MICRO AND MACROECONOMIC DETERMINANTS OF NET ASSET VALUE OF ISLAMIC EQUITY UNIT TRUST FUNDS: A CASE STUDY OF MALAYSIA

BY

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A dissertation submitted in fulfilment of the requirement for the degree of Doctor of Philosophy in Business Administration

Kulliyyah of Economics and Management Sciences
International Islamic University Malaysia

SEPTEMBER 2015

ABSTRACT

Over the past two decades, the Islamic unit trust industry in Malaysia has experienced rapid growth and continues to grow at a fast pace. This high growth highlights the uniqueness of the Islamic unit trust investment which diversifies *Sharī`ah* compliant asset investments and provides several advantages. Even though the unit trust industry has witnessed high growth in portfolio size, performances, and regulations, various aspects of the industry remain poorly understood due to a general lack of information on the funds' unit price behaviours and mechanisms. Forecasting the price movements in the equity unit trust industry has been a major challenge for various investors, management funds, brokers, and policy makers. This research investigates the effects of microeconomic and macroeconomic variables and the 2007-2008 Global Financial Crisis on the NAV of the Islamic equity unit trust funds. This research utilised the Autoregressive Distributed Lag (ARDL) model and the Vector Autoregression (VAR) model to analyse this relationship over the January 2006 to December 2012 period using monthly data. The results showed a significant long-run equilibrium relationship between the Fund Dividends, Fund Historical Performance, Fund Size, Hedge Funds, Industrial Production Index, Money Supply (M3), Foreign Exchange Rate, Crude Oil Price, Corruption Index, and the NAV of the Islamic equity unit trust funds in the Malaysian capital market. In addition, the causality tests results showed that the Industrial Production Index, National Political Election, and 2007/2008 Global Financial Crisis have significant unidirectional causal effects on the NAV of Islamic equity unit trust funds, while Crude Oil Price has bidirectional causal effect with the NAV of the Islamic equity unit trust funds. The findings of this research will assist investors, fund managers, industry players, and policy makers to estimate and predict the future trend direction of the NAV of Islamic equity unit funds and accordingly make sufficient investment decisions.

Key words: Net Asset Value, Islamic Unit Trust, Micro and Macroeconomic Variables, Malaysia

ملخص البحث

شهدت أسواق أسهم وحدات الائتمان الإسلامي في ماليزيا نمواً سريعاً على مدى العقدين الماضيين ، ولايزال هذا النمو مستمراً بوتيرة عالية في الوقت الراهن. و يدل هذا النمو المتزايد على قدرة أسهم وحدة الائتمان الإسلامي في توفير مزايا استثمارية فريدة للمستثمرين فضلاً عن تنوع أصولها الاستثمارية التي تتوافق مع مبادئ الشريعة الإسلامية. وبالرغم من أن أسواق أسهم وحدات الائتمان الإسلامي في ماليزيا شهدت نمواً كبيراً في حجم معدلات حقائبها الإستثمارية , تحسناً كبيراً في أدائها , هذا بالإضافة الي التطور الكبير في جوانبها التنظيمية والتشريعية ، إلا أنه لايزال هناك الكثير من القصور في فهم العديد من الجوانب المختلفة لها، على سبيل المثال عدم توفر معلومات كافية عن الاستراتيجيات والآليات السعرية المتبعة لفهم التغير في سلوك سعر أسهم وحدات الائتمان الإسلامي. وهذا يعتبر بمثابة تحدٍ كبير للكثير من المهتمين على سبيل المثال: المستثمرين , السماسرة , وأيضاً صناع القرار. لذا يهدف هذا البحث إلى دراسة تأثير عوامل الإقتصاد الجزئي والإقتصاد الكلي وأيضاً دراسة تأثير الأزمة المالية العالمية 2007\2008 على أسعار أسهم وحدات الائتمان الإسلامي. استخدم هذا البحث نموذج الإنحدار الذاتي Autoregression (VAR) model وايضاً Auto-Regressive Distributed Lag (ARDL) model في تحليل هذه العلاقة باستخدام بيانات شهرية للفترة من يناير 2006 حتى ديسمبر 2012م. أظهرت نتائج البحث أن هناك علاقة ذات دلالة إحصائية على المدى طويل الأجل بين كلٍ من الأرباح الموزعة , الأداء التاريخي للصناديق , حجم الأصول , حجم الإستثمارت في صناديق التحوط , مؤشر الإنتاح الصناعي , عرض النقود , سعر صرف العملة الاجنبية , أسعار النفط الخام العالمية , ومؤشر معدل الفساد وأسعار أسهم وحدات الائتمان الإسلامي في سوق الأوراق المالية الماليزية ، بالإضافة إلى ذلك، أظهرت نتائج الاختبارات أن مؤشر الإنتاج الصناعي , الأنتخابات الوطنية السياسية والأزمة المالية العالمية 2007\2008 لها علاقة سببية ذات دلالة إحصائة وذو إتجاه أحادي على سعر أسهم وحدات الائتمان الإسلامي، في حين هناك علاقة سببية ثنائية الإتجاه بين أسعار النفط الخام العالمية والتغير في أسعار أسهم وحدات الائتمان الاسلامي في ماليزيا . وبالتالي فإن نتائج هذا البحث ستساعد المستثمرين , مدراء الصناديق والحقائب الاستثمارية و صناع القرار في ماليزيا على التنبؤ و معرفة الإتجاه المستقبلي للتغير في أسعار هذه الوحدات وبالتالي اتخاذ قرارات إستثمارية كفؤة.

APPROVAL PAGE

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DECLARATION

I hereby declare that this dissertation is the result of my own investigation, except where otherwise stated. I also declare that it has not been previously or concurrently submitted as a whole for any other degree at IIUM or other institutions.

Anwar Hasan Abdullah Othman

Signature…… Date…….

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…… ……

Signature Date

To My Beloved Parents
To My Brothers, Sisters & Friends
To All Aspiring Muslim Youth

ACKNOWLEDGEMENTS

In the name of Allah, the Most Compassionate and the Most Merciful. Alhamdulillah and All praise, acknowledgments and thanks are due to Allah (S.W.T), the Lord of the Universe, for giving me the strength and determination to complete this dissertation and the journey of attaining knowledge at the International Islamic University Malaysia (IIUM), the garden of Islamic virtue and knowledge. Peace and blessings be upon His beloved Prophet and Messenger Mohammed (Peace Be upon Him).

I would like to express my sincere gratefulness and thanks to my supervisors Prof. Dr. Ahamed Kameel Mydin Meera and Prof. Dr. Hasanuddeen Abdul Aziz, for their support, motivation, patience and encouragement throughout my dissertation journey. My deepest sense of appreciation is to them also for their thoughts, advice, expertise and valuable insights for completing this dissertation.

My sincere thanks and appreciation goes also to those who cooperated and guided me to obtained the related data of my dissertation during the data collection procedure, especially for the staff and management of the National Library of Malaysia and the staff and management of IIUM library, as well as the Bloomberg *data-base* administrator in the Kulliyah of Economics and Management Sciences at IIUM university.

I would like to express my truthful appreciations and gratitude to the department of postgraduate unit, administrative staff of the Kulliyah of Economics and Management Sciences and all the lecturers as well as the staff of IIUM University for their assistance and gaudiness throughout my dissertation process. Specially for Associate Prof Dr. Salina Binti Haji Kassim, Assistant Prof. Dr. Adewale Abideen Adeyemi and Assistant Prof. Dr. Abdo Mohamed.

My gratitude is also due to internal examiner of this dissertation; Dr. Zulkufly Ramly, from department of Finance, Kulliyah of Economics and Management Sciences, IIUM University and both external examiners Prof. Dr. Shamsher Mohamad Ramadili Moho from department of Finance and Accounting, INCEIF Institute, Malaysia and Assoc. Prof. Dr. M. Shabri Abd Majid from department of Islamic Economics, Syiah University Indonesia for their efforts in evaluating my dissertation.

Finally, my genuine thanks and gratitude goes to my beloved parents, brothers and sisters who always support and encourage me in every aspect until I am what I achieved today. At the end I would like to thank all my colleagues and friends as well as all who have directly or indirectly contributed to the successful completion of this dissertation.

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GLOSSARY OF TERMS AND ACRONYMS

Terms & Acronyms	Description
NAV	Net Asset Value, which represents the fund's unit price
UTFs	Unit Trust Funds
Fund manager	The person(s) responsible for managing fund's portfolio investment strategy and trading activities.
Unit-holders	The providers of the funds.
Trustee	Who holds the assets of the trust for the unit holders
Purification	Purify company income by donating the interest income received as a charity.
Sharī`ah compliance	Islamic law as revealed in the Qur'an and *Sunnah.*
Sukūk	It refers to the Islamic bonds, where the translation of the Arabic word of *Sukuk* is "Islamic Investment Certificates". In which the *Sukuk* holders hold an undivided beneficial ownership in the *Sukuk* assets (Thomas et al., 2005, p.154).
Takāful	It refers to Islamic Insurance, where the translation of the Arabic word of "*Takāful*" is "joint Guarantee", whereby a group of participants agree among themselves to support one another jointly for the losses arising from specified risks (Swartz1& Coetzer, 2010).
Halal	It is an Arabic word meaning "lawful" or Permissible according to the Islamic *Sharī`ah* Law.
Riba	It is an Arabic word and translated into English as "usury" or "interest", that technically in *Sharī`ah* refers to the 'premium' amount that must be paid to the lender by the borrower along with the principal amount as a condition for the loan or for an extension in its maturity (Chapra, M. Umar, 1986, pp.56-57).
Umum balwa	According to Islamic juristic terminology, *Umum balwa* is a negative widespread circumstances or Common plight affecting most of the people and difficult to avoid (Azahari, 2010).
Uruf	It is an Arabic word, refers to the customs or General rules and practices that have become commonly adopted through consistent habit and common use among the society (Ghani, 2012).
Maslahah	It is an Arabic word refers to Consideration of Public Interest such as seeking benefits and repelling harm. Al-Shatibi, (1990), defines *Maslahah* as "all concerns that promote the subsistence of human life, the completion of man's livelihood and the acquisition of all his physical and intellectual qualities which are required for him' (Shaharuddin, 2010).
Gharar	It is an Arabic word which in Islamic economic refers

	to uncertainty (Al-Saati, 2003).
Maysir or *Qimar*	It is an Arbic word which means Gambling, where the Muslim Scholars such as Al-Shawkani, 1357H define it as "a situation where there must be one of the player gains and another loses" (Abdullah, 2013).
Haram	Forbidden according to the Islamic law
Fatwa	A legal opinion or ruling issued by Islamic scholar
Murabahah	It is an Arabic term refers to a contract of sale, in which a financial institution purchases the item upon the request of customer who makes payment that covers cost and profit margin and specified the time of payment in an initial contract (Isa et al., 2012).
Mudarabah	It is an Arabic term refers to partnership (with pre-agreement on Profit-sharing ratio) contract between two parties, one is called *Rabb al-mal* (Financier) and another is the *Mudarib* (financee) (Anwar, 1987).
Ijarah	It is an Arabic word refers to leasing, it defines as a long term contract of rental that is subject to specified conditions as approved by the *Sharī`ah* guideline (Rahman, 2007).
Musharakah	It is an Arabic term refers to partnership or joint venture, in which the partners share the capital and profit (Saripudin et al., 2012).
Ijtihad	It is an Arabic term, which means "independent reasoning" or "the utmost effort an individual can put forth in an activity.
FZ	Fund Size as measured by (Total Asset) of the fund
M EX	Fund Management Experience
HP	Fund Historical Performance
S	Fund Risks
DIV	Fund Dividends
HF	Hedge Funds Index
CPI	Consumer Price Index
IPI	Industrial Price Index
TBR	Three-Month Treasury Bill Rate in Malaysia
M3	Broad Money Supply
FER	Foreign Exchange Rate
OP	Crude Oil Price
NPE	National Political Elections
CI	Corruption Index
FC	The 2007/ 2008 Global Financial Crisis
KLSI	Kuala Lumpur *Sharī`ah* Index
FTSE	Financial Times Stock Exchange
S&P	Standard & Poor index
FBMES	FTSE Bursa Malaysia Emas *Sharī`ah* Index
DJIM	Dow Jones Islamic Market Index
MSCI	Morgan Stanley Capital International Index
IDB	Islamic Development Bank
IFSB	Islamic Financial Services Board

MIFC	Malaysia International Islamic Financial Centre
SCM	Securities Commission of Malaysia
FMUTM	Federation of Malaysia Unit Trust Managers
BNM	Bank Negara Malaysia
SAC SC	*Sharī`ah* Advisory Council of the Securities Commission. It is established in 1996 under the Securities Commission Act 1993 for the screening process of the products and the primary objective of this organization is to advise Securities Commission on *Sharī`ah* matters and *Sharī`ah* guidance for Islamic capital market in Malaysia (Jamal et al., 2010).
CAPM	Capital Assets Pricing Model Theory
APT	Arbitrage Pricing Theory
PT	Portfolio Theory
GRT	Granger's Representation Theorem
VAR	Vector autoregressive
VECM	Vector Error Correction Terms
IRF	Impulse Response Function
FEVD	Vector Error Variance Decompensation

CHAPTER ONE

INTRODUCTION

1.0 BACKGROUND OF THE STUDY

The overriding concept of the Unit Trust Funds (UTFs) is to pool the capital of numerous investors, who share the financial objectives, investment schemes and risk tolerance with the subsequent full use of the experiences of the fund managers to trade in the securities (Choong, 2001 and Othman, 2011). The pooled money is then invested by the fund managers in various investment instruments such as stock market, bonds, money market investments and other securities as well as diversified portfolio of authorized investments, which must be approved by the Malaysian Securities Commission (Keng, 2000 and Choong, 2001). The unit trust investment plays a very significant role in the Malaysian capital market and it has witnessed a substantial sustainable growth during the last few decades.

