas 10 firms have negative significant exposure. In this case, the number of negative firms' exposure on average is more than firms with positive exposure and then most of services companies have negative significant coefficient. This result can be explained that the value of services firm is adversely affected by a depreciation of the GBP against the US dollar.

On the other hand, industrial firms have (14) firms that have significant exposure with GBP exchange rate. This indicates that 54% of industrial firms have positive and negative significant exposure with GBP exchange rate. This percentage can be explained as 6 of 26 industrial firms have positive significant exposure, whereas 8 of 26 industrial firms have negative significant exposure. The industrial firms had positive exposure with GBP exchange rate with a mean of 0.575 and standard deviation of 0.567. The remaining 65% of industrial firms had negative exposure

with GBP exchange rate with a mean of -0.762 and standard deviation of 0.601 . By comparing services firms and industrial firms' exposure, the result seem too close for positive and negative coefficient and the percentage of GBP negative exchange rate exposure coefficients of this currency outweighs positive exposure coefficients in both sectors (service and industrial firms). This finding indicates that domestic services firms and industrial firms are affected when the GBP depreciates because it decreases their profitability and increases the firms' cost of production and this will lead to lower value of firms.

Moreover, it was observed that just five of the 23 firms have positively significant exposure with GBP exchange rate in the case of services firms, compared with six of 26 firms having positive exposure with GBP exchange rate in the case of industrial firms. This finding indicates that the returns of firms are positively affected by an appreciation of the UAE AED against the GBP in services and industrial firms. On the other hand, ten out of 26 firms have negative exposure with GBP exchange rates in the case of services firms; while 8 of the 26 industrial firms exhibit negative exposure. It can be said that the result of services and industrial firms are almost identically significant in positive and negative estimated.

The result of EUR exchange rate exposure for services firms is similar to those reported for industrial firms. Of the services firms, 39% demonstrate positive exposure with a mean of 0.381 and standard deviation of 0.311 ; compared to industrial firms with 0.42% positive exposure with a mean of 0.468 and standard deviation of 0.301 . The remaining 61% of services firms reported negative exposure with a mean of -0.822 and standard deviation of 1.231 ; while 0.58% of industrial firms had negative exposure with a mean of -0.506 and standard deviation 0.391 .

The results also reveal that the number of services firms exposed to EUR exchange rate is 16 of 23 services firm at 0.05 and 0.10 levels; this number represents that 69% of services firms have significant exposure with EUR exchange rate. This number observes that 8 firms have negative significant exposure with EUR exchange rate, whereas 6 firms have positive significant exposure with EUR exchange rate. On the other hand, the number of industrial firms significantly exposed to EUR exchange rate is similar as reported earlier with services firms. The estimated exposure with industrial firms observes that the ten industrial firms exhibit negative foreign exchange rate exposure coefficients, while four industries have positive exposure. This result indicates that the value of services and industrial firms are, on average, negatively affected by a depreciation of the UAE AED against the EUR exchange rate.

Table (7.1): Descriptive statistics of estimates of foreign exchange exposure for services firm with positive and negative exposure

	Full sample			Positives			Negative			Significant at the 0.10 level		Significant at the 0.05 level	
	N	Mean	STDEVA	N	Mean	STDEVA	N	Mean	STDEVA	Total	+/-	Total	+/-
GBP	23	-0.213	0.844	9	0.614	0.387	14	-0.744	0.579	2	0/2	13	5/8
EUR	23	-0.351	1.136	9	0.381	0.311	14	-0.822	1.231	2	0/2	14	6/8
JPY	23	0.544	0.918	16	1.024	0.609	7	-0.52	0.475	3	1/2	13	12/1
AUD	23	-0.182	0.923	10	0.644	0.592	13	-0.817	0.542	1	0/1	15	6/9
INR	23	-0.400	1.29	9	0.722	0.895	14	-1.121	0.944	4	1/3	14	6/8
EQW	23	0.185	0.302	4	0.474	0.259	19	-0.974	0.223	1	0/1	15	7/8

Averaged estimates of residual exchange rate exposure for the 23 domestic firms used in the sample the two factor residual exchange rate model. Estimates are for each of the foreign exchange rate measures for monthly horizons. The full sample is divided between negative and positive exposures and reported separately. GBP = UK pound, EUR= Europe euro, JPY = Japanese yen, AUD = Australian dollar, INR = Indian rupee, EQW = equally weighted exchange rate. This table estimated by this model $R_{i,t} = a + \beta_i R_{m,t} + \gamma_i XR_{j,t} + \varepsilon_i$

The results of the analysis indicate that the JPY exchange rate exposure for services firms and industrial firms are almost the same. Sixteen of the 23 firms had positive exposure with a mean of 1.024 and standard deviation 0.609; compared to 17 of the

26 industrial firms showing positive exposure with a mean of 0.688 and standard deviation 0.853. The remaining 7 of the 23 services firms reported negative exposure with a mean of –0.520 and standard deviation 0.475; compared to 9 out of 26 industrial firms reporting negative exposure with a mean of –0.958 and standard deviation 0.718. Furthermore, tables 7.1 and 7.2 show that 14 (61 percent) of services firms are significantly exposed to the JPY exchange rate in the case of positive exposure, compared to 10 (38 percent) of industrial firms. Conversely, 3 (13 percent) of services firms’ are negatively significantly exposed to the JPY exchange rate compared to 4 (15 per cent) of industrial firms. Services firms and industrial firms are, on average, positively related to the movement of the Japanese yen, this indicating that, on average, a gain in value when the UAE AED appreciates against the Japanese yen.

Table (7.2) Descriptive statistics of estimates of foreign exchange exposure for industrial firms with positive and negative exposure

	Full sample			Positives			Negative			Significant at the 0.10 level		Significant at the 0.05 level	
	N	Mean	STDEVA	N	Mean	STDEVA	N	Mean	STDEVA	Total	+/-	Total	+/-
GBP	26	-0.25	0.88	10	0.575	0.567	16	-0.762	0.601	2	1/1	12	5/7
EUR	26	-0.094	0.602	11	0.468	0.301	15	-0.506	0.391	2	1/1	12	3/9
JPY	26	0.118	1.126	17	0.688	0.853	9	-0.958	0.718	1	1/0	13	9/4
AUD	26	-0.208	0.644	9	0.435	0.354	17	-0.549	0.479	1	1/0	12	2/10
INR	26	-0.451	1.203	9	0.677	0.724	17	-1.049	0.95	1	0/1	14	2/12
EQW	26	0.566	0.32	8	0.566	0.334	18	-0.683	0.492	1	0/1	13	3/10

Averaged estimates of residual exchange rate exposure for the 26 domestic firms used in the sample the two factor residual exchange rate model. Estimates are for each of the foreign exchange rate measures for monthly horizons. The full sample is divided between negative and positive exposures and reported separately. GBP = UK pound, EUR= Europe euro, JPY = Japanese yen, AUD = Australian dollar, INR = Indian rupee, EQW = equally weighted exchange rate. This table estimated by this model $R_{i,t} = a + \beta_i R_{m,t} + \gamma_i XR_{j,t} + \varepsilon_i$

The findings of AUD exchange rate exposure (see tables 7.1 and 7.2) show that 43% of services companies had positive sign exposure with a mean of 0.644 and standard deviation 0.592; compared to 34% of industrial firms having positive sign with a

mean of 0.435 and standard deviation 0.354. The remaining 57% of services firm reported negative sign exposure with a mean of -0.817 and standard deviation 0.542; compared with industrial firms with 0.65% negative exposure with a mean of -0.549 and standard deviation 0.479. Furthermore, tables 7.1 and 7.2 show that the number of positively significant exposures in services firms is greater than industrial firms, where the number of firms in the services sector equals (6) firms having exposure with AUD exchange rate; while the number in the industrial sector equals (3) firms having exposure to the AUD exchange rate. This indicates that the value of services firms appreciates when the AUD exchange rate increases compared to industrial firms. In contrast, the findings further show there is a negative correlation between services firms, industrial firms and AUD exchange rate. The empirical findings are in accordance with GBP and EUR exchange rates. From Tables 7.1 and 7.2, it is found that a number of services firms are negatively significantly exposed to changes in the AUD exchange rate with 10 firms at 0.05 and 0.10 levels, whereas the number of industrial firms is also 10. The negative and significant exposure coefficient to Australian dollar may be explained by the fact that the movement of the Australian dollar tends to negatively affect the value of services industrial firms.

For the INR exchange rate, 9 (39%) of 23 firms had positive coefficients with a mean of 0.722 and standard deviation 0.895; compared to 9 (35%) of 26 industrial firms with a mean of 0.677 and standard deviation 0.724. The remaining 61% (14 firms) of services firms reported negative coefficients with a mean of -1.121 and standard deviation 0.944; compared to industrial firms with 0.65% (17 firms) having negative coefficients with a mean of -1.049 and standard deviation 0.950. Tables 7.1 and 7.2 also show that 30% (7 of 23 services firms) of the sample services firms are positively significantly exposed with INR exchange rate at 0.10 and 0.05 levels,

compared to 10% (2 of 26 industrial firms) of firms' stock returns being positively significantly exposed to change in the INR exchange rates. In contrast, 47% (11 of 23 services firms) of the services sector display negatively significant exposure with INR exchange rate, compared to 0.50 (13 of 26 industrial firms) of the industrial sector displaying negatively significant exposure to the INR exchange rate.

It seems that the number of negative significant firms is more the number of positive firms in two kinds of firms (services firms and industrial firms). Furthermore, negative sign of services and industrial firms are almost the same (47% and 0.50 respectively); this implies that the value of domestic firms that have negative significant exposure with Indian rupee are adversely affected by a depreciation of the Indian rupee against the UAE dirham. This finding suggest that the UAE domestic firms have cost exposure, where a depreciation of the Indian rupee leads to a reduction in profitability and an increase in cost production for domestic firms. Also, UAE domestic firms are under pressure of competition with firms or goods coming from India because India is one of the major trade partners with the UAE, as shown in chapter two.