The UTFs represent 20.12 percent of Net Asset Value (NAV) of the Bursa Malaysia market capitalization (Securities Commissions (SC) Report, 2012). The UTFs are believed to have an overriding influence that attracts the small investors to prudently invest in the capital market. The UTF provides low income group of the population to participate in a professionally managed portfolio of investment without being exposed to the risk of a large sum of money through direct investment in securities. Thus, the sustainability of this vital part of the financial market institution is very important to inculcate the investment culture among the low-income group as well as the corporate organizations. It serves as a source of diversification for a lucrative wealth management.

Furthermore, in the dual capital market system, typical of the Malaysian capital market, where the conventional and the Islamic equity markets are traded side by side. This brings in the impetus for the Muslim investors with a choice or alternatives to invest their funds in line with the *Sharī`ah* rules or principles that are consistent with their faith. Hence, the Islamic unit trust investment is considered as an alternative investment window through which Muslim investors can participate in the stock market with a clear Islamic conscience. Thus, it is imperative to have a comprehensive and in-depth understanding of the rational investment mechanism on the lucrative but intricate working of the Islamic equity unit trust investment, specifically, understanding the funds unit pricing mechanism.

There are groups of investors such as individual investors, institutional investors, fund managers of companies, portfolio managers, financial analysts, government agencies and brokers that are all interested in fully understanding the nature of price movement patterns of financial assets and what events can change or determine the persistence of the price movement over time (Malik and Hassan, 2004). This type of information is important to establish an accurate model of asset price trend and volatility that may assist them to analyze the risk of holding an asset in the investment portfolios, and to provide indicators for the investors to diversify their portfolio investments. For example, investors would adjust their equity holding assets within their portfolios to either enhance their portfolio returns or at least mitigate the portfolio risks as a consequence of the potential implications of the micro and the macroeconomic information available that may have an influence on the equity prices in different sectors.

Price movement also plays a central role in determining the investment decision and spending in which excessive movement and high volatility of equity

share prices may cause investors in the financial markets to shift their funds investments towards risk-free assets rather than investing in equity market that has a high risk factor. A high fluctuation of the equity prices may also be interpreted by investors as indicators of unstable financial markets. This may cause them to shift their investments to other equity markets overseas that are more stable than the local equity markets. As a result, the local capital markets will shrink and cause deterioration to the performance of the local equity markets.

In addition, from the policy makers' point of view, understanding of the relationship between the macroeconomic variables and the equity market price behaviour are useful inputs in formulating economic policies for promoting a sustainable economic growth (Junkin, 2011). This is due to the fact that much empirical researches have found that equity markets development is increasingly dominant in promoting an economic growth in both the developing and the emerging investment markets (Levine and Zervos, 1996; Kose, Prasad, Rogoff and Wei, 2006; Deb and Mukherjee, 2008).

According to the efficient market hypothesis (EMH), price efficiency refers to asset prices that fully incorporate all the relevant information relating to their fundamental values (Fama, 1965). For instance, the efficient market share prices of a company should be equal to the present values of the company's expected future cash flows. This means that the past information is useless in forecasting future asset price behaviours and only new relevant information can be applied to explain the current trend of the market share price movements to a certain extent of the time frame (Fama, 1965). However, there are at least two difficulties encountered in empirically testing the EMH validity. Firstly, it may be difficult to build or obtain a truly reliable proxy of the relevant fundamental factors, (Andersona, Beardb and Kimb, 2012). For example,

Miller and Modigliani (1961) found that it was misleading to interpret the share market price as the present value of expected earnings per share when some earnings of the companies are logically retained. Secondly, it is difficult to create the right method for modeling the expected formation mechanisms of equity market participants, most probably due to different participants having different market perceptions, intuitions and sentiments.

This phenomenon of price inefficiency is popular in financial market as prior empirical studies show that, somehow, there often exists a large and persistent deviation of asset prices from the fundamentals (Shiller, 1981; Campbell and Shiller, 2001; and Boswijk et al., 2007). These deviations may be due to the irrational behaviour or incorrect decision made by market participants or unexpected adverse events occurring either locally in other parts of the globe (Shiller, 1981; Daniel, Kent, Hirshleifer and Subrahmanyam 1998; and Barberis and Thaler, 2003). Thus, it can be quite prudent for decision makers in modeling equity market prices to have more knowledge and information from both the microeconomic and the macroeconomic levels to timely capture this deviation.

The theoretical groundwork of the relationships between the equity market prices and the microeconomic as well as the macroeconomic variables is illustrated and explained by many earlier models, such as the original capital asset pricing models (CAPM) (Sharpe (1964), Lintner (1965) and Black, Jensen and Scholes (1972)), the Intertemporal CAPM model (Merton, (1973), the arbitrage pricing theory of Ross (1976) and the version of consumption based on the CAPM Breeden model (1979), as well as the EMH (Fama, 1965). These models offer the theoretical foundation for the asset pricing mechanism which provides an explanation of how

changes in the micro and macroeconomic variables are transmitted into the equity share price unpredictable variations.

The existing empirical financial literatures in the developed and developing or emerging markets show the movement of the equity price as a direct consequence of the movement of the micro and macroeconomic variables (Castanias, 1979; Hardouvelis, 1988; Ross, 1989; Aug and Chiona, 2010; Shubiri, 2010; Nazir, Nawaz, Anwar and Ahmed, 2010; Buyuksalvarci, 2010; and Pilinkus, 2010, Govindarajan, Balachandran, Anand and Vijesh, 2012, Sirucek (2012)). Microeconomic variables fall directly under the company or funds management control that directly reflect the perception of the weaknesses or strengths of the business itself. An analysis of the microeconomic level helps to investigate how individual asset prices are established through understanding the variables that have an influencing effect on the decisions made by the individuals and the groups of investors that ultimately may reflect on the fund unit price level. The macroeconomic variables represent the factors or events that a company or fund has no control over.

According to the stock valuation model, the macroeconomic variables may have systematic influences on the equity share prices through their influences on the expected discounted future cash flows that consequently affect the NAV of the Islamic equity UTFs invested in the stock market (Othman, 2011). These variables include the gross domestic products, the industrial production index, the consumer price index, the inflation, the interest rates, the exchange rate, the money supply and such global events like crude oil price erratic fluctuations and financial crisis (Fama, 1981; Chen, Roll and Ross, 1986; Sirucek, 2012; Maysami, Howe and Hamzah, 2004; Dash and Kumar, 2008; Acikalin, Aktas and Unal, 2008; Mahmood and Dinniah, 2009; Kuwornu, 2011; and Rasool, Fayyaz and Mumtaz, 2012). In the Malaysian equity

market, financial literature also shows that a lot of studies have been conducted to examine the variables that influence equity share price fluctuation in the short or long-term scenarios. For instance, Ibrahim and Aziz (2003); Majid and Yusof (2009); Hussin *et a.,* (2012); Thaker et al. (2009); Rahman, Sidek and Tafri (2009); and Bekhet and Mugableh (2012) found that there were significant short-run (causes and effects) and long-run relationships existed between the equity prices or returns and the micro and macroeconomic variables in the Malaysian capital market.

In addition, the financial market stability, especially, the market share prices can be extremely affected by the situation of local instability of the country, such as, political conflicts and unmitigated corruption levels. Local stability factor is usually referred to as the absence of excessive fluctuations in the country political risks and corruption levels (Durnev, 2010). According to the EMH, new information that affects companies' returns will quickly be capitalized into their share prices. Thus, the degree of political surprise will affect the level of the response in the share prices of affected firms (Milyo, 2012). Several political incidents can influence the equity market fluctuations such as revolutions, death of powerful politicians, political conflict and political election uncertainty (Asiedu, 2006 and Milyo, 2012).

Political election can be very dominant in influencing the share price of companies because different investors generally have different sentiments and different understanding of the expected newly elected government that can probably fare better under one party administration than another in leading the country's economy (Milyo, 2012). Additionally, an increase in uncertainty before and during the election year may negatively impact the decision makers to invest in the Malaysian equity market or at least for a rational decision they may discreetly delay their investments. This in turn, may affect the current equity market performance and

subsequently, the fund unit price behaviours. Thus, some caution must be exercised by the investors or funds managers in interpreting the outcomes from political events that may influence or cause shocks “particularly” for the equity fund unit price behaviours or the equity markets as a whole.

Furthermore, the intensity of corruption level among the politicians may also cause instability in the financial market in one way or another (David, 2006). Political corruption is the use of powers by public officials for illegitimate private gain due to an illegal act done under the guise of law or being involved in influencing established trading mechanism (Park, 2012). Nowadays, most of the international ranking agencies are ranking countries' profile performances based on the level of corruption among the politicians, such as the Transparency International’s Corruption Perceptions Index (Catrinescu, Ledesma, Piracha and Quillin, 2009).

Changes in ratings, either downgrading or upgrading, may have a harsh impact on equity price levels because changes in the country's rating can potentially affect the pool of investors and the investment storages or locations (Kaminsky and Schmukler, 2002). Based on the foreign equity investors' point of view, a country with a higher corruption level has a higher risk investment with an equally high chance of loss. This is due to the fact that the incorrect information that can be provided by the corrupt people in the equity market may cause an increase in the irregular information on market expectation performance, which can be very misleading to make efficient decision. This may also lead the local investors to shift their investments to a global capital market causing attenuation of the local capital market and adversely fluctuating the market share prices as well as the fund unit prices.

In addition, the magnitude of corruption level can turn into a hot issue in the financial market that has attracted the interest of researchers, investors and many

policymakers (Mauro, 1995). The main focus has been on the corruption level that impacts on the economic growth (Shleifer and Vishny, 1993; Mauro, 1995). These studies have investigated the effect of corruption that can adversely affect numerous sectors, such as, public expenditure, private investment and other factors that can collectively retard the economic growth. However, an investigation into the relationship between the corruption and the equity market prices has not done much in the financial literature so far. Only few studies, such as Svensson, (2005); Ciocchini et al. (2003); Dived, (2006); Ahlin and Pang, (2008); Yartey, (2010); Cherif and Gazadar, (2010); and Bolgorian, (2011), had investigated this relationship. They found that corruption had all along fundamentally contributed to a negative influence into the equity market prices, but the quantum of effect and extent of time have not been rationally established as yet.

In Malaysia, prior literature that examined the equity prices movement were mainly focused on the macroeconomic variables that were more relevant with the monetary policy, the economic condition, the price level and the global events. But with less or no attention given to the local stability of the country that could potentially affect the investment decision makers and which might seriously affect the equity market price behaviour, either positively or negatively. The uniqueness of this dissertation, therefore, is to examine the same issues, with a special reference to the Malaysian local stability factor that can cast an adverse effect on the Islamic equity UTFs prices. This is encouraged by the fact that Malaysia scored high on corruption level and ranked among the corrupted countries list according to the Transparency International's Corruption Perceptions Index. It has suffered also from many political issues such as political conflicts among the ethnicities and political parties (Reynal-Querol, 2002). These factors may give negative effect on the country's local stability

and the investment environment as a whole, including equity market if it is not control well in future.

Furthermore, the extreme instability and volatility of the equity market prices during the period of financial crisis may prevent the smooth functioning of the financial markets and may unfavorably affect the performance of the UTFs investments and the economy performance as a whole. For example, the Wall Street Crash of 1929, the Black Monday on October 19, 1987 in the United States, the Asian Financial Crisis of 1997/1998 and the Global Financial Crisis of 2007/2008 were forms of the economic crises that have affected the equity market behaviours. Chong (2011) investigated the effect of the 2007/2008 Global Financial Crisis on the New York Stock Exchange and observed that the dividend yield of the S&P 500 index was significantly and negatively affected after the bankruptcy of the U.S. investment bank, Lehman Brothers. For the duration of 2008, the U.S. equity market was mainly characterized by negative returns and high volatility of share prices.

European FTSE100 index was also negatively affected by the 2007/2008 Global Financial Crisis. Neaime (2012) documented that the British equity market was highly correlated with the U.S. equity market and the French equity during the crisis period. The results also revealed that, between 2008 and 2009, the FTSE100 index had been characterized by high fluctuations and low returns, which directly reflected the impact of the financial crisis on the European equity market returns and their market share prices. The Malaysian equity market had been severely affected by the 2007/2008 Global Financial Crisis where share prices recorded a high volatility and significantly negative stock returns during the crisis period (Rachdi, 2013).

The KLCI, which is the main index of the stock market in Malaysia, sharply dropped by around 670 basis points within the period of 14th of January 2008 to 12th

of September 2008 and this accounted for about 45-percent drop in its total value (Angabini and Wasiuzzaman, 2011). This was perhaps due to the high correlation of the Malaysian stock market with the Stock Exchange in the United States (Kassim, Abd Majid, and Hamid, 2011). Thus, understanding the dynamic behaviour of the equity market prices during the period of the financial crisis becomes a dominantly crucial issue for investors, financial management companies, financial analysts and financial policymakers to enhance their decision-making shrewdness and even to the extent of evaluating such policies for protecting the country's economy from the effects of the ongoing crisis.

1.2 PROBLEM STATEMENT

Equity market trends are difficult to understand as well as to interpret. Price prediction is even more challenging and considered as one of the most challenging issues in modern finance research studies (Yoo, Kim and Jan, 2005). Greater interest in the research on stock market prices prediction is due to its commercial applications among the stock market participants. Nevertheless, there has been a lot of research in the field of equity price prediction across the globe of many stock exchanges. However, it still remains as a big question whether the trend of the equity market price can really be comprehensively predicted.

In general, there are two schools of thoughts in the equity price prediction. The first school of thought follows the Random Walk Hypothesis, which states that stocks market prices cannot be predicted and the stock market is "informationally efficient." This school of thought also follows the EMH, which proposes that equity price is unpredictable, in which investors cannot achieve above average trading advantages based on the present and past information of the equity market. On the other hand, the

second school of thought believes that the market is predictable to a certain extent when prices may move in the expected trends while calculative empirical analytical studies of past prices can help to forecast the future price directions on periodic basis over a certain time frame (Lo and MacKinlay, 1988).

Forecasting the price movements in equity unit trust industry has been a major challenge for various investors (individuals, firms and entrepreneurs), management companies (fund managers), brokers and speculators (Yoo, Kim and Jan, 2005). The main area of concern in the unit trust portfolio investment is to determine the appropriate time to buy, hold or sell the units. This creates the need for empirical analysis that can contribute to the understanding of forecasting the future movements of the NAV of the Islamic equity UTFs. The exciting literature shows that fluctuation of the equity share prices is undeniably the consequences of changes in the micro and macroeconomic variables (Govindarajan et al., 2012; and Özlen and Ergun, 2012). This is perhaps due to the changes of micro and macroeconomic variables could affect the fund future cash flows and investors' decisions, which are reflected in the NAV. Hence, it is imperative to predict the NAV of the Islamic equity UTFs behaviours based on the available information of the micro and the macroeconomic variables. For example, unit-holders would adjust their decision making to buy, sell or hold units within their portfolio investments as a consequence of the potential implications of such information on the micro and macroeconomic variables that may well establish themselves later to be significant in influencing the movements of the NAV of the Islamic equity UTFs.

In addition, the empirical financial literature revealed that during the 2007/2008 Global Financial Crisis period the financial markets witnessed numerous unstable conditions and most of the stock exchange markets experienced high

volatility and low or negative returns (Chong, 2011; Angabini and Wasiuzzaman, 2011; Neaime, 2012; and Rachdi, 2013). The high volatility in the share market prices or UTF prices during the crisis period is an indication of the risk premium of the equity market that should be considered and carefully calculated by both the individuals and the institutional investors to estimate their portfolio returns. As the time frame of the current research covers the 2007/2008 Global Financial Crisis, it is therefore necessary for researchers, investors and decision makers to consider the effect of the crisis period on their portfolio investments because ignoring the crisis event in the analysis may lead to an inadequate decision to either buy, sell or hold the units in the portfolio investments, based on incorrect estimation of the UTFs prices behaviour.

Furthermore, a lot of studies have investigated the equity market prices behaviours, however, less attention is paid to local stability factors such as political election and the corruption effects on the equity market prices. A number of studies have discussed that political environments and corruption practices can influence the economic activities, which directly have an impact on the asset prices and can also either increase or decrease investment risks (Durnev, 2010; Asiedu, 2006 and Milyo, 2012). Thus, understanding the impact of local stability factors on the equity price is very essential concern since this factor has direct influence on the investment environments and has power to influence the investment decisions-making in the equity market (Durnev, 2010).

Corresponding with the mission of forecasting, the review of prior financial literature shows that researchers investigated the impact of micro and the macroeconomic variables on the equity share prices separately in various sample and setting. This method lacks inclusive result and may lead to inadequate investment

decisions for their portfolio investment. This research therefore attempts to address the problem of the NAV of Islamic equity UTFs forecasting by analyzing the relationships between the NAV of the Islamic equity UTFs and the potential effects of the micro and macroeconomic variables including the political election and level of corruption variables as well as the 2007/2008 Global Financial Crisis.

1.3 RESEARCH QUESTIONS

In an effort to achieve the objectives of this research, which are to investigate the micro and the macroeconomic determinants of the NAV of the Islamic equity UTFs listed in the Bursa Malaysia, as well as to examine the effects of the 2007/2008 Global Financial Crisis on the NAV of the Islamic equity UTFs, this research aims to answer the following questions:

i. Do all the chosen microeconomic variables, namely, Income Distributions (dividends) (DIV), Fund Historical Performance (HP), Fund Risk (S), Fund Size (FZ), Fund Management Experience (MEX) and Hedge Funds (HF) share significant long-run equilibrium relationships with the NAV of the Islamic equity UTFs in Malaysia?

ii. Do all the chosen macroeconomic variables, namely, Consumer Price Index (CPI), Industrial Production Index (IPI), 3-month Treasury Bill Rate (TBR), Money Supply (M3), Foreign Exchange Rate (FER), Crude Oil Price (OP) and Local Stability as measured by National Political Elections (NPE) and Corruption Index (CI) share significant long-run equilibrium relationships with the NAV of the Islamic equity UTFs in Malaysia?

iii. Do the chosen macroeconomic variables, namely, Consumer Price Index (CPI), Industrial Production Index (IPI), 3-month Treasury Bill Rate

(TBR), Money Supply (M3), Foreign Exchange Rate (FER), Crude Oil Price (OP) and Local Stability as measured by the National Political Elections (NPE) and the Corruption Index (CI) have causal relationships with the NAV of the Islamic equity UTFs during the chosen observation period? If so, what is the direction of the causality between the NAV and each of these variables? further, why does such causal relationship between the selected macroeconomic variables and the NAV of the Islamic equity UTFs exist?

iv. Does the 2007/2008 Global Financial Crisis have significant impact on the NAV of the Islamic equity UTFs in Malaysia?

1.4 RESEARCH OBJECTIVES

A review of prior financial literature revealed researchers examined the effects of micro and the macroeconomic variables on the equity share prices separately in various sample and setting. This approach lacks comprehensive result because if decision makers ignore one salient factor and lay emphasis on the other, it will lead to wrong, irrelevant or inadequate decisions, which may be considered to be only partial decision-making. This may guide the decision makers or investors to make inadequate decisions for their portfolio investment. Hence, the current research attempts to examine both micro and macroeconomic variables at the same sample period to achieve more sophisticated and comprehensive results that can help to predict the future behaviour of the NAV of the Islamic equity UTFs in Malaysia. The specific objectives of this research are as follows:

i. To examine the long-run equilibrium relationship between selected microeconomic variables, namely, Income Distributions (dividends)

(DIV), Fund Historical Performance (HP), Fund Risk (S), Fund Size (FZ), Fund Management Experience (MEX) and Hedge Funds (HF) with the NAV of the Islamic equity UTFs.

ii. To examine the long-run equilibrium relationship between the selected macroeconomic variables, namely, Consumer Price Index (CPI), Industrial Production Index (IPI), 3-month Treasury Bill Rate (TBR), Money Supply (M3), Foreign Exchange Rate (FER), Crude Oil Price (OP) and Local Stability as measured by the National Political Elections (NPE) the Corruption Index (CI) and the NAV of the Islamic equity UTFs.

iii. To investigate the causal relationship between the selected macroeconomic variables, namely, Consumer Price Index (CPI), Industrial Production Index (IPI), 3-month Treasury Bill Rate (TBR), Money supply (M3), Foreign Exchange Rate (FER), Crude Oil Price (OP) and Local Stability as measured by the National Political Elections (NPE) and the Corruption Index (CI), the 2007/2008 global financial crisis (FC) and the NAV of the Islamic equity UTFs.

iv. To analyze the impact of the 2007/2008 Global Financial Crisis on the NAV of the Islamic equity UTFs in Malaysia.

1.5 MOTIVATIONS OF THE STUDY

This research was motivated by two main aspects. Firstly, although the unit trust industry has witnessed a high growth in portfolio size, performances and regulations, there is still lack of understanding on various aspects of the industry such as the lack of information on the funds unit price behaviours and mechanisms. Most investors, specifically, the "risk-takers" prefer to invest mainly in the equity UTFs with the

objective of a long-term investment through the capital gain, or at least to maximize their portfolio investments even if not to instantly realize a capital gain (Ahmad et al., 2014). The lack of information on the funds unit price mechanisms makes all investors or at least a great part of them handling their portfolio investment are thus considered as speculators. This is due to the fact that most investors make their investment decisions based on a game of chance or intuitional basis. They also applied some monopoly practices which are in conflict with the *Sharī`ah* principles comparable to the decision made by speculation which is usually a result of either the turn of a card or casting of a dice (Ahmed et al., 2014).

The difference between speculators and investors is that, speculators buy and sell their securities in a very short time by using a game of chance basis, while other investors take a longer time period to do so based on rational and scientific input. Thus, Muslim investors need to make their investment decision based on a great deal of knowledge, skills and analysis of the related information of the industry, the economic conditions and the business characteristics itself, but not by means of financial speculation. For example, investors need rational information before buying or selling their units, such as the funds' historical financial records, information on management abilities and skills, funds' portfolio size, the personal profile of decision makers in terms of risk and returns preference parameters as well as the local and the global macroeconomic indicators. This therefore, enables them to estimate the fund unit price behaviours in both the short and long terms investments.

Secondly, given the operation of the dual financial system in Malaysia where the Islamic and the conventional financial systems operate side by side, the current study finds that the Islamic UTFs present a viable opportunity for the Muslim investors to practice their *Sharī`ah* faith. In fact both the Islamic and the conventional

UTFs are all available choices for the investors. The UTFs are vehicles through which investors can conveniently pool their resources together to access and invest in the stock market with cost effective professional management and diversification strategies. However, it is difficult for the Muslim investors, representing more than 60 percent of the total population to participate freely in the Malaysian capital market because the conventional UTFs are functioning based on interest and risk-free, which is prohibited by the *Sharī`ah* investment principle (Othman, 2011).