The final currency in this analysis is equally weighted (EQW) exchange rate. Tables 7.1 and 7.2 show services firms are less exposed than industrial firms in this currency. Seventeen percent (4 of 23) of services firms had positive exposure with a mean of 0.474 and standard deviation 0.259; compared to 8 (33%) out of 26 industries firms demonstrating positive exposure with a mean of 0.566 and standard deviation 0.334. The remaining 73% (19 firms) of services firms reported negative exposure with a mean of -0.974 and standard deviation 0.233; compared with 0.69% of industrial firms (18 firms) showing negative exposure with a mean of -0.683 and

standard deviation 0.492. Domestic firms in similar service and industrial sectors, on average, are negative correlated with EQW exchange rate.

Figure 7.8: Significant Exposure for Services Firms

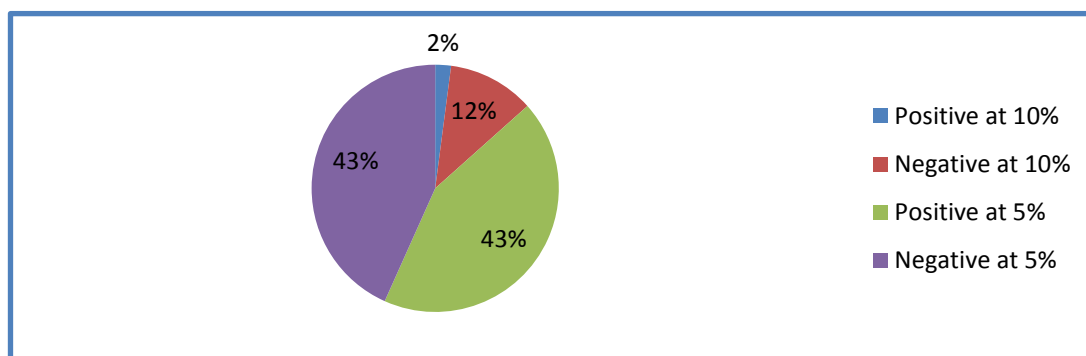
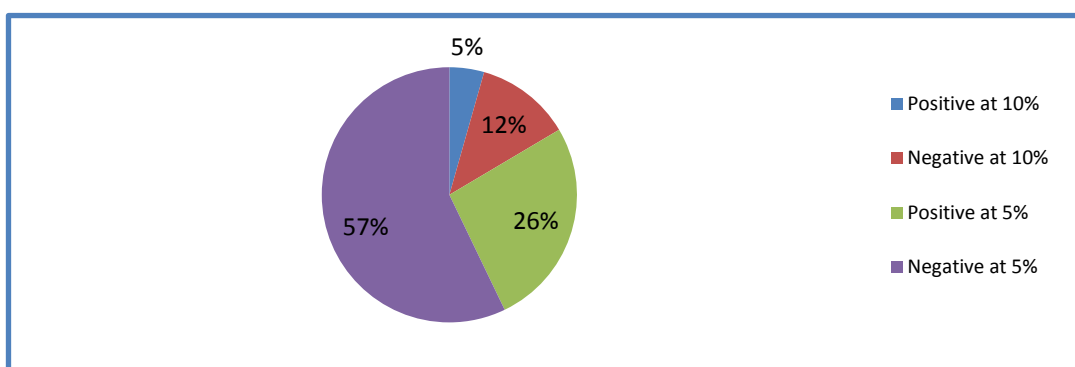


Figure 7.9: Significant Exposure for Industrial Firms



Tables (7.3 and 7.4) and figures (7.7 and 7.8) list negative and positive exposure of services and industrial firms to foreign exchange rates and also provide descriptions about these exposures. From figures 7.7 and 7.8, services and industrial firms have similar positive and negative exposure at 10%. On the other hand, service firms are significantly different with industrial firms showing positive exposure at 5%. Domestic firms are, on average, positively significant related to the movement of Japanese yen and negatively significant exposure to GBP, EUR, AUD, INR, and EQW in both sectors of firms, indicating that UAE domestic firms have negatively and significantly exposure coefficient with that exchange rate currencies (GBP,

EUR, AUD, INR, and EQW) and tend to have a negative effect on the value of domestic firms.

Table 7.3 Descriptive statistics for coefficient and exposure for services firms

Currencies	No of firms	coefficient		Significant at 10%		Significant at 5%	
		Positive	Negative	Positive	Negative	Positive	Negative
GBP	23	9	14	0	2	5	8
EUR	23	9	14	0	2	6	8
JPY	23	16	7	1	2	12	1
AUD	23	10	13	0	1	6	9
INR	23	9	14	1	3	6	8
EQW	23	4	19	0	1	7	8
Total of significant exposure for all firms				2	11	42	42

As can be seen from this result, the number of significant firms sometimes is bigger than the number of the sample used in this study, because some firms have been exposed to one currency while others are exposed to two or more currencies.

Table 7.4 Descriptive statistics for coefficient and exposure for industrial firms

Currencies	No of firms	coefficient		Significant at 10%		Significant at 5%	
		Positive	Negative	Positive	Negative	Positive	Negative
GBP	26	10	16	1	1	5	7
EUR	26	11	15	1	1	3	9
JPY	26	17	9	1	0	9	4
AUD	26	9	17	1	0	2	10
INR	26	9	17	0	1	2	12
EQW	26	8	18	0	1	3	10
Total of significant exposure for all firms				4	11	24	52

7.3 Comparison Determinants of Foreign Exchange Exposure for Services and Industrial Firms

This section of the study aims to explore the differences in exposure of the exchange rate between two sectors (services firms and industrial firms). In addition, the study seeks to examine whether UAE domestic firms' foreign exchange rates are

determined by factors which may increase or decrease their exposure to exchange rates in different sectors (services and industrial firms). The results reported in tables 7.3 and 7.4 comprise two categories: (i) for services firms; and (ii) for industrial firms. The analysis aims to investigate to what extent these determinants affect each of these two sectors in establishing the degree of competition in these sectors.

Tables 7.3 and 7.4 present a summary of determinants of foreign exchange exposure for services and industrial firms mentioned above at the firm level. In the case of services firms, the overall model fit was significant with European EUR, Japan JPY and Australian AUD with significance at ($F = 2.296, P > 0.05$, $F = 2.380, P > 0.05$, and $F = 4.919, P < 0.01$) respectively. Compared with industrial firms, the overall model fit was significant with the European EUR, Japan JPY, Australian dollar AUD, and equally weighted index EQW with significance at ($F = 2.296, P > 0.05$, $F = 2.380, P > 0.05$, $F = 4.919, P < 0.01$ and $F = 2.380 > 0.05$) respectively.

Debt ratio was found to be a significant predictor of exposure in services firms. The result of debt ratio was positively significantly related to JPY exposure and negatively significantly related to AUD exposure. The estimated coefficients were ($2.196, P < 0.01$; and $-0.976 P > 0.01$). In the case of industrial firms, however, the debt ratio was found to be negatively related with INR and EQW exchange rates with coefficients ($-2.808 P < 0.01$; and $-0.963 P < 0.01$). These results indicate that services firms have positive and negative exposure, whereas industrial firms only have negative exposure with debt ratio. The level of debt ratio in this study is proxy to adjust and manage foreign exchange rates. Firms with a higher debt ratio will expect to face higher costs of bankruptcy and financial risk, and should be positively related to the exchange rate exposure. In this estimate, service firms have more

exposure than industrial firms, because services firms have a positive significant relationship with the JPY exchange rate. In contrast, industrial firms exhibit just a negative relationship with INR and EQW exchange rate. However, from the estimation of industrial firms the JPY and AUD currencies were not estimated with the debt ratio due to this factor affecting the regression, thus, the researcher has avoided this factor to improve the regression.

Tables 7.3 and 7.4 show asset turnover to be negatively significantly related to exposure with GBP, JPY and AUD exchange rates with significance at ($-0.752, P < 0.01$, $-0.340, P > 0.05$, and $-0.361, P < 0.05$) in the case of services firms. On the other hand, the asset turnover in the case of industrial firms demonstrated negatively significantly related exposure with GBP and EUR exchange rate with significance ($-0.317, P > 0.05$, and $-0.295, P < 0.01$) and was found to be positively significant to INR with coefficient ($0.746, P < 0.05$). This indicates that services firms experience a greater degree of exposure than industrial firms. This means services firms have lower asset turnover and, in turn, less natural protection against firms that compete in the same market, and have the facility against changes in pricing. Furthermore, the negative significant sign with services firms is more than industrial firms, indicating that domestic firms experience lower asset turnover and facing high exposure to foreign exchange rate and vice versa firms with higher asset turnover have higher natural protection against firms that compete in the same market, and have the facility against changes in pricing.

Compared to the results reported for the ROE for services firms and industrial firms, the findings show that the ROE in services firms has a positive and negative relationship with GBP and JPY exchange rates. The coefficients of these currencies

were -0.019 , $P < 0.01$ and 0.007 , $P < 0.05$ respectively. On the other hand, the ROE in industrial firms has just a positive relationship with GBP, JPY and INR exchange rates, the coefficients being $(0.075, < P 0.01, 0.114, < P 0.01, \text{ and } 0.017, P > 0.05)$ respectively. This finding indicates that industrial firms have more protection against foreign exchange exposure than services firms; due to industrial firms having higher (positively significant) return on equity for profitability by revealing how much profit a company generates with the money invested by shareholders. In contrast, the results reported for the ROE for services firms' exhibit negative significance with GBP, indicating that services firms are under pressure from UK firms or goods that compete in the UAE market. This finding is consistent with the finding in Table 7.1 that services firms' exhibit negative coefficients with GBP exchange rate. This result implies that services firms exhibit negative exposure for the GBP exchange rate, indicating a lower return on equity with an appreciation of the UAE AED against the UK Pound.

However, the findings on firm size differ noticeably from that reported with size of services firms and size of industrial firms. This difference is in terms of currency exposure only, but in terms of exposure the size of services firms and industrial firms are almost the same because both of them have negatively significant exposure. For services firms, the size of firms demonstrated negatively significant exposure with EUR, AUD, and INR with coefficients of -0.354 , $P > 0.05$, -0.556 , $P < 0.01$, and -0.580 , $P > 0.05$ respectively. In contrast, the coefficients for the size of industrial firms are consistently negative with GBP, JPY, AUD and EQW (-0.614 , $P < 0.01$; -1.013 , $P < 0.01$, -0.439 , $P < 0.05$; and -0.216 , $P < 0.05$ respectively. This result indicates that smaller firms in the two sectors are facing significantly more exposure to foreign exchange rates than larger firms. This result is consistent with the findings

of (Aggarwal & Harper 2010) and (He & Ng 1998), but inconsistent with (Doidge, Griffin & Williamson 2006). This finding is also consistent with the findings in the previous chapter (chapter 6) for positive and negative estimate of the size of firm that indicate size of firms exhibits negative exposure coefficient. Moreover, by comparing the size of services firms to the size of industrial firms, there is greater exposure with the size of industrial firms than with the size of services firms.

The relationship between exposure and market-to-book ratio in services firm is different compared to the exposure of market-to-book ratios in industrial firms. The market-to-book ratio was found to have positive exposure with just the JPY exchange rate in services firms with coefficient (0.210, $P > 0.05$), whereas the market-to-book ratio in industrial firms showed negative exposure with GBP, EUR and AUD with coefficients (-0.061 , $P < 0.01$, -0.039 , $P < 0.01$, -0.058 , $P < 0.01$). The findings from the two sectors mean that industrials firms have less exposure than services firms in relation to this factor. Firms with lower levels of market-to-book ratio have lower exposure to foreign exchange rates and vice versa firms with high levels of the market to book have higher exposure.

By comparing asset tangibility of services firms and asset tangibility of industrials firms it is contended that both exhibit similar findings in terms of the currencies they are exposed to, but experience different exposure in terms of positive and negative. The asset tangibility of services firms demonstrated positively significant exposure to GBP and AUD with coefficients (1.421, $P < 0.01$; and 1.607, $P < 0.01$). In contrast, asset tangibility of industrial firms was found to be significant also with GBP and AUD, as well as INR, with negative exposure (-1.168 , $P < 0.05$; -1.352 , $P < 0.01$; and -0.98 , $P > 0.05$) respectively. It can be said that the asset tangibility of services

firms has positive exposure, and asset tangibility of industrial firms has negative exposure. The different exposures mean that higher asset tangibility should reduce the exposure to foreign exchange rates. This indicates that firms with greater asset tangibility face lower exposure; and firms with lower asset tangibility experience higher exposure. The findings show that industrial firms have greater exposure than services firms in relation to this factor due to asset tangibility of industrial firms yielding lower exposure than the asset tangibility of services firms.

The INDHERF factor was found to be a significant determinant of exposure for domestic firms, especially services firms. Moreover, the INDHERF factor has negative significance in both sectors. The increase in the Herfindahl index generally indicates an increase in pricing power and a decrease in competition; whereas the devaluation of the Herfindahl index indicates a value price drop and the high value of competition. Aggarwal and Harper (2010) illustrate that the relationship between Herfindahl index and foreign exchange rate should be negative.

The finding of INDHERF index with service firms was found to be negatively related to exposure with all currencies used in this study except for the EQW exchange rate. The results of R-squared were quite good for most currencies used in this study with value (GBP= 0.47, EUR= 0.65, JPY= 0.70, AUD= 0.80, INR= 0.35 and EQW= 0.27). These implies that 47%, 65%, 0.70%, 80%, 35% and 27% of variability of the dependent variable (Y) was explained by the independent variables (X). In addition, the coefficients of services firms are negatively significant with GBP, EUR, JPY, AUD, and INR ($-3.752 P < 0.01$, $-3.99 P < 0.01$, $-1.681 P < 0.05$, $-3.359 P < 0.01$, and $-2.794 P < 0.05$) respectively.

Table (7.5) Determinants of foreign exchange exposure for services firms																
	Intercept	Debt	Asset over	turn	ROE	Size	Market book	to	Asset tangibility	INDHERF	PCM	Profit margin	Gross margin	R-squared	F-Stat	Durbin Watson
GBP	1.90	-0.239	-0.752		-0.019	-0.072	0.103		1.421	-3.752	8.791	—	-1.593	0.47	1.296	2.86
	(0.680)**	0.417	(0.153)***		(0.004)***	0.118	0.118		(0.336)***	(7.887)***	(2.835)***	—	0.311			
EUR	4.19	-1.47	-0.512		-0.006	-0.354	0.055		0.444	-3.99	15.486	-0.809	-2.429	0.65	2.3*	2.066
	(1.42)**	1.127	0.403		0.007	(0.189)*	0.159		0.536	(1.464)***	(4.599)**	(0.281)**	1.809			
JPY	0.79	2.196	-0.34		0.007	-0.136	0.21		-0.395	-1.681	1.091	-0.126	-0.682	0.70	2.38*	1.42
	0.77	(0.573)***	(0.158)*		(0.003)**	0.174	(0.098)*		0.581	(5.286)**	1.944	0.144	0.39			
AUD	4.212	-0.976	-0.361		-0.005	-0.546	0.035		1.607	-3.359	1.114	-0.083	-1.01	0.80	4.92***	2.906
	(0.267)***	(0.299)***	(0.152)**		0.003	(0.043)***	0.049		(0.211)***	(4.453)***	(0.899)***	0.108	(0.246)***			
INR	4.124	2.119	—		—	-0.58	—		—	-2.794	1.862	-0.411	-2.277	0.35	1.47	1.486
	(1.368)***	1.627	—		—	(0.30)*	—		—	(1.571)**	(2.897)***	(0.130)***	(1.00)**			
EQW	-0.26	-0.993	0.262		-0.005	0.232	0.060		-0.134	-9.27	0.999	0.49	-0.384	0.27	0.454	1.632
	0.843	0.718	0.291		0.004	0.195	0.094		0.518	8.794	2.2	0.43	0.345			

Estimates in the determination in exposure for the absolute value of positive exposure of exchange rate exposure estimated based on the work of Jorion Model (1991). Definitions of the variable in this table are the same as in Table (6.6) in chapter 6. Newey–West corrected standard errors in parentheses.

$$|\hat{\gamma}_i| = \alpha + \beta_1 \text{Debt} + \beta_2 \text{Turnover} + \beta_3 \text{ROE} + \beta_4 \text{Size} + \beta_5 \text{MkBk} + \beta_6 \text{IndHerf} + \beta_7 \text{AssetTangibility} + \beta_8 \text{R\&D} + \beta_9 \text{PCM} + \beta_{10} \text{profit margin} + \beta_{11} \text{Gross margin}$$

$$\sum_{j=2}^n b_i \text{SIC}_j + \varepsilon$$

***, **, and * indicate significance at the 0.01, 0.05 and 0.10 level, respectively.

(—) perfect collinear

On the contrary, the INDHERF explained negative exposure with just the INR exchange rate with coefficient -2.716 $P < 0.05$ in the case of industrial firms. The R squared was quite acceptable with a value 0.59; this indicated that 59% of the variability of the dependent variable (Y) was explained by the independent variable (X). By comparing the two sectors (services firms and industrial firms) it is observed that services firms have greater competition than industrial firms because most service companies have less concentration in the market than industrial firms. This finding indicates that an increase in the value of competition in the market will affect the value of concentration in the market.

The PCM is mainly dependent on the demand elasticity in the country which dictates whether the margin is large or the margin is low. If the margin is large then it is considered that there is a large gap between the price and the competitive price of the goods being sold. The results displayed in tables 7.3 and 7.4 reveal that the exposures of price cost margin (PCM) were just positively significant with services and industrial firms. Table 7.3 shows that for services firms the (PCM) was positively significant with four out of six currencies exchange rates used in this study (GBP, EUR, AUD and INR), with coefficients (8.791 $P < 0.01$, 15.486 $P < 0.05$, 1.114 $P < 0.01$, and 1.862 $P < 0.01$) respectively. Dolage and Sade (2012, p. 28) asserted that:

'The PCM can be defined as the difference between price (p) and marginal cost (mc) as a fraction of price that is $(p - mc)/p$. The price cost margin is usually taken as an indicator of market power which means the ability of buyers or sellers to exert influence over the price or quantity of goods, services'.

This means a positive correlation between GBP, EUR, AUD and INR and price cost margin (PCM). This result implies that as the PCM increases by one percent, the corresponding exposure increases by (8.791 , 15.486 , 1.114 , and 1.862) for GBP, EUR, AUD and INR respectively.