Furthermore, Muslims are not allowed to invest in conventional UTFs according to their faith and the *Sharī`ah* rules, which prohibit them from investing in certain equities, such as, conventional banks, conventional insurance companies or companies that deal in alcohol, pork products, tobacco products, gambling and entertainment (cinema, casinos and TV channels) (El Kianj, 2012). Based on different investment strategies of both counter-parties, therefore, it is inspire for academics and participants in financial market to have an in-depth analysis and understanding about the Islamic equity UTFs investment instruments that facilitate channel for the Muslim investors to fully participate in the capital market that is *Sharī`ah* complaint and fulfill their belief and faith. This was another motivation that leads to conduct this research about the Islamic equity UTFs investment as opposed to the conventional equity UTFs.

1.6 EXPECTED CONTRIBUTIONS OF THE RESEARCH

The results of this research are expected to contribute theoretically and empirically to the knowledge of the Islamic finance and Islamic UTFs industry. In terms of contribution to the theory and knowledge, first, the current research's theoretical framework was developed based on the premises number of theories and frameworks,

such as, the modern portfolio theory of Harry Markowitz (1950), the original CAPM models (Sharpe (1964), Lintner (1965) and Black et al. (1972)) and the arbitrage pricing theory of Ross (1976), as well as the dividend discount model of Miller and Modigliani (1961). The findings from the preliminary investigation were later applied to refine the theoretical framework to ascertain whether it can correspondingly conform to the actual phenomenon of asset pricing modelling in the context of the Islamic unit trust industry research and its future studies. Hence, the main contribution of the study is the establishment of an empirical–based framework, which consists of two levels of variables, namely, the micro and the macroeconomic variables. The findings of the current research can be used to either refute or strengthen the theories or frameworks that were adopted in the previous financial literatures.

Moreover, as the prior literature of macroeconomic determinates of equity market prices in Malaysia did not include the local stability factors in most of their equity price modeling according to the best knowledge of this researcher. Therefore, this research contribute to the knowledge of Islamic funds industry and the existing literature by addressing the issue of growing concern on the impact of the local stability factors on the NAV of Islamic equity UTFs in Malaysia. Understanding the effect of local stability factors on the equity price is a very crucial issue for investors so that they can estimate their portfolio returns or mitigate portfolio risks, since this factor has direct impact on the investment climate prospective and it has strong power to influence the investment decision makers. Thus, understanding the effect of the local stability factors such as political election and corruption level on the NAV of Islamic equity UTFs will provide a better understanding on funds unit prices mechanism worthy of application into the knowledge of the Islamic unit trust industry.

In terms of contribution to the practice, this research is expected to add several empirical primary contributions to the Islamic unit trust industry in Malaysia. First, knowing the relationship between the NAV of the Islamic equity UTFs and the selected micro and macroeconomic variables will assist the stakeholder groups, such as investors, financial managers of the companies, government agencies, industry players and policy makers to estimate the future trend direction of the NAV and decide on the operational, managerial and sustainable growth decisions efficiently. Such measures will encourage investors to proactively act, with a clear conscience, to either enhance their portfolios' returns or mitigate the risks in the face of micro and macroeconomic policy changes.

Second, the results of this research provide valuable insights to investors whether the NAV of Islamic equity UTFs reflected all available information from both micro and macroeconomic variables or not. Efficient pricing mechanism in the equity market in Malaysia will motivate public investors to shift their saving investments into a profitable investment; hence, ensuring a suitable as well as a sustainable return.

Third, the result of this research also contributes towards enhancing the growth of the unit trust industry in Malaysia by focusing on the variables that are significant in determining the viable growth of the industry. Thus, variables that were identified to be dominantly significant in influencing the pattern in price movements of the NAV should be given more attention by the relevant authorities such as the SC of Malaysia and the Federation of Investment Manager Malaysia (FMUTM) to formulate suitable investment regulations and strategies that can further develop the industry.

Fourth, the results of the research may also help policy-makers of the country to evaluate the effectiveness of the existing economic policy in terms of analyzing the relationship between the macroeconomic policy and the NAV of Islamic equity UTFs

to investigate whether or not such policy positively or negatively contributes to the viable development of the Islamic equity industry.

Fifth, the existing research investigates the short-run relationship between macroeconomic variables and the NAV of Islamic equity UTFs in Malaysia using the Granger causality tests. The result of the present research may help regulators and policy makers to formulate an effective regulation or macroeconomics policy that can help to control the capital market of the unit trust industry and safeguard it against any undesirable speculative occurrence in short-run investment. For example, policy makers can adopt policies to change the behaviour of such macroeconomic variables that are established to be significantly contributive in predicting the NAV of Islamic equity UTFs in shot-run or develop such regulation that does not allow speculators to exercise these variables information for speculation purpose.

Sixth, the current research investigates the effect of the 2007/2008 Global Financial Crisis factor on the NAV of Islamic equity UTFs. Hence, the practical significant results could help investors and fund managers to know whether the the 2007/2008 Global Financial Crisis positively or negatively affects the NAV of Islamic equity UTFs and then rationalize or adjust their investment decision. The results may assist investors to evaluate whether the Islamic equity UTFs investment is a practical or suitable instrument to hedge the financial risk during the economic slowdown or not.

1.7 ORGANIZATION OF THE RESEARCH

This dissertation comprises of seven chapters. Chapter 1 is the introduction and it spells out the problem statement, the research questions, the research objectives and the motivation for conducting this research as well as the expected contributions of the

research. Chapter 2 presents the background and a general overview of the UTFs industry in Malaysia with respect to structural, operational and regulatory characteristics followed by the discussion on the Islamic unit trust investment. Chapter 3 reviews the existing literature on the effect of the micro and the macroeconomic variables as well as the 2007/2008 Global Financial Crisis on the NAV of Islamic equity UTFs. At the end of Chapter 3, a research gap is identified to justify the necessity of this research.

Chapter 4 covers and reviews the relevant theories that are applicable to the objectives of this research, followed by the discussion of the development of the theoretical framework and the development of research hypotheses. Chapter 5 describes the data processing procedures, variable measurements and the research methodology employed in this research. Chapter 6 presents the findings of the research analysis. Chapter 7 concludes the dissertation by summarizing major research findings, discussing the implications, the recommendations for future research.

CHAPTER TWO

OVERVIEW OF MALAYSIAN UNIT TRUST INDUSTRY

2.0 INTRODUCTION

This chapter comprises of two sections. The first section presents a historical review of the development of the Malaysian unit trust industry with respect to its structural, operational and regulatory characteristics. The second section discusses the Islamic unit trust investments including typical structure of the Islamic equity UTFs and followed by discussion on *Sharī`ah* screening processes that are practiced by both major global Islamic equity indices and the SC of Malaysia equity index.

As this research focuses only on the Islamic equity UTFs investments, it is therefore important to have knowledge on its structures, regulations, and operations in Malaysia. This is due to the fact that funds' *Sharī`ah* statues and their screening processes that are applied to screen their transactions can have directly an impact on investors' investment decisions and can either increase or decrease investment risks of Islamic UTFs. Thus, it is imperative to have adequate knowledge on how the Islamic funds operate and run their business transactions in Malaysia.

In addition, including screening processes of the global equity indices in this chapter is motivated by the fact that SC of Malaysia has its own benchmarks that establish the minimum acceptable level of the non-permissible activities in funds' operational transactions. Thus, including the screening process of the global equity indices will improve the basic understanding for international investors on how the Malaysian Islamic equity UTFs' screening processes are difference than the global equity indices. This provides equity international investors specifically those who are

seeking for *Sharī`ah* complaint products with the necessary information when they make their investment choice and the decision to invest in the Malaysian UTFs industry.

2.1 HISTORICAL DEVELOPMENT OF THE UNIT TRUST INDUSTRY IN MALAYSIA

The concept of the UTFs in Malaysia can be traced back to the 1950s. The Malayan Unit Trust Limited Company made its marks in the Malaysian unit trust industry in 1959 (Taib and Isa, 2007). During that period, it was named a unit trust rather than a mutual fund based on the fact that ownership of the funds was separated according to the units' entitlement. The development of the unit trust industry in Malaysia has passed through four various periods. The first period that spanned through 1959 to 1979 was characterized with a slow growth in the sales of the units which was evidently due to the acute lack of public interest in the newly introduced investment product.

The second period which ran from 1980 to 1990 marked the substantive intervention of the government in the unit trust industry, in the form of regulation and the composition of the committee that regulated the unit trust industry (Taib and Isa, 2007). The unprecedented growth in the Malaysian unit trust industry, especially in terms of the number of new management companies established and funds under the management occurred during the period between1991 to 1999. In line with this development, the total NAV of funds under the management was reported to have increased from RM15.72 billions at the end of 1992 to RM59.95 billions at the end of 1996.

However, the growth witnessed in the unit trust industry was thwarted by the event of the Asian financial crisis in 1997-1998. In spite of the effect of the crisis on the industry, it maintained its high level at RM43.3 billion of NAV at the end of 1999. In addition, a greater product innovation and deregulation process in the industry was witnessed during the crisis period. The alarming growth of the industry during this period prompted the establishment of the SC of Malaysia on 1st March 1993 under the Securities Commission Act 1993. The latest period that covers the period of 2000 up to date, witnessed a steady growth in the industry. The NAV of the unit trust grew from RM43 billions at end of December 2000 to RM 294.851 billion as at the end of December 2012, with 351.578 billion of units in circulation through 607 approved funds (SC Report, 2012).

Compared to the conventional unit trust, the Islamic unit trust industry has a relatively recent history. The Islamic UTFs have its debut on 12th January 1993 under the name of the Arab Malaysian Tabung Ittikal by the Arab-Malaysian Unit Trust Berhad, with an approved 300 million units and an estimated NAV of RM 97 million (AMMB, 2006). Similar to its conventional counterpart, the Islamic UTFs have experienced a significant growth over the last few decades. This is well reflected by the number of funds offered and the size of capital managed by the unit trust management companies.

Statistically, as at December 2006 there were about 92 Islamic UTFs in Malaysia with 18.474 billion units in circulation. By December 2012, the number of funds rose to 169 funds with about 70 billion of the units was in circulation. During the same period, the NAV of the Islamic unit trust surged from RM9.101 billion in December 2006 to RM35.361 billion in December 2012. This indicates that between

2006 and 2012 the Islamic unit trust grew approximately by 228.54 percent or about 32.65 percent per annum (SC Report 2012).

2.1.1 Unit Trust Industry Structure

According to the Federation of Malaysian Unit Trust Manager (FMUTM), there are five categories of the UTFs in Malaysia, namely equity funds, bond funds, balanced funds, money market fund and capital guaranteed fund (Hoong, 1997). The objective of each type of fund is illustrated in Table 2.1.

Table 2.1 Types and Investment Objective of UTFs in Malaysia

Type of Fund	Investment Objectives
Equity Fund (Growth Fund)	This long-term investments are invested in stock/share with the aim of achieving capital appreciation and income distribution. This category of fund has a higher volatility and a higher risk-return as well.
Bond Fund (Fixed Income Fund)	This involves conservative-risk investors that invest primarily in the corporate or government funds with the aim of realizing a constant income.
Balanced Fund (Mixed Fund)	This type of fund consists of a combination of equities and bonds in one portfolio. This type of fund is suitable for moderate-risk investors with the target of realizing appreciation in income and capital appreciation with excessive risk.
Money Market Fund	This is a short-term investment instrument that is highly liquid and appropriate for the financial institutions to invest their idle liquid assets. This type of fund has a low risk while the biggest risk involved is the inflation.
Capital Guaranteed Fund	This is a long-term investment that ranges from three to five years whereby the investors' capitals are guaranteed from any loss. Besides, the investors cannot redeem the investment before maturity. It usually involves structured products for yield enhancement and downside protection.

Source: Securities Commission of Malaysia

Although there are many types of unit trust investment schemes, the structure for all funds is similar in general. The structure includes three parties that act according to the deed and prospectus (Ibrahim, 2008). First, the unit-holders (investors) provide the capital to be invested by the unit trust management company (fund manager) on their behalf and in charge of paying a fee to the management Company and the Trustee. Second, the management company performs several tasks, such as, establishing, operating and administering the investments in the unit trust scheme and sending reports to the trustee. This includes promoting and selling units of the scheme to the unit holders (investors) and buying back units from investors who desire to sell back their units (Guidelines on UTFs, 2003).

With the objective of protecting the unit holders' capitals, the unit trust management companies are not allowed to hold the assets of the UTFs under their own names. This is where the Trustee function comes in. Third, the Trustee is appointed by the unit trust management company and the appointment must be approved by the SC of Malaysia (Guidelines on UTFs, 2003). The Trustee handles the fund asset safekeeping, collection and income distribution and returns the principal investment amount to the unit-holder at redemption time (Butterworth, 1990). Figure 2.1 illustrates the relationship between the unit holders, the trustee and the fund manager.