Table (7.6) Determinants of foreign exchange exposure for industrial firms														
	Intercept	Debt	Asset turn over	ROE	Size	Market to book	Asset tangibility	INDHERF	PCM	Profit margin	Gross margin	R-squared	F – Stat	Durbin Watson
GBP	4.101 (1.083)***	0.175 0.51	-0.317 (0.178)*	0.075 (0.014)***	-0.614 (0.183)***	-0.061 (0.016)***	-1.168 (0.545)**	6.243 8.741	5.928 4.042	-0.184 (0.045)***	-0.676 0.885	0.65	2.826**	2.057
EUR	0.815 (0.251)***	0.335 0.311	-0.295 (0.094)***	— —	— —	-0.039 (0.014)***	-0.505 0.303	— —	— —	-0.027 0.03	— —	0.24	1.26	2.011
JPY	4.742 (1.572)***	— —	0.102 0.168	0.114 (0.033)***	-1.013 (0.256)***	-0.021 0.028	-1.306 0.994	2.91 9.553	18.492 (2.754)***	-0.081 0.086	1.97 (0.838)**	0.73	4.825***	2.756
AUD	3.64 (0.717)***	— —	— —	— —	-0.439 (0.161)**	-0.058 (0.014)***	-1.352 (0.431)***	6.437 5.178	8.698 (1.345)***	-0.156 (0.052)***	-0.656 0.422	0.42	1.88	1.576
INR	0.526 3.073	-2.808 (0.830)***	0.746 (0.296)*	0.071 (0.036)*	0.166 0.477	-0.065 0.042	-0.98 (0.546)*	-2.716 (12.190)**	15.866 (6.135)**	0.063 0.055	4.708 1.063	0.59	2.222*	2.44
EQW	2.64 (0.523)***	-0.963 (0.258)***	— —	-0.008 0.007	-0.216 (0.094)**	0.009 0.018	-0.796 0.626	— —	4.427 (1.768)**	-0.024 0.033	-0.055 0.459	0.435	1.638	1.89

Estimates in the determination in exposure for the absolute value of positive exposure of exchange rate exposure estimated based on the work of Jorion Model (1991). Definitions of the variable in this table are the same as in Table (6.6) in chapter 6. Newey–West corrected standard errors in parentheses.

$$|\hat{\gamma}_i| = \alpha + \beta_1 \text{Debt} + \beta_2 \text{Turnover} + \beta_3 \text{ROE} + \beta_4 \text{Size} + \beta_5 \text{MkBk} + \beta_6 \text{IndHerf} + \beta_7 \text{AssetTangibility} + \beta_8 \text{R\&D} + \beta_9 \text{PCM} + \beta_{10} \text{profit margin} + \beta_{11} \text{Gross margin}$$

$$\sum_{j=2}^n b_j \text{SIC}_j + \varepsilon$$

***, **, and * indicate significance at the 0.01, 0.05 and 0.10 level, respectively.

(—) perfect collinearity

However, analysis of industrial firms (see Table 7.4) shows that the PCM was also positively significant with four currencies (JPY, AUD, INR, and EQW) with coefficients (18.492 $P < 0.01$, 8.698 $P < 0.01$, 15.866 $P < 0.05$ and 4.427 $P < 0.05$) respectively.

As reported in tables 7.3 and 7.4, profit margin has negative exposure in services and industrial firms with different currencies. In services firms, the profit margin was negatively significant with EUR and INR, with significance $-0.809 P < 0.05$ and $-0.411 P < 0.01$. The profit margin in the sector of industrial firms demonstrated negative exposure with GBP and AUD with coefficients ($-0.184 P < 0.01$; and $-0.156 P < 0.01$). The negative sign of this factor means that the lower the level of the profit margin, the higher the level of competition and the opposite is also true: a higher level of competition in the market will result in a decrease in the level of corporate profits.

The final factor in determining exchange rate exposure is gross margin. The exposure of gross margin in services firms is significant with AUD and INR ($-1.01 P < 0.01$; and $-2.277 P < 0.05$) respectively. The results of R-squared of gross margin with AUD and INR were (0.80 and 0.35) respectively with Durbin Watson 2.90 for AUD and 1.48 for INR. The negative sign of gross margin means that UAE domestic firms compete with other firms (local and foreign) that import goods or services from India and Australia; and because these firms have higher gross margins than their competitors it means firms spend less on production or command higher prices.

7.4 Summary

The chapter provided a description of industry-level (services and industrial) exchange rate exposure for domestic companies for monthly data. These estimates are the estimated regression coefficient for the predictor variable from the fitted multiple regression model. Estimates are reported for all currencies, as well as for weighted index. The findings of this chapter listed services and industrial firms with positive and negative exposure. Domestic firms are, on average, positively significantly related to the movement of Japanese yen and show negatively significant exposure to GBP, EUR, AUD, INR, and EQW in both sector of firms, indicating that UAE domestic firms display negatively and significantly exposure coefficient with exchange rate currencies (GBP, EUR, AUD, INR, and EQW) which tends to negatively affect the value of domestic firms. The findings of this chapter indicate that with the negative exposure for most of the currencies exchange rates used in this study, UAE domestic firms having cost exposure, where a depreciation of the those currencies (GBP, EUR, AUD, INR, and EQW) lead to reduced profitability and increased cost production of domestic firms. It also suggests that UAE domestic firms are under pressure from competition with firms or goods from destination countries of these currencies (GBP, EUR, AUD, INR, and EQW).

This study also received mixed results between positive and negative exposure for the two categories (services and industrial firms). The second analysis in this chapter seeks to examine whether UAE domestic firms' foreign exchange rates are determined by factors which may increase or decrease their exposure to exchange rate in different sectors (services and industrial firms) and to establish the difference in the determinants of foreign exchange exposure when comparing services firms to industrial firms. The results reported comprise two categories: (i) for services firms;

and (ii) for industrial firms. The analysis aims to investigate to what extent these determinants affect each of these two sectors in establishing the degree of competition in these sectors. The overall summary reported between services and industrial firms and concluded that services firms are exposed to foreign exchange rates more than industrial firms.

CHAPTER 8: CONCLUSIONS AND IMPLICATIONS

8.1 Introduction

The last two chapters presented the description and findings of this study. This chapter provide a summary of the major findings from chapter 6 and 7 and also provide conclusions to this thesis. In addition, questions and the literature review that relate to the finding of this study have been provided to support and address the key focus of the study. This chapter also outlines the limitations of this study and outlines a number of areas for future research.

8.2 Conclusions about the Research Questions

To achieve the objectives of this study, this research analyses and discusses the questions underpinning this research. This study undertakes a comprehensive investigation of the extent and strength of the association between foreign exchange rates and UAE domestic firms; and this association may increase or decrease on the basis of exchange rate exposure. The main question of this study is as follows:

What are the determinants of the exchange rate exposure of domestic corporations in the UAE and what are the implications of this exposure for the market value of those corporations?

Four sub-questions were formulated in order to investigate the general research problem:

- 1- What is the extent of the exposure of UAEs' domestic firms to fluctuation in foreign exchange rates?
- 2- What factors determine a domestic firm's exposure to foreign exchange rates and what is the role of competition as a determinant?

- 3- Do services firms experience more exposure to foreign exchange rate than industrial firms?
- 4- Is there a difference in the determinants of foreign exchange exposure when comparing services firms to industrial firms?

The four sub-questions form the conclusions of this study based on the analyses conducted in chapter 6 and 7.

8.2.1 What is the extent of the exposure of UAEs' domestic firms to fluctuation in foreign exchange rates?

It is often argued that local or domestic firms have no reason to hedge themselves against a currency risk. Globalisation of financial and product markets means that domestic firms are still likely to be exposed to foreign exchange rates as they increasingly compete with international firms based in or operating in their own domestic economy (Aggarwal & Harper 2010). The empirical and theoretical evidence supports the view that foreign exchange rates can have an impact on the stock return of non-financial firms. Muller and Verschoor (2006) indicated that volatile exchange rates affect the revenues and profits of both multinational and local corporations. The findings of the analysis indicate that foreign exchange rates can have a negative, positive or zero effect on stock prices. However, the results of this chapter provide strong support for previous studies in the review of the literature that the GBP, EUR, JPY, AUD, INR, and EQW equally weighted exchange rate are variables that affect the value of UAE domestic non-financial firms, but to varying degrees.

The results of the study indicate that there are different exposures to foreign exchange rates on the value of domestic firms. Williamson (2001) argued that the

company's operations and the ability to compete in this industry may be altered to the extent of exposure to exchange rates. This study covers 49 UAE domestic firms and there are 28 domestic firms not significantly impacted against any currencies used in this study, 10 firms are significantly exposed to one exchange rate (of six exchange rates), 5 firms are significantly exposed to two of six exchange rates, 4 firms are significantly exposed to three out of six exchange rates, and 2 firms have significantly exposure for four of six exchange rates. Consequently, of the 49 firms of the total sample, there are 21 firms that have significant exposure to at least one exchange rate (of six exchange rates) use in this study. Therefore, as with other macroeconomic factors, not all firms feel the same effect from their exchange rate exposure. Financial strategies, operating strategies, hedging strategies and similar variables may be used to manage exchange risk (for more details see chapter). This indicates that approximately half (21 of 49 firms) of the sample of the UAEs domestic firms are exposed to foreign exchange rates exposure.

The result of exposure to exchange rates lists negative and positive firms at the 0.10 and 0.05 significance levels. For the 0.10 levels significance, there are 18 companies between positive and negative significantly exposed to different foreign exchange rate currencies, while 20 companies between positive and negative are significantly exposed at 0.05. These companies represent approximately 37% of all firms exposed to different foreign exchange rates at the 0.10 level; and also approximately 41% from all firms exposed to different foreign exchange rates at the 0.05 level. The results further show that 26 firms have negative exposure at 5 and 10 percent and 12 firms have positive exposure at 5% and 10% (as reported earlier in Table 6.4). Furthermore, firms with negative exchange rate exposure coefficients outweigh firms

with positive exposure coefficients. Hence, this study finds more significant negative exposure coefficients in domestic firms than positive exposure coefficients.

The fluctuations in foreign exchange rates may suggest that firms are more likely to face risk with negative effects of foreign exchange volatility, and the response of the value of UAE's domestic firms to exchange rate depreciation is mostly negative. Some studies suggest that firms may improve their risk management and develop their financial hedging strategies to mitigate the negative effect of exchange rate fluctuations (Allayannis, Ihrig & Weston 2001). With the expectation of the negative and statistically significant estimates effect for some of the foreign exchange rates on the value of domestic firms, the value of firms are likewise negatively and significantly decreasing with European EURO, Australian dollar (AUD) and the Indian Rupee (INR). UAE firms, on average, show a negative relationship with the movement of the European EURO, Australian dollar (AUD) and the Indian Rupee (INR) and are positively related with the movement of the Japanese Yen (JPY). These findings indicate that the value of UAE firms decreases against the European EURO, Australian dollar (AUD) and the Indian Rupee (INR) and increases when the Japanese Yen appreciates. Furthermore, companies will be more at risk when the fluctuations in the exchange rate have a negative effect.

Between the period 1978 to 1989 Bartov and Bodnar (1994) estimated the effect of foreign exchange rate on 208 US companies. Their findings indicated that firms with large foreign currency adjustments reported on their previous financial statements are negatively associated with accorded changes in the US dollar. The fact that the estimated exposure is mostly negative implies that the sample of domestic firms faces significant indirect competition from European EURO, Australian dollar (AUD) and the Indian Rupee (INR). These finding also indicate that one percent

appreciation of EUR, AUD and INR would, on average, cause decreases by the number of the negative coefficient of the value of domestic firms. Moreover, the findings related to this sub-question reveal that most domestic firms, on average, have negative significant coefficients. This finding implies that the value of domestic firms is negatively affected by the depreciation of the UAE AED against the US dollar European EURO, Australian dollar (AUD) and the Indian Rupee (INR). Another possible reason is that an increase in the value of UAE AED has an adverse effect on firm value for domestic firms that have a negative exposure with the activity of domestic sales and exports.

In contrast, the number of firms with positive significant exposure is 12 with different exchange rate currency at 5% and 10% levels. This number shows 0.24 (24%) of domestic firms are exposed to foreign exchange rates. The positive relationship between the exchange rate and the value of domestic firms implies that the decrease in the value of the exchange rates that have positive sign is correlated with a decline in value of domestic firms and vice versa. In other words, the higher values of domestic firms are associated with a depreciation of UAE AED against the other currencies in the basket. Rees and Unni (2005) explained the value of UK firms when domestic currency (pound) depreciates against the US dollar.

Furthermore, the number of positive significant firms can be explained as 2 (4%) firms having exposure with GBP exchange rate, 4 (8%) firms with exposure to JPY exchange rate, 3 (6%) firms with exposure to AUD, 2 (4%) firms with exposure to INR, and just one firm with exposure to EQW exchange rate. The study finds that most positive firms come with the Japanese Yen (JPY) exchange rate. This result of the positive estimated exposure with Japanese Yen (JPY) may indicate a pass-through of change in exchange rate to pricing by foreign competitors.

In particular, a decrease in home currency enhances operating cash flows via the export channel, while it weakens operational cash flows of industries having a bulk share of imported inputs. Those industries would reap benefit in cases where there is an increase in home currency which depends mainly on imported inputs and also import for resale, since an increase in home currency decreases the cost of commodities. On the contrary, a decrease in home currency leaves a positive effect on the competitive position of export industries, while leaving a comparatively negative impact on those industries which possess a higher share of imported inputs. So usually when there is an increase in the home currency, an unfavourable effect is witnessed on the competitive positions of the export industries and import-competing industries.

8.2.2 What factors determine a domestic firm's exposure to foreign exchange rates and what is the role of competition as a determinant?

Movements in exchange rates can have an impact on a company's value through different channels, whether or not they have foreign operations. In addition, movements in exchange rates can also affect domestic companies that do not operate in the international market but face international competition in their local market or are indirectly exposed. Thus, the second aim of this chapter is to test the relationship between foreign exchange rate exposure for firms and the financial and operational variables (the determinants of foreign exchange rate) that influence a firm's ability to reduce exposure. These determinants take into account the elements that can measure competition as the most important factor in this study. This study has used the absolute value of the exposure as the dependent variable, so the coefficients of the independent variables indicate what causes the most risk without indicating the

direction of exposure. The results are report for three categories: (i) for all firms, (ii) for only those with positive exposure and (iii) those with negative exposures.

The results for UAE domestic firms indicate that the difference in exposure between the three categories can be explained by the factors used in the regression of the determinants of foreign exchange rate exposure. Domestic firms are more likely to have greater exposure to foreign exchange rate with high debt ratio, market-to-book ratio and low asset turnovers. This study has revealed different mixed results for the three categories (for all firms, for those with positive exposure, and those with negative exposure); for the financial strength, the debt ratio was positively significant for most of the currency exchange rates. This finding in table 6.7 is similar to that reported earlier in Table 6.8 showing that GBP and JPY have a positive significant relationship with debt ratio. The results reveal that domestic firms with high levels of debt ratio have higher levels of financial risk, which should have positive exposure to foreign exchange rate, indicating that UAE domestic firms with high debt ratio having more exposure with destination countries of these currencies (GBP, EUR and JPY). According to Haushalter (2000) total debt ratio has a positive relationship with the percentage of production hedged. This finding is consistent with theories of transaction costs of financial distress.

For the operational strength and the asset turnover and market-to-book ratio, different mixed results were received between positive and negative exposure for domestic firms with some currencies. The findings from the three categories: (i) for all firms, (ii) those with positive exposure and (iii) those with negative exposures indicate that the coefficient of asset turnover was negative in many cases. This would imply that companies with higher asset turnover have lower exposure. In contrast, firms with lower asset turnover have higher exposure to foreign exchange rates.

Wherever significant predictors were reported, the pattern found was that debt ratio was positively related and asset turnover was negatively related to exposure, indicating that domestic firms with higher debt ratio and lower asset turnover are likely have higher exposure to foreign exchange risk as compared to firms with lower debt ratio and higher asset turnover. In this study, the GBP and JPY exchange rates have positive exposure with debt ratio and negative with asset. This finding is consistent with the findings of Aggarwal and Harper (2010) which indicate that the exposure of foreign exchange rate for domestic firms was significantly negatively related to asset turnover and positively with debt ratio.

The market-to-book ratio, on average, of the three categories was significantly negative. A higher proportion of the company in market-to-book ratio lead to more access to new opportunities for investment; and the greater the chances of investment ratios increase the incentive to hedge. More specifically, this finding suggests that the market-to-book ratio on domestic firms is substantially harmed by appreciation of the GBP, EUR, AUD and INR exchange rates exposure.

In addition, operational strength is also proxied by return on equity, asset tangibility, profit margin, and gross margin. In this analysis, the researcher also measured the log of equity market value as a measure of size, Herfindahl and PCM as proxy of competition. Small companies are more likely to have exposure than large firms because of their decreased ability to be competitive with large firms. Allayannis and Ofek (2001) explained that the size of firms is associated with theories of optimal hedging. They confirmed that large firms are more likely to used hedging activities than small firms. Chow and Chen (1998) emphasised that the decision of operational hedging is based on the size of firms, thus small firms may not have reason to hedge themselves against the fluctuation in foreign exchange rates because they may not

deal with international firms and may not have the resources to engage in hedging activities. The finding of the size of firms shows a negative relationship with currencies exposure in JPY and AUD for all firms, GBP, JPY, AUD and INR for positive firms estimated, and AUD and INR. This finding is consistent with Koutmos and Martin (2003) and Nance, Smith and Smithson (1993) who argued in their hypotheses that small firms are more likely to have exposure to foreign exchange rates than large firms because of their decreased ability to be competitive with large firms.

Moreover, the Herfindahl estimate should have negative exposure with the exchange rate; in this study the Herfindahl has negative exposure in two categories for all firms and negative exposure estimated, and positive exposure in one category (positive estimated). The Herfindahl index has a negative and significant exposure coefficient with GBP EUR and JPY with value (-32.077 , $P < 0.01$ and -31.575 , $P > 0.05$ and -28.69 , $P < 0.05$). The value of negative coefficient in this factor means that companies with the GBP, EUR and JPY exchange rate reflect the competitive environment with other firm destination countries of these currencies in the market. In contrast, Herfindahl has positive significance with GBP and AUD exchange rates. The coefficients of the AUD were (21.466 , $P < 0.05$) respectively. Overall for this factor, there is a weak correlation with most of the exchange rates used in this study; the reason behind this factor may be higher level of standard errors in this factor.

However, the price-cost-margin (PCM) evaluates the difference that exists in the country in the price of goods sold and the cost of these products. This factor is usually taken as the market power in domestic markets due to the larger of the margins representing the difference between marginal cost and price in the market,

that is, the difference between competitive price and the price in the market. Thus the PCM is the major determinant as proxy of competition in this study. Marston (2001) indicated that in theory the foreign exchange rate exposure may be determined by firms' competitive structure. The PCM in this study is significant, with many cases showing varying levels of foreign exchange rate exposure for the three categories. On average, for most findings in the three estimated categories (all firms, positive firms and negative firms), the PCM was positively and significant exposed to foreign exchange rates. The positive sign of the exposure of the PCM with the exchange rate GBP, EUR, AUD and INR indicates that UAE domestic firms are in a competitive situation with destination countries of these currencies. This finding is consistent with the finding of (Ito & Krueger 1999). In particular, UAE domestic firms with a higher degree of high price elasticity of imports increase the effect of imports on PCM. In addition, the findings reveal that UAE firms' production structure on imported inputs and the appreciation of real exchange rate seems to significantly lower PCM through reducing input costs.