According to the Guidelines on the UTFs, 2003, a Deed represents a contractual obligation document that shows the obligations of the unit trust management company, trustee and the rights of the unit holders. This document is prepared by the management company and registered with the SC of Malaysia. Further, the deed provides the investors with various information. For instance, the maximum fee payable, description of the type of investment that particular scheme

can make. The deed also prescribes how the value of a unit in the scheme can be determined and decides on how the price of a unit sold to unit holders, as well as buys and calculates the price of the unit that unit-holders wish to sell. Moreover, the deed determines the responsibilities of the auditor appointed by the trustee of the unit trust scheme. The prospectus represents the documents that provide information on the unit trust scheme, such as the fund's objectives and strategies for achieving those objectives. This includes the principal risks, fund management and the fund fees and expenses (Butterworth, 1990).

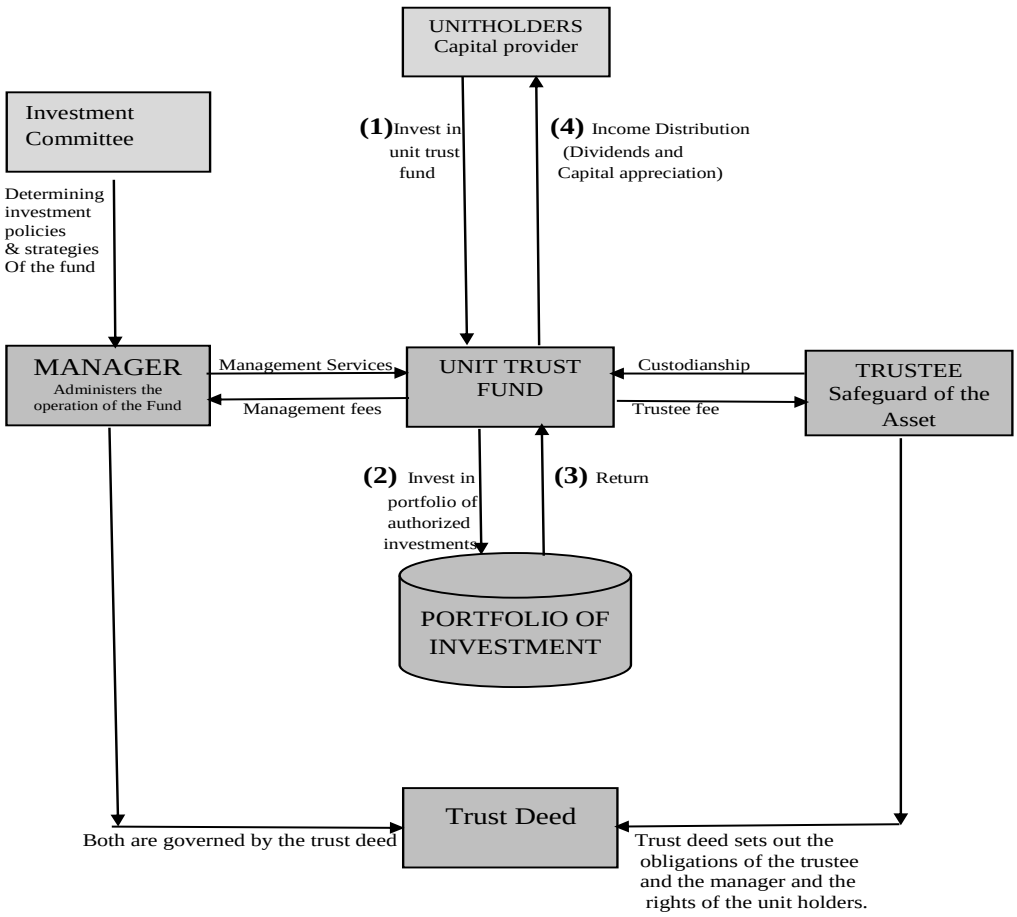


Figure 2.1 Relationship between the Unit Holders, the Trustee and the Fund Manager
Source: Inland Revenue Board of Malaysia Report, 2013

Similar to any business entity, the UTF investments have the advantages and disadvantages for potential investors. These advantages are capital appreciation and income distribution, cost effective (professional management) and diversification, as well as secondary benefits, such as tax minimization, marketability, liquidity and divisibility (Choong, 2001 and Tenk, 2012). However, the disadvantages of the unit trust investments are: fluctuation in total returns of investment, loss of control, fees and charges, lost opportunity costs and risk (Lam, 2008).

Furthermore, different funds have different degrees of risks; therefore, the investors should constantly evaluate their risk profiles and understand well how much risk they can take. It is known that the UTFs' portfolios have the ability to reduce and to eliminate the unsystematic risk through diversification path (Tenk, 2012). However, the potential systematic risks are difficult to diversify and avoid by the fund managers. For example, market risk, interest rate risk, the credit risk, the country risk and currency risk (foreign exchange risks), as well as the *Sharī`ah* non-compliant risk (Othman, 2011). This *Sharī`ah* non-compliant risk is applicable to funds that hold securities in the portfolios of the *Sharī`ah*-based funds.

In exploring the methods of investment for selecting the stocks in the fund's portfolio investments, a combination of two approaches are usually carried out by the fund management companies, which are the top-down approach and the bottom-up approach. The top-down approach takes the first step by viewing the top-level, wherein the fundamental analysis starts on a global macroeconomic level, and then move to consecutively narrower economic levels to reach the individual business itself (Ozbay, 2009).

To expound further, the top-down approach affirms that the stock is influenced by both the economy and the industry despite the characteristics of an organization or

company (Ozbay, 2009). In contrast, the bottom-up approach opines that it is likely to find stocks that offer superior returns regardless of the positions advocated by the economy and industry (Ozbay, 2009). The bottom-up approach clearly opposes the top-down approach and the analysts who adopt this approach tend to select a company and verify the its performance and characteristics without considering any specific concern pertaining to the economic situation (Yu, 2007).

2.2 ISLAMIC UNIT TRUST FUND INVESTMENTS

The Islamic unit trust investment refers to the marketplace where the activities are carried out in ways that do not conflict with the ethics of Muslims and the religion of Islam. In other words, the Islamic unit trust scheme emphasizes the need to transact their business to strictly adhere to the Islamic tenets scrupulously. The Islamic UTFs investment is interest free which is mainly invested in shares of joint stock companies that run their business under the Islamic contracts, such as the *musharakah*, the *mudarabah*, the *murabahah* and the ijarah (Usmani, 2002).

The SC of Malaysia has rigorously established the major requirements for the purpose of launching the Islamic fund management entity. In order to achieve this end, firstly, the fund manager is required to appoint an independent *Sharī`ah* Advisor who has the requisite advisory capacity to provide an exclusive service to the *Sharī`ah* experts to guide on all relevant matters that are closely related to the Islamic fund management business. Secondly, the Islamic fund manager is vested with the obligation that the *Sharī`ah* principles should at all times be rigorously observed and complied with when the financial businesses are being performed through the portfolio management service (Lexis Nexis, 2009). Thus, Muslim capital seekers and capital

providers can have a clear conscience when investing in the *Sharī`ah* compliant capital market as an alternative to the conventional unit trust investment.

In particular, this research focuses only on the Islamic equity UTFs that involve investments in the stock/share market. This greater choice of equity UTFs is due to the fact that the equity UTFs are highly correlated with the *Sharī`ah* principles of equity (Muhammad and Mokhtar, 2008). The concept of the Islamic equity UTFs is based on the *Musharakah* principle, which means, the unit trust is a participatory financing entity involving an agreement between the provider of the capital and the operator. In other words, the fund managers buy the shares from different companies on behalf of the unit-holders to become the partner in capital of the stock companies thereby jointly share the profit or loss (Yatim, 2000). The investors can realize the profit (or loss) from the fluctuations of the fund's NAV (Othman, 2011). In this aspect, the equity UTF has similar features to that of an equity share wherein, it does not in any way offer any guarantee to any fixed returns to the investors nor any assurance on the returns of any part thereof (Khatkhatay and Safwan, 2007).

2.2.1 Typical Structure of Islamic UTFs

The Islamic unit trust schemes are available in many forms and their structures are similar to their conventional counterparts. The Islamic funds equally comprise of three parties of the conventional funds, namely, the unit-holders, the management company and the trustee with an additional party of the *Sharī`ah* committee (Ibrahim, 2008). The role of the *Sharī`ah* Committee (Advisors) in the Islamic UTFs investments is to ensure that the Islamic fund is managed and administered in accordance with *Sharī`ah* principles.

The *Sharī`ah* committee has several tasks: i) to advise on all aspects of unit trust and fund management business in accordance with the *Sharī`ah* principles; ii) to provide *Sharī`ah* expertise and guidance on all matters, particularly on the fund's deed and prospectus, fund structure, investments and other operational matters; ii) to ensure that the fund is managed and operated in accordance with the *Sharī`ah* principles, relevant SC of Malaysia regulations and/or standards, including resolutions issued by the SC's *Sharī`ah* Advisory Council. According to guidelines on UTFs 2014, *Sharī`ah* adviser should be independent of the management company, registered with the SC of Malaysia, the committee members have to include at least three persons and at least one of them has to be expert and fitted the criteria of the *Sharī`ah* requirements. Figure 2.2 displays the structure of the typical Islamic UTFs.

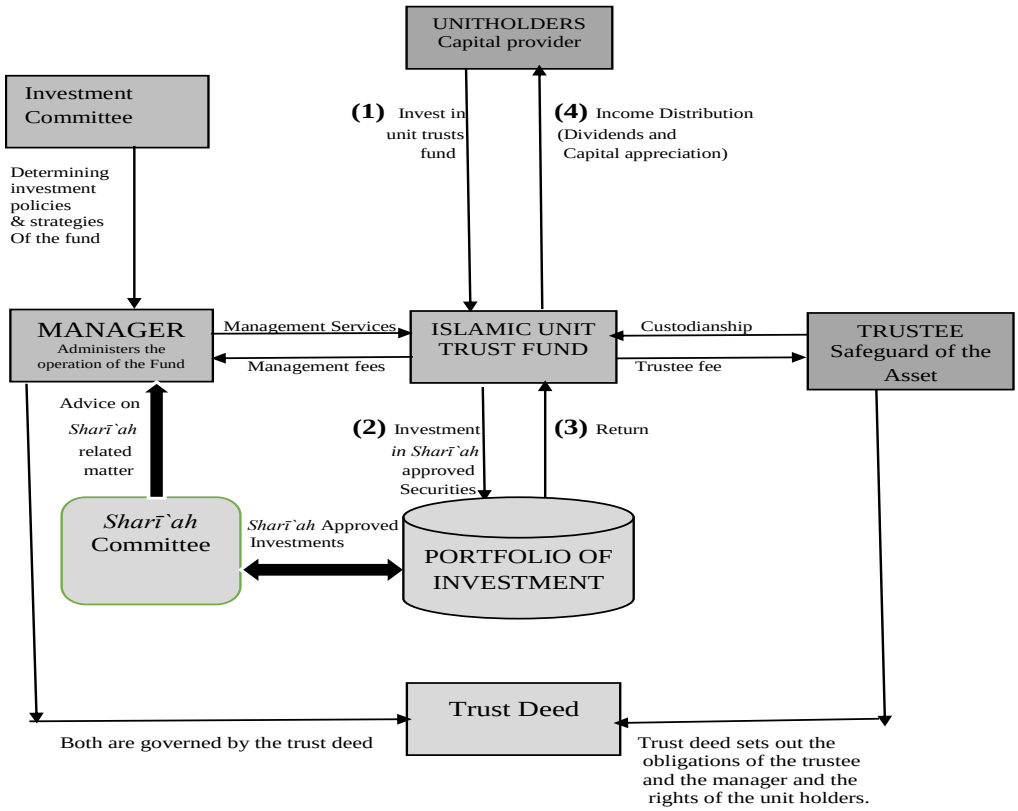


Figure 2.2 Structure of a Typical Islamic UTFs
Source: Inland Revenue Board of Malaysia Report, 2013

2.2.2 Screening Process of Global Islamic Equity Indices

Nonetheless, the nature and operations of each type of the Islamic UTFs is basically similar to the conventional UTFs in many ways except that the Islamic UTFs are required to adhere strictly to the related *Sharī`ah* guidelines. The validity, in terms of *Sharī`ah* compliance, will always be subjected to two basic conditions: Firstly, instead of a fixed return tied to the shares' face values, it must carry a pro-rata profit actually earned by the funds. In other words, before entering the UTFs investment, the unit-holders must be made to be fully aware of the fact that the actual profit earned or lost suffered by the fund is undetachably linked to their investments without any ambiguity. Secondly, the amounts pooled together must be invested in a business acceptable to the *Sharī`ah* guidelines (Usmani, 2002).