Operational strength is proxied by profit margin and gross margin. The finding suggests that profit margin is negatively correlated with GBP, EUR, JPY, AUD, INR, EQW exchange rates. The results reveal that, on average, domestic firm have negative exposure outweighing positive exposure coefficients. The results seem to suggest that firms with negative exposure sign are in a competitive situation with destination countries of these currencies, because decreased market share of firms due to competition with other companies decreases the value of their profits margin. The opposite is true in this situation; firms with positive sign with exchange rate have low risk of competition because they have flexibility for pricing of goods and services in the market. On the one hand, the gross margin has mixed result between

positive and negative exposure with weak correlation with most of currency exchange rates used in this study. However, the positive significant sign of the gross margin indicates that domestic firms are able to compete more effectively than companies with lower gross margins. In this study the gross margin was significantly positively with AUD for the positive estimated firms and with JPY in the case of negative estimated firms. In contrast, the negative significant relationship implies that UAE domestic firms are in a competitive situation with destination countries of these currencies. Moreover, domestic firms experiencing depreciation of the exchange rate and appreciation of the home currency (UAE dirham) are more likely to compete with other firms, especially with firms from countries that have a negative effect on UAE's dirham.

Generally, the negative sign of profit margin and gross margin indicates that UAE domestic firms are in a competitive situation with destination countries of these currencies, because companies with lower profit margins and gross margins do not have flexibility in producing their goods. To clarify the positive relationship of profit margins and gross margins, companies with higher profit margins and gross margins have more flexibility than companies with lower profit margins and gross margins because these factors gives corporations two advantages: (i) flexibility for pricing of goods and services that can absorb shocks resulting from the market, and (ii) companies with higher profit margins and gross margins are able to compete more effectively than companies with lower profit margins and gross margins.

8.2.3 Do services firms experience more exposure to foreign exchange rate than industrial firms?

According to Lastrapes (1992), over a short period of time alterations in real exchange rates chiefly reflect changes in insignificant exchange rates as an alternative to changes in comparative inflation disparity. A change in the foreign exchange rate may influence the profitability of domestic companies because of the change that may take place in the terms and conditions of global competition. Consequently, if any connection is found amongst firms' or industries' profits and variation in foreign exchange is witnessed in the present study, then unstable currency movements may lead to associated inconsistency in firm and industry market values. This means that an effect is expected on these firm and industry values, particular regarding the intensity of foreign exchange variations and the degree of substitutability of imports and exports in the economy (Shapiro 1975). The depreciation of the UAE Dirham would tend to benefit domestic firms against foreign firms due to it enabling local companies to meet foreign competition, while an appreciation of the UAE AED would tend to be harmful to domestic firms. On the other hand, a negative and significant exposure coefficient would mean that changes in an exchange rate tend to negatively affect firms' stock returns. If a firm is primarily import-oriented, then a depreciation of the UAE AED would tend to be detrimental and an appreciation would tend to be beneficial to this firm.

The remainder of this question looks at the exposure of the exchange rate between services and industrial domestic UAE firms and the extent of the level of sensitivity of the exposure. Thus, the assumption of this question is that companies in different sectors experience dissimilar competition and, therefore, have different exposure. The empirical evidence clearly supports the view that foreign exchange rates can

have differing effects on different sectors of non-financial firms due to different currencies having different rates. Additionally, features like the intensity and mode of internationalisation, the scale of international competition, demand elasticity, industry concentration and rivalry characteristics affects the firms' sensitivity to the rate of exchange. It is possible to view a few of these characteristics via industry groupings which permit a comparison of cross-industry, where variances in exchange rates are integrated entirely into domestic prices which depend greatly on imports or substantial manufacture of substitutable goods (Feinberg 1986).

This study covers 49 UAE domestic firms of which 23 are service firms and the residual 26 firms are categorised as industrial firms. For service firms, the significant exposure at 5% and 10% may be explained as the GBP exchange rate having exposure with 15 of 23 (65%) services firms; these exposures represent positive and negative significance for the total sample of service firms.

The results also show that the percentage of domestic firms with significant negative exposure coefficients dramatically outnumber the domestic firms with significant positive exposure coefficients with GBP exchange rate. This finding indicates that services firms suffer with a depreciation of the GBP exchange rate against UAE AED and benefit when the UAE AED appreciates against the GBP exchange rate. On the other hand, the GBP exchange rate has exposure with 14 (of 26) industrial firms, indicating that 53% of industrial firms have exposure with GBP exchange rate. In addition, most industrial firms that have exposure with GBP exchange rate have negative exposure. Moreover, most of the negative exposure is significant at 5% level. The results seem to suggest that the values of domestic industrial firms are impacted

negatively from a depreciation of the GBP exchange rate against UAE AED and gain in value when the UAE AED appreciates against the GBP exchange rate.

The results also show the EUR exchange rate exhibits a positive and negative effect on services and industrial firms. For service firms, the EUR exchange rate exhibits positive and negative significance with 16 of 23 firms at 10% and 5% levels; these significance levels represent 70% of the total sample of service firms. Furthermore, services firms with negative exposure outnumber those with positive exposure. For industrial firms, the EUR exchange rate also has positive and negative significance with 14 industrial firms (of 26 firms) at 10% and 5% levels. The number of industrial firms which exhibit significant exposure represents 54% of the total sample of industrial firms. In addition, 15 firms exhibit negative significant exposure, whereas 4 firms exhibit positive significant exposure. In addition, the percentages of domestic firms with significant positive exposure coefficients are less than domestic firms with significant negative exposure coefficients with GBP exchange rate. The economic theory argued anticipating an association between foreign exchange rate movements and stock returns depends on the impacts of devaluations and increase of home currencies on company sales and, consequently, on the companies' profits. In this case, the value of domestic firms is reduced as a result of depreciation of EUR against UAE AED and benefit when the UAE AED appreciates against the EUR exchange rate. The results also show that 70 percent of the sample of service firms exhibits a significant correlation between return of firms and change in the value of UAE AED against the EUR exchange rate. In contrast, for industrial firms, 54% of the sample exhibit a significant correlation when the UAE AED appreciates (depreciates) against the European EUR.

The relationship between Japanese Yen (JPY) exchange rate and the value of domestic firms are, on average, positively significant on the type of firms (service and industrial firms). The results indicate that an appreciation of the UAE AED against the Japanese Yen has a positive effect on return values of UAE firms. However, the numbers of firms that have positive exposure are more than the number of firms that have negative exposure, indicating that most of the services firms in this study benefit from an appreciation of the UAE AED against the Japanese Yen. The finding of this estimated was similar to the finding of positive and negative estimated in chapter 6 which is the Japanese Yen has positive exposure on the value of domestic firms. This finding is in accordance with the study of Chen, Naylor and Lu (2004). They assessed that NZ companies commonly increased in worth when the NZ dollar increased against the US dollar and declined against the Australian dollar. Simply stated, commonly NZ companies are positively linked to the movement of the US dollar while negatively linked to the movement of the Australian dollar.

Additionally, the JPY exchange rate has exposure with 16 (of 23) services firms. This indicates that approximately 70% of services firms reported statistically significant levels to JPY exchange rate at 0.10 or 0.05 levels. On the other hand, the JPY exchange rate also has positive and negative significance with 14 (of 26) industrial firms at 10% and 5% levels. Furthermore, most of the significant industrial firms come with positive exposure, indicating that industrial firms benefit from an appreciation of the UAE AED against the Japanese Yen.

The regression of AUD exchange rates on services and industrial firms show that the results for the AUD exchange rate differ noticeably from the number of exposure firms reported for services firms and for industrial firms. The results reported that 70% of services firms are significantly exposed to AUD exchange rates, compared to

50% of industrial firms. On the other hand, the services and industrial firms have similar negative exposure for 10 (of 23) services firms; and 10 (of 26) industrial firms also have negative exposure. Moreover, the estimated reveals that most of the significant regression coefficients for service and industrial firms are negative. This result implies that the values of domestic firms are negatively affected by a decrease of UAE AED against the Australian dollar. The finding would mean that firms have cost exposure and reduce their profitability when there is a depreciation of the UAE dirham, which leads to a reduction in the value of domestic firms.

The results of Indian rupee (INR) exchange rate are similar to the results of GBP and EUR exchange rate. The major result of this estimated is that the Indian rupee exhibits a negative relationship with the value of domestic firms. This implies that the percentage of negative exposure of Indian rupee outweighs positive exposure coefficients. This indicates that a depreciation of the UAE AED against the Indian rupee has a negative impact on the value of firms. In addition, 78% of services firms are significantly exposed to the INR exchange rates, compared to 54% of industrial firms. Using UK data, Joseph (2002) examined the impact of foreign exchange rate changes on UK firms in the chemical, electrical, engineering and pharmaceutical industries during the period 1988 to 2000. The findings show that industry returns are negatively affected by foreign exchange rate changes. The effects depend on the industrial sector of the firms. He attributes the reason as to why the results on the portfolio level are not strong to the positive correlation between the proportion of intra-firm trade and export and domestic price changes, and that industries with high mark-up tend to absorb a larger proportion of the foreign exchange rate impacts compared with those in low mark-up industries.

The last currency of this finding is equally weighted index (EQW). The estimated of this currency shows that there is negative and positive coefficients for services and industrial firms exposed to equally weighted index (EQW) exchange rate. For service firms, the EQW exchange rate exhibits negative significant exposure more than positive exposure. Moreover, services firms that have significant exposure with EQW represent 16 (70%) of 23 services firms. However, the negative exposure is higher than positive exposure in industrial firms. Furthermore, the number of industrial firms that have significant exposure to EQW is 14 (54%) of 26 industrial firms, including 3 for positive firms and 11 for negative firms.

In brief, service firms in this study have a higher percentage of significant foreign exchange rate exposure (Europe euro, Japanese yen, UK pound, Australian dollar, and Indian rupee, as well as equally weighted exchange rate) than industrial firms. Furthermore, the percentages of Europe euro, UK pound, Australian dollar, and Indian rupee, as well as equally weighted exchange rates, have negative exchange rate exposure coefficients and outweigh positive exposure coefficients. In addition negative exchange rate exposure coefficients with service firms outweigh industrial firms. In this analysis just one currency exhibits positive exposure coefficient (for Japanese yen exchange rate), implying a higher (lower) return of domestic firms with an appreciation (depreciation) of the UAE AED against the Japanese yen.

8.2.4 Is there a difference in the determinants of foreign exchange exposure when comparing services firms to industrial firms?

The results shown in tables 7.3 and 7.4 in chapter 7 report for two categories: (i) for services firms; and (ii) for industrial firms. The analysis aims to investigate to what extent these determinants affect each of these two sectors in establishing the degree

of competition in these sectors. Those tables show the relationship between foreign exchange rate exposure for services and industrial firms and the determinants of foreign exchange rate used in this study. This chapter extensively compared services firms with industrial firms in the UAE. The results for services firms and industrial firms indicate that the difference in exposure between the two categories can be explained by determinants of foreign exchange rates. Services firms are more likely to face additional risk than industrial firms, due to the debt of services firms exhibiting a positive relationship to foreign exchange rates, whereas industrial firms only have negative exposure with debt ratio. The level of debt ratio in this study is proxy to adjust and manage foreign exchange rate. Firms with higher debt ratio will expect to face higher costs of bankruptcy and financial risk, and should positively relate to the exchange rate exposure.

This study has received mixed results between positive and negative exposure for the two categories for the determinant of operational strength (market-to-book ratio, asset turnover, and return on equity, asset tangibility, profit margin, and gross margin). Furthermore, the negative significant sign of asset turnover with services firms are more than industrial firms, indicating that domestic firms experience lower asset turnover and face high exposure to foreign exchange rate and vice versa—firms with higher asset turnover have higher natural protection against firms that compete in the same market, and are shielded from changes in pricing.

However, compared to the results reported for the ROE for services firms and industrial firms, the findings show that the ROE in services firms has a positive and negative relationship with GBP and JPY exchange rates. The finding indicates that industrial firms have more protection against foreign exchange exposure than services firms due to industrial firms having higher (positively significant) return on

equity for profitability by revealing how much profit a company generates with the money invested by shareholders. In contrast, the results reported for the ROE for services firms exhibit negative significance with GBP, indicating that services firms are under pressure from UK firms or goods that compete in the UAE market. This finding is consistent with the findings in chapter 6 that service firms' exhibit negative coefficients with GBP exchange rate. This result implies that services firms exhibit negative exposure for the GBP exchange rate, indicating a lower return on equity with an appreciation of the UAE AED against the UK Pound.

Small firms are more likely to have negative and significant exposure than large firms. Consequently, the size of firms is related to negative exposure. Moreover, by comparing the size of services firms to the size of industrial firms, there is greater exposure with the size of industrial firms than with the size of services firms. The relationship between exposure and market-to-book ratio in services firm is different compared to the exposure of market-to-book ratios in industrial firms. The findings from the two sectors mean that industrials firms have less exposure than services firms in relation to this factor. Firms with lower levels of market-to-book ratio have lower exposure to foreign exchange rates and vice versa firms with high levels of market-to-book ratio have higher exposure.

By comparing asset tangibility of services firms and asset tangibility of industrial firms it is contended that both exhibit similar findings in terms of the currencies they are exposed to, but they experience different exposure in terms of positive and negative. It can be said that the asset tangibility of services firms has positive exposure, and asset tangibility of industrial firms has negative exposure. The different exposures mean that higher asset tangibility should reduce the exposure to foreign exchange rates. This indicates that firms with greater asset tangibility face

lower exposure; and firms with lower asset tangibility experience higher exposure. The findings show that industrial firms have greater exposure than services firms in relation to this factor due to asset tangibility of industrial firms yielding lower exposure than the asset tangibility of services firms.

The analysis of the INDHERF factor indicates that the INDHERF has negative significance in both sectors. The increase in the Herfindahl index generally indicates an increase in pricing power and a decrease in competition; whereas the devaluation of the Herfindahl index indicates a value price drop and the high value of competition. In addition, the Herfindahl result should have negative exposure with the exchange rate; in this analysis the Herfindahl has negative exposure in two categories with varying degrees. By comparing the two sectors (services firms and industrial firms) it is observed that services firms have greater competition than industrial firms because most service companies have less concentration in the market than industrial firms. This finding indicates that an increase in the value of competition in the market will affect the value of concentration in the market.

The analysis of the price–cost margin (PCM) shows that there are varying levels of exposure of PCM with different foreign exchange currencies for services firms and industrial firms. The results indicate that firms' PCM exhibits the significant impact on the foreign exchange rate exposure for both kinds of firms with just positive exposure. There are positive sign exposure of the PCM with the exchange rate of GBP, EUR, AUD and INR for service firms estimated for monthly data and the positive sign exposure of the PCM with the exchange rate of JPY, AUD, INR, and EQW in the case of industrial firms, indicating that UAE domestic firms are in a competitive situation with destination countries of these currencies. In particular, UAE domestic firms with a higher degree of high price elasticity of imports show an

increase in the effect of imports on PCM. In addition, the findings reveal UAE firms' production structure on imported inputs and the appreciation of real exchange rate seems to significantly lower PCM through reducing input costs.

The last two factors in this discussion are profit margin and gross margin. The finding of the profit margin reveals that almost all of the significant regression coefficients are negative for both kinds of firms (service and industrial firms). In services firms, the profit margin was negatively significant with EUR and INR exchange rate whereas the profit margin in the sector of industrial firms demonstrated negative exposure with GBP and AUD exchange rate. The negative relationship of these currencies with this factor implies the lower the level of the profit margin, the higher the level of competition and the opposite is also true: a higher level of competition in the market will result in a decrease in the level of corporate profits. On the other hand, the exposure of gross margin in services firms is significant with AUD and INR. The results of R-squared of gross margin with AUD and INR were (0.80 and 0.35) respectively with Durbin Watson 2.90 for AUD and 1.48 for INR. The negative sign of gross margin means that UAE domestic firms compete with other firms (local and foreign) that import goods or services from India and Australia since these firms face higher competition in their gross margins. The gross margin depreciates when the firms have more competition with other firms.

8.3 Limitations of this Study

Exchange rate variations pose the key source of macroeconomic ambiguity for multinationals, and to an extent, for those too who do not perform business outside their home country. Variations in the value of home currency can affect a firm even though it does not perform business outside the home country because when there is

an increase in the value of home currency; home goods appear to be more expensive in contrast to imported goods.

Attention has in many studies focused entirely on multinational firms where the extent of economic contact is considerably lower than the exposure of solely exporting or importing companies owing to the compensating nature of their international cash flows (Allayannis, Ihrig & Weston 2001; Di Iorio & Faff 2002). Contrary to earlier studies of foreign exchange rate exposure, this study comprises non-financial firms, irrespective of any previous determination of the extent of their worldwide participation. Thus, solely domestic companies sans any foreign currency transactions are included in this study. The purpose of this study is to examine the foreign exchange rate exposure (Europe euro, Japanese yen, UK pound, Australian dollar and Indian rupee, as well as equally weighted exchange rate) of domestic corporations in the United Arab Emirates (UAE) and the implications of that exposure for the market value of those corporations, taking into account the effect of competition as a determinant of exchange rate exposure.

Although this study is one of the most holistic studies to investigate the effect of foreign exchange rate exposure on domestic firms through their competition, some limitations remain. Firstly, the unavailability of US dollar and Chinese Yuan exchange rates means these currencies are not employed in this study despite these countries having major trading relationships with the UAE. This study resorted to employing six currencies (Europe euro, Japanese yen, UK pound, Australian dollar, and Indian rupee, as well as equally weighted exchange rate) as foreign exchange rate exposure to estimate to what extent these currencies impact on the market value of domestic firms in the UAE. In addition, most studies use the US dollar as the

determinant of exchange rate exposure. The reason behind the decision to exclude these currencies from this study is that the United Arab Emirates currency has been stable against the U.S. currency since the mid-1980s, valued at AED 3.67 per US\$1 and pegging the Chinese Yuan to the US dollar. This indicates that there is no volatility or may barely be simple among these currencies (US dollar, Chinese Yuan and United Arab Emiratis AED).

Secondly, although it is consistent with the number of relevant United Arab Emiratis non-financial firms, the sample of this study is likely to be considered small. This study used secondary data to provide information for the variables to achieve the goals of the study; hence, there is the potential for the use of another method such as questionnaire or personal interview to collect the data for more firms which may not be registered in the UAE financial markets for a larger number of companies. Furthermore, this study classified companies as service or industrial firms, although future research could cover more sectors that are exposed to foreign exchange rates.

Thirdly, This study employs the standard OLS estimation method to estimate the exchange rate exposure of UAE non-financial firms using an augmented market model that incorporates foreign exchange rate changes using different exchange rate definitions. OLS model might not generate reliable parameter estimates if the regression residuals are time-varying. For future research, we recommend the use of other estimation methods e. g., ARCH and GARCH. GARCH models are useful as they are able to exploit the time-varying properties of the series while at the same time provide coefficient estimates of those time-varying parameters. GARCH models have been relatively successful in capturing the conditional volatility in financial prices.

The last two limitations of this study relate to a lack of related elements in the emerging markets to measure competition. In this study, UAE firms do not use research and development (R&D) as a factor of their analysis in their annual report. Determining the degree of R&D is important in determining the degree of competition due to the insulation of the firm from both foreign and local competition; hence; this factor may increase firms' investment in unique services and products. The second important factor is the total variable costs (TVC) which includes labour and intermediate costs to measure Price-cost margin. In this study, the total variable costs (TVC) were not found in the Osiris database or in the annual reports for all firms for all periods of the study. In this case, the researcher has taken *costs of goods sold* for total variable costs to measure PCM, because the costs of goods include most of the variable cost. There are many methods that have been employed by researchers in the calculation of the PCM. Some researchers have calculated it by the profits to sales ratio (Aghion et al (2002) Nickell (1996) while others have calculated the demand and the cost factors separately before making the calculations for the PCM. All of the methods, however, point to the same conclusion that if there is higher concentration in the market then the prices will be high and there will be low competition due to which the PCM will be high. A research paper by Scherer and Ross (1990) gives a detailed example of the process.