In general, the selections of the *Sharī`ah*-compliant companies are based on the screening process using two reliable approaches, namely, the qualitative and the quantitative parameters (Sadeghi, 2008). The qualitative parameter looks into the core activity of the business and the structure of the transaction in terms of whether there is any element that is prohibited by the Islamic law. This includes interest (*riba*), uncertainty (*gharar*), gambling (*Maysir* or *Qimar*), manufacture or sale of non-*halal* products, conventional insurance and entertainment activities which are non-permissible according to the *Sharī`ah* law, as well as the nature of the counter-party's (firm's) business (Derigs and Marzban, 2008). As a consequence, any company that has its transaction involving with one of the non-permissible activities will be classified as *Sharī`ah non*-compliant. This method is applied and practised by all the global equity leading index providers, such as the Dow Jones Islamic Market index (DJIM), the Financial Times Stock Exchange (FTSE) index, the Standard and Poor's

(S&P) index, the Morgan Stanley Capital International Index (MSCI) and the Barra index (Derigs and Marzban, 2008).

On the other hand, there are some indices including FTSE, S&P and MSCI, which are firstly screened the companies according to their core-business classifications and then further screening are done on these companies with mixed activities by using their quantitative screening methods (Bellalah, Rehman and Masood, 2013). In other words, the non-permissible activities identified from the initial qualitative screen are further quantified to check if their level is acceptable by the respective users (Ho et al., 2012). This is emphasized by the various screenings that are published as displayed in Table 2.2, which indicated that all the global Islamic equity leading indices will conduct further screening processes of the *Sharī`ah* compliant level on the non-permissible incomes derived from the mixed businesses except the DJIM index, which incidentally does not apply such benchmark. This implies that this DJIM index is very strict in its quantitative screening which focuses only on the permitted business that is consistent with the *Sharī`ah* guidelines (Bellalah et al., 2013).

In particular, the quantitative parameter is used to measure the level of mixed contributions of the permissible and the non-permissible activities towards the revenue and the profit of the company (Jamal et al., 2010). Wherein, the quantitative approach also requires that the contribution of a non-permissible activity must not exceed the permissible benchmark (Pok, 2012). In general, this method involves four main financial ratios of screening namely, i) the liquidity ratio, ii) the receivable ratio, iii) the debt ratio and, iv) the interest income ratio as illustrated in Table 2.2 below (Khatkhatay and Nisar, 2007). Typically, these ratios are used by the world leading

equity index providers, such as, the DJIM, FTSE, (S&P) and (MSCI) Barra index (Derigs and Marzban, 2008).

Table 2.2 Screening Process Practised by Major Global Islamic indices

Index Name	**Denominator of Calculating Liquidity Ratio**	**Permissible Ratio**
DJIM Islamic Index	$\frac{\text{Total cash and interest} - \text{bearing securities}}{\text{Average market capitalization}}$	< 33%
FTSE *Sharī`ah* Index	$\frac{\text{Total cash and interest} - \text{bearing securities}}{\text{Total assets}}$	< 50%
S&P S *Sharī`ah* Index	$\frac{\text{Total cash and interest} - \text{bearing securities}}{\text{Average market capitalization}}$	< 33%
MSCI Islamic Index	$\frac{\text{Total cash and interest} - \text{bearing securities}}{\text{ATotal assets}}$	< 70 %
Index Name	**Denominator for Calculating Debt Ratio**	**Permissible Ratio**
DJIM Islamic Index	$\frac{Total\ debts}{Average\ market\ capitalization}$	< 33%
FTSE *Sharī`ah* Index	$\frac{Total\ debts}{Total\ assets}$	< 33%
S&P *Sharī`ah* Index	$\frac{Total\ debts}{Average\ market\ capitalization}$	< 33%
MSCI Islamic Index	$\frac{Total\ debts}{Total\ assets}$	< 33 %
Index Name	**Denominator for Calculating Receivable Ratio**	**Permissible Ratio**
DJIM Islamic Index	$\frac{Total\ receivables}{Average\ market\ capitalization}$	< 33%
FTSE *Sharī`ah* Index	$\frac{Total\ receivables}{Total\ assets}$	< 50 %
S&P *Sharī`ah* Index	$\frac{Total\ receivables}{Average\ market\ capitalization}$	< 49%
MSCI *Sharī`ah* Index	$\frac{Total\ receivables}{Total\ assets}$	< 70 %
Index Name	**Denominator for Calculating Revenue from Prohibited Activities**	**Permissible Ratio**
FTSE, S&P and MSCI Islamic Index as well as SC benchmarked	$\frac{Portion\ of\ net\ income\ from\ Non - Hala\ activity}{Total\ revenue\ of\ Company}$	< 5 %

Source: (Bellalah, Rehman and Masood, 2013)

The leading index providers differ in view with the financial ratios of the screening norm, in which the DJIM and S&P utilize a market capitalization as their denominator, while the FTSE and MSCI Barra apply the total assets as the leading denominator. The index providers that apply market capitalization as denominator claim that market capital provides the real worth of a company as valued by the market. However, the volatility of equity price movement which affects the screening threshold value, may create inconsistency problem with the *Sharī`ah* status of the listed companies over time. Thus, the index providers use average market capitalization to smooth the measure and eliminate any seasonality effects. Alternatively, the indices that apply total assets as denominator deem it more relevant because the value of assets is measured in accordance with trusted accounting standards and is immune to the external forces or speculations (Derigs and Marzban, 2008).

2.2.3 Screening Process of Malaysian Equity Index

The SC of Malaysia has the same stock market screening processes with global equity indices in terms of the qualitative parameters approach, but it differs in terms of quantitative parameters. The sample period of this study witnessed two difference screening criteria that were adopted in determining the *Sharī`ah* compliancy of a company in Malaysian capital market. The initial screening criteria was based on the core activity of the business, the mixed activities of the business and the benchmarks of tolerance were applied from 1995 to 2012. In particular, the initial screening criteria imposed five benchmarks to establish the minimum acceptable level of mixed contributions from the non-permissible activities (Jamal et al., 2010).

First, the 5 percent of tolerance that is used to assess the level of prohibited items, such as *riba* (interest-based), gambling, liquor and pork is included in an investment (Pok, 2012). Second, the 10 percent benchmark of tolerance that is applied to assess the level of the mixed investment contributions from the activities that involve the element of *umum balwa*, which are basically prohibited elements, but they affect most people and are inherently difficult to avoid. For example, interest income from fixed deposits in conventional banks and tobacco related activities (Pok, 2012).

Third, 20-percent benchmark of tolerance is used to assess the level of contribution of rental payment from the *Sharī`ah* non-compliant activities such as, rental payment from premises that is rented for gambling activities (Jamal et al., 2011). Fourth, 25-percent benchmark of tolerance is applied to assess the level of combination of investment activities whereby the non-compliant activities are tolerated based on the associated element of *maslahah*. However, there are other elements such as hotel and resort operations that may affect the *Sharī`ah* status of these activities (Jamal et al., 2012). In view of that, a situation in which such activities exceed the benchmark, the company is considered as non-*Sharī`ah* compliant (Sadeghi, 2008).

The SC of Malaysia revised these criteria in 2012. This was due to the complication of modern capital markets with the presence of complex investment instruments and the involvement of firms from various sectors worldwide in Malaysian capital market (Zainudin et al., 2014). This indeed required the SC of Malaysia to enhance the *Sharī`ah* screening instructions that can expand the Islamic capital market in Malaysia into the international scope (Zainudin et al., 2014).

In other words, the SC of Malaysia has made an effort to improve and modify the screening criteria process to maintain the compliance level and eradicate the

hardship of the Muslim investors who look for and prefer to invest in the *Sharī`ah*-compliant products. Furthermore, the varying *ijtihad* (independent reasoning) of Muslim scholars in dealing with modern finance matters have raised the necessity and the importance of a more refined *Sharī`ah* investment screening process in the Malaysian capital market (Zainudin et al., 2014).

In particular, the screening process was revised by the SAC of the SC of Malaysia on 18 June 2012. However, it started effective practice in November 2013 (SC of Malaysia 2013). The revised approach adopts a two-tier quantitative approach that applies to the business activity benchmarks and the newly introduced financial ratio benchmarks. The new criteria are to continue to maintain the existing qualitative screening methods (SC of Malaysia 2012). The contribution of non-permissible activities such as *umum balwa*, which allowed 10 percent benchmark under the previous approach was reduced to 5 percent. The other benchmark is for the contributions that come from non-permissible activities (i.e. hotel and resort operations, share trading and stock broking), which was reduced from 25 percent to 20 percent benchmark. Besides, the newly-introduced financial ratios are cash over total asset ratio and debt over total asset ratio, which must be less than 33 percent (SC of Malaysia 2012). Table 2.3 shows the main modifications of the previous approach of the screening criteria.

Table 2.3 The Main Differences between the Revised Approach and Previous Approach

Previous Approach of Screening	Modifications	Revised Approach of Screening
First Stage Screening-Focusing on the activities of the company to determine the non-permissible activities if any.	Drop	All companies must undergo all screening stages which cover:
Second Stage Screening – a mixture activities company should undergo:	Reduced benchmark from Four to Two	1. Quantitative assessment
		First-tier:
1. Quantitative assessment compute the contribution of non- permissible activities and compare with the group turnover and group profit before tax.		Compute the contribution of non-permissible activities and compare with the group turnover and group profit before tax.
Benchmarks used;		Benchmarks used;
i. 5% ii. 10% iii. 20% iv. 25%		i. 5% ii. 20%
	Newly introduced Financial Ratios	Second-tier:
		Compute the financial ratios:
		i. Cash/ Total Assets
		ii. Debt/ Total Assets
		Each ratio must be lower than 33%
2. Qualitative assessment	Unchanged	2. Qualitative assessment
a. Image of the company		a. Image of the company
b.*Maslahah, `umum balwa, `uruf* etc.		b.*Maslahah,`umum balwa, `uruf* etc.

Source: (Zainudin, Miskam and Sulaiman, 2014)

2.3 CONCLUSION

This chapter began with the presentation of the historical development of the unit trust industry in Malaysia. The discussion on funds structures, regulations and *Sharī`ah* screening procedures provide investors with good knowledge about the unit trust investment in the Malaysian capital market.

CHAPTER THREE

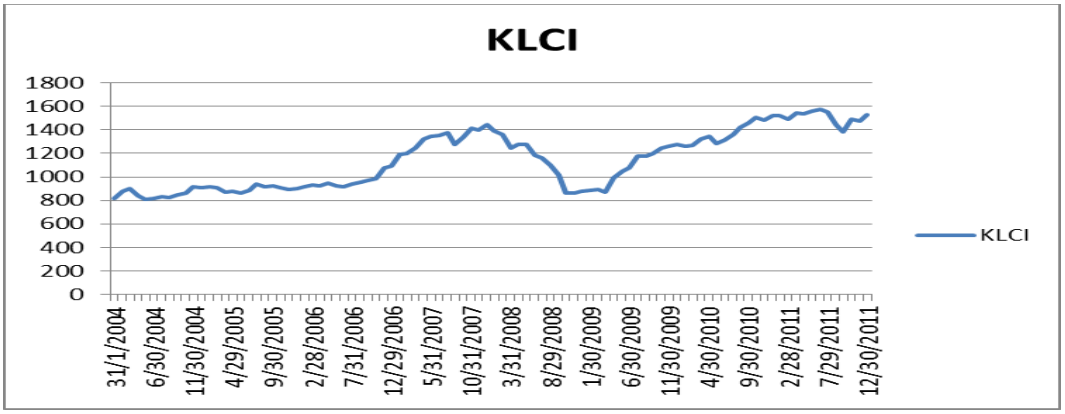
LITERATURE REVIEW

3.0 INTRODUCTION

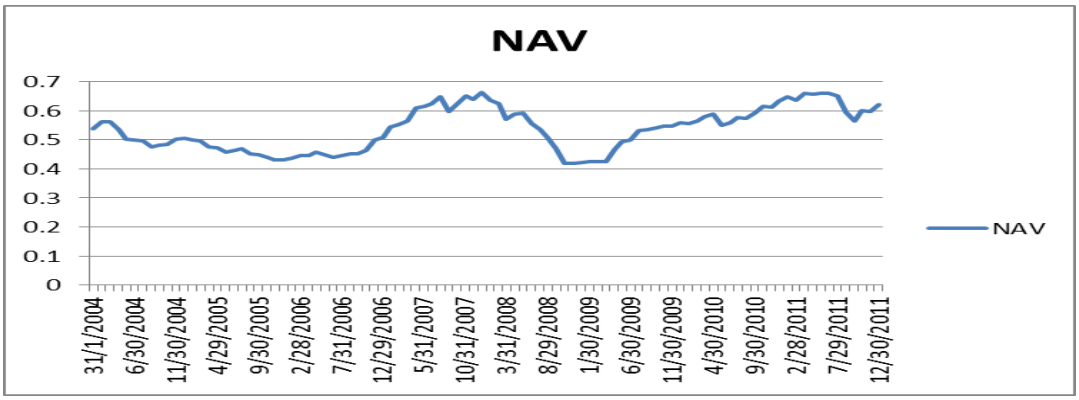
The growing linkages among the micro, macroeconomic indicators and the movement of the equity market price have captured the interests of academics and practitioners. This is reflected in the rich literature on the relationship between equity price and the internal and external economic fundamentals. The dynamic interaction between Islamic equity UTFs and the economic fundamentals can be derived from the studies on the relationship between the equity market prices and the economic activities in Malaysia. This is due to the fact that in equity UTFs investments the amount collected from the unit-holders was pooled together and invested in shares of joint stock companies (Usmani, 2002). Thus, Islamic equity UTFs can be considered as an indirect investment product created to serve as an alternative to direct stock market investment for investors (Low, 2007).

Graphs 3.1 and 3.2 show the movement of both the NAV of the Islamic equity UTFs and the KLCI over the period of January 2004 to December 2011. This indicates that the portfolio of equity UTFs can be considered as a basket of various stocks. In summary, as the investment portfolio of the Islamic equity UTFs basically invests in the stock market, it is a well-established fact that the NAV of the Islamic equity UTFs also be influenced by the micro and the macroeconomic variables that affected the stock market price behaviour in Malaysia. This chapter therefore, reviews the indirect financial literature on the relationship between the equity market price and the micro and macroeconomic variables due to the lack of direct past financial literature on the

effect of micro and macroeconomic variables on NAV of Islamic equity UTFs, as well as the effect of the 2007/ 2008 Global Financial Crisis on the equity UTFs.



Graph 3. 1 Trend of KLCI: Jan-2004 until Dec-2011



Graph 3. 2Trend of NAV of Islamic Equity Unit Trust Jan-2004 to Dec-2011

3.1 IMPACT OF MICROECONOMIC VARIABLES ON EQUITY UTFS

The existing literature on the equity market shows that the price efficiency of the equity market was examined by studying the relationships between the micro, macroeconomic variables and the equity share prices (Aug and Chiona, 2010; Shubiri, 2010; Nazir et al., 2010; Buyuksalvarci, 2010; and Pilinkus, 2010). Equity share price volatility is generally related to the internal and the external variables (Govindarajan

et al., 2012). Internal variables can be classified as microeconomic variables that are related to the individual operation of the firms- capital expenditure, company management, insider trading, dividend policy, company share and value in the sector (Özlen and Ergun, 2012). This part of the research reviews the past literature on the effect of microeconomic variables on equity prices of both equity funds and stock markets.

Unit trust industry has been the subject of study by many practitioners and researchers in the past. Earlier study of Low (2007) used monthly data of 40 Malaysian UTFs for 5-year period, January 1996 to December 2000 to investigate whether selectivity and timing performance of fund manager is sensitive to the choice of market benchmarks (KLCI and EMAS) in Malaysia. The study applied Jensen's model to estimate the overall fund performance, while Henriksson and Merton's model was used to estimate the fund manager's performance (selectivity and market-timing).

The results revealed that on average, the funds showed overall negative performance with both the KLCI and the EMAS Index. It is also found that fund a manager's poor timing ability negatively contributed to the overall fund's performance. Different results were found by Swinkels and Rzezniczak (2009), who investigated the manager's selectivity and market timing skills of 38 mutual funds using Sharpe Ratio, Treynor and Mazuy (1966) model and Henriksson and Merton (1981) model, over the period of 2000-2007, using monthly mutual fund returns in Malaysia. The analysis included three types of mutual funds namely equity funds, balanced funds and bond mutual funds. The empirical results revealed that positive performance but insignificant selectivity skills of the mutual fund managers in Malaysian mutual fund industry.

The latest study by See and Jusoh (2012) investigated the impact of the fund's characteristics such as risk, fund size, management turnover ratio, experience ratio and fund age on the fund performance by using the multiple regression models. They applied the Jensen's model (1968) to calculate the risk-adjusted return. Data in this study was made up of 69 Malaysian equity funds (44 conventional funds and 25 Islamic funds) and the return on each fund was calculated using monthly NAV from the period of January 2005 to December 2009. The empirical results showed that fund characteristics such as fund size and turnover ratio have no impact while management expenses may affect fund performance but not significantly. The results also found that funds with higher risk provide higher return. The results also showed that performance of equity funds invested in Malaysian stock market is dependent on the risk level of the funds and the study suggested that investors have to focus on the young funds and select fund based on fund manager's favoured level of risk.

In addition, the relationships between microeconomic variables of stocks companies and stock market prices have been the subject of study by many researchers in the past. For example, Irfan and Nishat (2002) examined the effect of changes in the six fundamental variables which are the dividend yield, pay-out ratio, size of the firm, leverage, earning volatility and asset growth on the share prices changes in Karachi Stock Exchange (KSE) over the duration of 1981 to 2000 using annual balance sheet data. The study employed cross-sectional least squares regression to explore the impact of these six variables on price variability. The results revealed that four variables, namely the pay-out ratio, size of the firm, leverage and dividend yields significantly explain one-fourth variation in share prices at KSE. Other variables such as growth in asset and earning volatility were found to have insignificant impact on the share price volatility. The adjusted R-square is very low,

suggesting other variables than the six selected fundamental variables may have vital and relevant ability to explain the share price volatility in Pakistan.

Shubiri (2010) investigated the variables that affect equity return of 14 commercial banks of Amman Stock Exchange in Jordan for the period of 2005 to 2008. The study also examined the relationship between market return of the listed commercial banks and microeconomic factors. Simple and multiple Ordinary Least Square (OLS) regression analysis were adopted. The dependent variable is stock market price. Independent variables of this study include NAV per share, dividends percentage, earning per share, lending interest rate, inflation rate and gross domestic products. The findings revealed that there is a positive significant relationship between stock market price and NAV per share, dividends percentage and gross domestic product. However, a negative significant relationship was found between stock market price and inflation as well as with the lending interest rate.

Khan, Aamir, Qayyum, Nasir and Khan (2011) employed fixed and random effect models of regression analysis to examine the relationship between dividend policy (Dividend Yield and Retention Ratio) and stock prices along with control variables- earnings per share, profit after tax and return on equity- in Karachi Stock Exchange (KSE). The study used panel data by taking a sample of 55 dividend paying companies listed in KSE between 2001 to 2010. The findings revealed that dividend yield has significant positive effect on the KSE index volatility, while the retention ratio has negatively influenced. The result implies that investors prefer to invest in a company that offers more dividends, thus provides positive indication about the future prospects of that company. In addition, the earnings per share and profit after tax were positively related to stock price. However, the return on equity was negatively

associated with stock price just in the case of Fixed Effect Model, while it was positively associated with stock price in the case of Random Effect Model.

Irmala, Sanju and Ramachandran (2011) studied the determinants of share price in India. The study adopted Fully Modified Ordinary Least Squares (FMOLS) method in order to estimate the impact of the selected variables on the share prices. The study used panel data relating to the sectors namely, auto-sector, healthcare and public sector covering the period from 2000 to 2009. The study chose dividend, profitability, price-earnings ratio and leverage as explanatory variables for the determinants of share price. The findings of this study showed that explanatory variables such as dividend, price-earnings ratio and leverage were significant determinants of the share prices for all the sectors under the study, while profitability influenced the share prices only in the case of auto-sector.

Ali (2011) provided an assessment of stock market behaviour by investigating the impact of microeconomic variables on emerging stock price in Dhaka Stock Exchange (DSE). The study used monthly data for all variables under study covering the period from July 2002 to December 2009. The study used multivariate regression analysis which was computed by using the OLS formula. Stock price in the study represented the dependent variable, while microeconomic variables, which are market price/earnings and monthly percent average growth of market capitalization, represented the explanatory variables. The coefficient's results revealed that selected microeconomic variables had positive relationship with stock price in the Dhaka Stock Exchange (DSE). In addition, the results of the study showed that micro and macroeconomic variables can explain only 44.48 percent variation of the stock price, which ultimately show the evidence of informational inefficient market.

In a recent study, Özlen and Ergun (2012) examined the relationship between stock price of companies in Istanbul exchange stock market and its financial ratios which were total assets turnover ratio, current ratio, debt ratio, price to earnings ratio, net profit margin and book value in order to clarify the internal determinants of the stock price movements in different sectors. The chosen sectors in the study were industrial and service sectors. The study adopted the OLS estimation method to investigate this relationship for the period from the second quarter of 2001 to the last quarter of 2011. The empirical findings showed that book value is the most significant internal determinant of the stock price in all sectors, while for the other financial ratios the degree of impact varies in different sectors. For instance, the stock price movements of Energy and Metal-Main sectors are highly reliant on the internal variables whereas, Commercial sector is the least impacted by the internal variables.

In the case of mutual funds industry in Pakistan, Shah et al. (2012) evaluated the performance of the Islamic and conventional mutual fund performance based on the risk and return, risk adjusted performance, diversification and timing of the fund for 125 funds (31Islamic fund and 94 conventional funds). The study used the Sharpe Ratio, Treynor Ratio, Jenson Alpha, Modigliani and Modigliani, Treynor-Mazuy Timing Model and Fama's Decomposition Measures to evaluate the performance. The results indicated that Islamic mutual fund performed better with Sharpe ratio and diversified rate than the conventional funds. Furthermore, the result highlighted that the Islamic mutual funds have lower risk rate and at the same time giving higher average return than the conventional funds in the market.

In summary, a review of past studies shows a few common microeconomic variables that are affecting equity prices. These variables include dividends policy, dividend announcement, price earnings ratio, earnings per share, leverage and debt

policy, profitability, management performance, risk and firm size or capital growth of the firms or fund. These findings put forward that dividend paying firms or funds are better valued by equity investors as every investor favours a stable and consistent dividend policy. Likewise, shares with higher price earnings ratio indicate that such firms will have a favourable future in the appreciations of equity investors. Equity investors also desire firms that have high earnings per share as it ensures them a better return on the market share. Leverage or debt policy is considered as another imperative factor affecting equity shares prices or funds unit's prices and this suggests that investors attribute more value to those firms or funds with less debt. Because increasing the level of debt minimizes the earnings of the stakeholders or unit holders.

Profitability is also assumed to hold an imperative position for equity investors as it assures the stockholders or unit holders the amount earned on their investment. Management performance is also found to be another key factor that can add further value to the companies' stock market prices or funds unit's prices through employs their skills and experiences in stocks trading. The above studies also found that stock market prices or UTFs performance are dependent on the risk level, which suggests that investors have to focus on the risk level and select their shares or funds based on firms or funds management company favoured level of risk. Moreover, firms or funds with higher capital size indicate that such funds will have a favourable future in the eyes of the equity investors. As the fund size increases, diversification chance will increase, as consequences funds' portfolios return will enhance with gain reduction on the risk level.

In spite of the emergence of several previous studies on the relationship between microeconomic variables and equity market prices, the findings show mixed opinions regarding the signal of the relationship each makes on equity market price.

Further, the findings of these studies were mixed because their models were sensitive to the choice of variable selection, countries and the time period studied. Therefore, it is difficult to generalize the findings of these studies in specific manner because each study has its own variables and objectives. Thus, the gap in this literature is noticed through the above studies which revealed the limitation of research on direct relationship between the NAV of Islamic equity UTFs and microeconomic variables namely, income distribution (dividends), fund historical performance, fund risk, fund size, fund management experience and hedge funds in the context of Malaysia.