8.4 Suggestions for Future Research

There are more opportunities for future research that arise from some of the limitations addressed in the previous section. Firstly, this study suggests that the focus on small open economies could yield more understanding on this subject, especially when their currencies are fully floating currency to foreign exchange rates. This would help in enhancing the validity of the estimates and implications of the

effect of foreign exchange rates. Secondly, additional methods could be adopted to collect data from more firms to increase the size of the sample, especially with domestic firms and where data is lacking.

Thirdly, another suggestion for future study is to investigate how exchange rates can be affected by competition by splitting competition into three parts: monopolistically competitive, perfectly competitive, and oligopolistic. If this method were used, the results increase knowledge on the impact of competition on exchange rates. Finally, another area which could be covered in future studies is the impact of suppliers on firms' exchange rate exposure.

8.5 Summary

This study has contributed to both theoretical and practical studies in the area of foreign exchange rate exposure and domestic firms and the implications of this exposure for the market value of those corporations. Furthermore, the study will open new windows for future study focusing on domestic firms because it is often argued that local or domestic firms have no reason to hedge themselves against a currency risk.

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Appendix (1)

Background to the United Arab Emirates

Capital	Abu Dhabi
Official language (s)	Arabic
Ethnic groups	16.5% Emirati, 83.5% South Asian, Indian, Pakistani, Bangladeshi, Chinese, Filipino, Thai< Iranian (West crners) -2009
Demonym	Emirati Arab
Government	Federal constitutional monarch
President	Khalifa Bin Zayed Al Nahyan
Prime Minister	Mohammed Bin Rashid Al Maktoum
Independence	
From the United Kingdom	December 2, 1971
Area	
Total	83600 Km (116th), 32278 sq mi
Water (%)	negligible
Population	
2007 estimate	6,000,000 (120th)
2010 census	6,888,888
Density	55/km (150th) 142.5/sq mi
GDP (PPP) 2009 estimate	
Total	\$179.321 billion
Per capita	36,536
GDP (nominal) 2009 estimate	
Total	22.971 billion
Per capita	46,857
General information	
Currency	UAE dirham (AED)
Time zone	GMT + 4 (UTC+4)
Date Formats	dd/mm/yyyy (CE)
Drives on the	right
Internet TLD	.ae
Calling code	971

Appendix (2)

LIST OF NATIONAL BANKS AND DISTRIBUTION OF THEIR BRANCHES IN THE UAE (As at 31-12-2011)

NO	Name of the bank	Head Office	Abu Dhabi	Dubai	Sharjah	Ras Al Khaimah	Ajman	Umm-Al Qaiwain	Fujairah	Al Ain	Total Number of Branches	Pay offices	Electronic Banking Service Units
1	National Bank of Abu Dhabi	Abu Dhabi	39	18	10	2	1	1	3	12	86	42	0
2	Abu Dhabi Commercial Bank	Abu Dhabi	20	11	3	1	1	0	2	7	45	5	1
3	ARBIFT	Abu Dhabi	3	4	1	0	0	0	0	1	9	0	0
4	Union National Bank	Abu Dhabi	19	14	8	2	2	1	1	7	54	10	0
5	Commercial Bank of Dubai	Dubai	3	17	1	1	1	0	1	1	25	5	0
6	Dubai Islamic Bank PJSC	Dubai	9	32	12	4	2	1	2	6	68	0	5
7	Emirates NBD Bank	Dubai	15	83	7	3	1	1	2	3	115	18	0
8	Emirates Islamic Bank	Dubai	4	17	5	1	1	1	1	3	33	1	0
9	Mashreq Bank PSC	Dubai	13	33	9	2	3	1	2	3	66	0	7
10	Sharjah Islamic Bank	Sharjah	1	3	20	0	0	0	1	1	26	1	0
11	Bank of Sharjah PSC	Sharjah	1	1	1	0	0	0	0	1	4	0	0
12	United Arab Bank PJSC	Sharjah	2	3	3	2	1	0	1	1	13	0	0
13	Invest Bank PLC	Sharjah	2	2	4	1	1	0	1	1	12	0	0
14	The National Bank of R.A.K	RAK	5	12	4	7	1	0	0	1	30	1	4
15	Commercial Bank International	Dubai	3	5	2	3	1	1	1	1	17	1	0
16	National Bank of Fujairah PSC	Fujairah	2	4	2	0	1	0	5	1	15	0	0
17	National Bank of U.A.Q PSC	U.A.Q	2	6	2	1	2	2	1	1	17	1	7
18	First Gulf Bank	Abu Dhabi	7	3	2	1	2	0	1	2	18	0	0
19	Abu Dhabi Islamic Bank	Abu Dhabi	28	11	8	3	2	1	2	11	66	0	0
20	Dubai Bank	Dubai	4	13	3	1	1	0	1	1	24	0	0
21	Noor Islamic Bank	Dubai	3	9	2	0	0	0	0	1	15	0	2
22	Al Hilal Bank	Abu Dhabi	10	8	1	1	0	0	0	2	22	0	0
23	Ajman Bank	Ajman	3	2	1	0	4	0	0	1	11	2	0
	Total		198	311	111	36	28	10	28	69	791	87	26

Source: Annual report of the central bank of UAE (2011)

Appendix (3)

LIST OF FOREIGN BANKS AND DISTRIBUTION OF THEIR BRANCHES IN THE UAE (As at 31-12-2011)

NO	Name of the bank	Head Office	Abu Dhabi	Dubai	Sharjah	Ras Al Khaimah	Ajman	Umm-Al Qaiwain	Fujairah	Al Ain	Total Number of Branches	Electronic Banking Service Units/Pay offices
1	National Bank of Bahrain	Abu Dhabi	1	0	0	0	0	0	0	0	1	0
2	Rafidain Bank	Abu Dhabi	1	0	0	0	0	0	0	0	1	0
3	Arab Bank PLC	Abu Dhabi	1	2	1	1	1	0	1	1	8	0
4	Banque Misr	Abu Dhabi	1	1	1	1	0	0	0	1	5	0
5	El Nilein Bank	Abu Dhabi	1	0	0	0	0	0	0	0	1	0
6	National Bank of Oman	Abu Dhabi	1	0	0	0	0	0	0	0	1	0
7	Credit Agricole - Corporate and Investment Bank	Dubai	1	1	0	0	0	0	0	0	2	0
8	Bank of Baroda	Dubai	1	2	1	1	0	0	0	1	6	7
9	BNP Paribas	Abu Dhabi	1	1	0	0	0	0	0	0	2	2
10	Janata Bank	Abu Dhabi	1	1	1	0	0	0	0	1	4	0
11	HSBC Bank Middle East Limited	Dubai	1	3	1	1	0	0	1	1	8	16
12	Arab African International Bank	Dubai	1	1	0	0	0	0	0	0	2	0
13	Al Khaliji (France) S. A.	Dubai	1	1	1	1	0	0	0	0	4	0
14	Al Ahli Bank of Kuwait	Dubai	1	1	0	0	0	0	0	0	2	0
15	Barclays Bank PLC	Dubai	1	1	0	0	0	0	0	0	2	3
16	Habib Bank Ltd.	Dubai	1	4	1	0	0	0	0	1	7	0
17	Habib Bank A.G Zurich	Dubai	2	5	1	0	0	0	0	0	8	1
18	Standard Chartered Bank	Dubai	2	7	1	0	0	0	0	1	11	3
19	Citi Bank N.A.	Dubai	1	2	1	0	0	0	0	1	5	7
20	Bank Saderat Iran	Dubai	1	3	1	0	1	0	0	1	7	0
21	Bank Meli Iran	Dubai	1	2	1	1	0	0	1	1	7	1
22	Blom Bank France	Dubai	0	1	1	0	0	0	0	0	2	1
23	Lloyds TSB Bank PLC	Dubai	0	1	0	0	0	0	0	0	1	5
24	The Royal Bank of Scotland N.V.	Dubai	1	1	1	0	0	0	0	0	3	3
25	United Bank Ltd.	Dubai	3	3	1	0	0	0	0	1	8	2
26	Doha Bank	Dubai	0	1	0	0	0	0	0	0	1	0
27	Samba Financial Group	Dubai	0	1	0	0	0	0	0	0	1	0
28	National Bank of Kuwait	Dubai	0	1	0	0	0	0	0	0	1	0
Total			27	47	15	6	2	0	3	11	111	51

Source: Annual report of the central bank of UAE (2011)

Appendix (4)
Summary of Key variables and Measurement

Variables	Description
The Average Debt Ratio (Debt)	Total debt divided total assets (total debt/total assets)
The Average Asset Turnover (Turnover)	Sales of firm's divided total assets of firm (sales/total assets)
Return on Equity (ROE)	Measured as net income/shareholder's equity
The Size of Firm (Size)	Size of firm's is measured by the log of sales
Average Market-to-Book Ratio (MkBk)	Book value of firm/market value of firm
The Asset Tangibility (Asset Tangibility)	Measured as long-term assets/total assets
Research and Development Expense (R&D)	Measured as R&D/Sales
Gross margin (GrMargin)	Total sales revenue minus its cost of goods sold, divided by the total sales revenue
Average of Herfindahl Index (IndHerf)	It is calculated by squaring the market share of each firm competing in a market
Price Cost Margins (PCM)	The profits to sales ratio or demand and the cost factors separately before making the calculations for the PCM
Profit margin (PrMargin)	Margin is measured as net profits divided by sales, or net income divided by revenues
Gross margin (GrMargin):	Measured as total sales revenue minus its cost of goods sold, divided by the total sales revenue
The Industry Dummy Variables (SICj)	Is usually evaluated by the financial analysts for almost all companies prevailing in the economic market