3.2 IMPACT OF MACROECONOMIC VARIABLES ON EQUITY UTFS

The macroeconomic factors may have systematic influence on the equity price through their influence on the expected discounted future cash flows (Campbell and Mei, 1993 and Agu and Chukwuma, 2010). The previous studies in this area also found that stock market prices and returns are influenced by economic announcements in which the variation of stock prices increase around the days of most economic news events (Castanias, 1979; Hardouvelis, 1988 and Ross, 1989). The degree of the macroeconomic variables effect on the equity price in the developed market may differ from the developing market. This is due to different political, economic and institutional structures in these markets caused by different risk and return profiles.

Further, a developed market is a market place that refers to the country with a greatly industrialized economy and offers more stable investment opportunities with less risk compared to a developing country (Hitt et al., 2000). Thus, reviewing prior studies from the developed market will be useful for current study to have knowledge on how such advanced macroeconomic policy in the developed markets

have different effects on the equity price than the local macroeconomic policy have. As there is interaction among the global stock markets exchanges, thus such policy that may apply in developed market may have such influence on local stock market by direct or in direct relationship. In addition, such benefit can be achieved from reviewing the studies from developed markets, especially in developing the current research framework by reapplying the models and the theories that are used in developing model stock pricing.

Developing market or emerging market is a market place that refers to the country that does not enjoy the strong level of economic security, industrialization and generally does not have the same level of market efficiency in terms of regulations, transparency and information channel distribution as well as characterized by high returns with high risks (Barry, Peavy and Rodriguez, 1998). Thus, the purpose of market classification into three groups (developed markets, developing/or emerging markets and Malaysian equity market) was to get more understanding about the effect of difference economic policies, financial structures and others prospective that may affect the stock market price, because different markets have different level of risks. For example, in emerging market investors would expect to achieve higher returns but it is accompanied by greater risk, while in the developed market investors would achieve low returns with less risk (Barry et al., 1998 and Estrada, 2001).

3.2.1 Study from Developed Market

Earlier study of Goswami and Jung (1997) investigated the effects of macroeconomic variables on Korean stock market for the sample period from January 1980 to June 1996 using monthly data. The study applied Vector Autoregressive (VAR) Model and

Vector Error Correction Model (VECM) in order to examine the long-run relationship and short-run dynamics between stock price and macroeconomic variables including short-term interest rate, long-term interest rate, money supply, inflation, industrial production, oil price, balance of trade from current account and foreign exchange rates.

The findings revealed that the Korean stock market is co-integrated with all the macroeconomic variables involved in the model. In particular, there is positive relationship between Korean stock prices and industrial production, inflation and short-term interest rate. However, long-term interest rates and oil prices are negatively related to Korean stock prices. The changes in foreign exchange rate may affect stock prices in either direction, where reduction of Korean Won against the US Dollar is positively and /or negatively related to stock price changes. The results also revealed that the forecasting ability of VECM is better than VAR estimating technique.

Dadgostar and Moazzami (2002) studied the relationship between the Toronto Stock Exchange (TSE) and macroeconomic variables, which are exchange rate (U.S. dollar in terms of the Canadian dollar), the consumer price index, the industrial production index, the long-term government bond rate (proxy of the long-term interest rate), the three month Treasury bill rate (proxy for short-term interest rate) and the money supply. The study applied co-integration method to examine this relationship using the VAR Model and Error Correction Model (ECM) to forecast the TSE index by using monthly data over the period that started from January 1974 to July 2002. The findings indicated that the consumer price index and the short-term interest rate were not co-integrated with the TSE index, but they significantly influenced stock returns in the short-term. In addition, the results of comparing the out-of-sample forecasting performance of the VAR model and EMC model indicated that the error

correction model outperforms the vector autoregressive model. In general, the results show that major macroeconomic variables and stock price index are related in Canada.

Using quarterly data from 1960 to 1998, Chaudhuri and Smiles (2004) applied Johansen's (1990) methodology, impulse response function (IRFs) analysis and Forecast Error Variance Decomposition (FEVD) analysis to investigate the relationship between the real stock price index and macroeconomics variables in Australia. The macroeconomic variables are the money supply (M3), the gross domestic products (GDP), the global oil price index and the private personal consumption expenditures. The study result provides an evidence of a long-run relationship that exists among the variables in the system. Also, the error correction term indicates that price movements are, in general, related to changes in real macroeconomic indicators along with deviations from the observed long-run relationships. However, the results of the IRF and VDC analyses showed weak evidence for the relationship between the Australian real stock price index and all selected macroeconomic variables in the analysis.

Günsel and Çukur (2007) investigated the effects of macroeconomic variables namely, interest rate, inflation, money supply, the exchange rate, the risk premium and industry specific variables such as dividend yield and industrial production on the London Stock Returns. The study applied the linear regression model of the Arbitrage Price Theory using the OLS technique to analyse the macroeconomic effect on stock return over a period of 1980 to1993, using monthly observation. The overall results showed that macroeconomic variables have significant influence on the UK stock exchange market. However, every factor affects different industries in different manners. This means that specific macroeconomic variable may impact one industry positively, but it may have negative impacts on the other industries.

Humpe and Macmillan (2007) examined relationship between a number of macroeconomic variables namely, industrial production, the consumer price index, money supply, long term interest rates and stock prices in both the United States and Japan during the period January 1965 to June 2005 using monthly data. The study used a co-integration analysis in order to model the long term relationship between stock market prices and the macroeconomic variables. The findings of the study showed that in the U.S, the data are consistent with a single co-integrating vector, where there is significant positive relationship between stock price and industrial production index. The results also found an insignificant positive relationship between stock price and the money supply. However, stock price in the U.S is negatively related to both the consumer price index and a long term interest rate. On the other hand, the Japanese data analysis found two co-integrating vectors. One vector of the study found that stock prices are positively related to industrial production and negatively to the money supply. The second co-integrating vector results revealed that industrial production is negatively affected by the consumer price index and a long term interest rate. These different results may be due to the deterioration in the Japanese economy during the 1990 and resulting to liquidity trap.

Patwardhan (2009) examined the impact of macroeconomic variables namely; consumer price index, GDP, unemployment and retail trade on the Australian stock market from of 1999 to 2008 using monthly data. Furthermore, positive news and negative news variables are constructed to examine the effect of news content on the equity markets. The study employed Autoregressive Conditional Hetroskedasticity (ARCH) and Generalized Autoregressive Conditional Heteroskedasticity (GARCH) to analyse this relationship. The results of the study indicated that Australian equity markets respond significantly to information spill-over from the US stock markets.

However, the Australian equity market did not respond significantly to the changes in the selected macroeconomic variables' news.

Lahrech (2009) applied a multivariate co-integration method and Vector Error Correction Model (VECM) to examine the long and short-run relationships between Canadian stock prices and both Canadian and the US macroeconomic variables namely, industrial production, aggregate price level CPI and real money supply M1, allowing for different associations across the US business cycle. The study used monthly data covering the period from January 1959 to October 2001. The findings showed evidence of a long run association between Canadian stock price, US stock price and fundamentals of both countries (Canadian and US). The study also discovered a strong cross-country impact that depends on the stage of the United States business cycle.

Altın and Sahin (2011) investigated the effect of the macroeconomic variables on the stock market prices for the developed financial market (the United States, Japan, United Kingdom, Germany and France), emerging financial market (Brazil, Russia, India, China and Turkey) and financial markets that are suffering from financial crisis (Spain, Portugal and Greece). The study used Generalized Least Squares (GLS) model to investigate the relationship between the Stock Exchange index in these countries and the chosen macroeconomic variables, which were Gold, Brent Oil, LIBOR and Euro/Dollar parity, using daily data covering the period from 2005 to 2010. The overall outcome of the study showed wider range of coefficients and signs of macroeconomic variables over stock exchanges in these countries. However, the coefficients and signs of macroeconomic variables are different and dependent on special cases for each country.

Using a quarterly data from the first quarter of 2000 to the second quarter of 2010, Hsing (2011) examined the relationship between Hungary stock market index and macroeconomic variables- real output (GDP), the government debt, the money supply, the real interest rate, the nominal effective exchange rate (NEER), the expected inflation rate, the foreign stock market index and the foreign interest rate. The study applied the Generalized AutoRegressive Conditional Heteroskedasticity (GARCH) model in empirical work of the analysis. The results showed that Hungary stock market index had a positive relationship with real GDP, the ratio of the government debt to GDP, the nominal effective exchange rate and the German stock market index. However, the Hungary stock market index had a negative relationship with the expected inflation rate, the real interest rate and the government bond yield in the Euro area and a quadratic relationship with real money supply (M2).

The most recent study of Sirucek (2012) examined the relationship between selected macroeconomic variables (inflation, interest rates, money supply, producer price index, industrial production index, oil price and unemployment) and stock indices [S&P 500 and DJIA] in the US. The study applied standard regressive multidimensional model with the OLS method to investigate this relationship, from 1999 to 2012. The results showed that the impact of selected macroeconomic variables on the DJIA appeared to be statistically significant. This model also confirmed the impact of selected macroeconomic variables on share prices conferring the justification of economic theory, where inflation and unemployment have negative correlation with share prices in the US stock market. The interest rates and unemployment represent the most significant determinant of the S&P 500 index, then manufacturing industries and unemployment, followed by changes to interest rates and oil price.

To sum up, the relationship between macroeconomic variables and equity market prices have been extensively studied in developed capital markets such as the United States, United Kingdom, Japan, Canada, Germany, France, Australia, Korean and European Countries. These studies reviewed the effects of several macroeconomic variables such as consumer price index, inflation, industrial products, unemployment, interest rates, money supply, foreign exchange rate and oil price on the stock market. The overall findings of these studies revealed that there are strong relationships between macroeconomic variables and equity prices in developed countries.

3.2.2 Study from Developing /Emerging Market

Similar to the developed countries, the finance literature in developing countries contains a large number of studies that examined the equity price behaviour with some emphasis on the determinants of the relationship between the equity prices and the macroeconomic variables. For example, Dash and Kumar (2008) employed the modified linear Granger causality test to analyse the effects of the macroeconomic variables on the NAV return/variance of the mutual fund scheme in India. Their macroeconomic variables consisted of the exchange rate (USD/INR and EURO/INR), the interest rate, the inflation rate and the global crude oil price. The study utilized weekly data of the average and variance of the NAV returns of seventeen mutual fund schemes covering the period from October 2006 to June 2008. Findings of the study indicated that the return and volatility of the mutual fund are significantly influenced by the macroeconomic variables which enable the fund managers to manage the risk profiles of their portfolios more effectively and facilitate the investors to understand the specific risk factors affecting their investments in a better frame of confidence.

Maysami et al. (2004) adopted the Engle and Granger's (1987) error correction model to examine the long-term equilibrium relationships between macroeconomic variables and the Singapore Stock Market Index (STI). This includes several Singapore exchange sector indices such as the Finance Index, the Property Index and the Hotel Index. The macroeconomic variables used consumer price index, industrial production, long and short-run interest rates, money supply (M2) and exchange rates. The study used monthly time series data over the period of January 1989 to December 2001. The overall findings indicated that there is co-integration relationship between the Singapore stock market, the property index and the changes in all the selected macroeconomic variables. However, Equity Finance Index is insignificantly related to real economic activity and money supply. The same way Equity Hotel Index has insignificant relationships with money supply and short and long terms interest rate.

Acikalin et al. (2008) used quarterly time-series data covering the period from the last quarter of 1991 to the last quarter of 2006 to analyse the Istanbul Stock Exchange (ISE) behaviour. The study applied co-integration tests, VECM and causality tests to examine the relationship between the macroeconomic variables namely, gross domestic products, exchange rate, interest rate and current account balance and the ISE price. The co-integration test and the vector error correction model show that stock price index is co-integrated with the chosen of macroeconomic variables. The causality test results revealed short-term relationships among ISE and the selected macroeconomic variables and second unidirectional relationships between macro variables and ISE index. The empirical result found two ways causalities. Variations in GDP, foreign exchange rate and current account balance cause an effect

on ISE index. On the other hand, changes in the stock market index cause an effect on the interest rates in Istanbul Stock market.

Mahmood and Dinniah (2009) examined the dynamics of the relationship between stock prices and macroeconomic variables namely, inflation, industrial production output and exchange rate in six Asian-Pacific counties- Malaysia, Thailand, Korea, Hong Kong, Japan and Australia. The study utilized the Johansen and Juselius maximum likelihood method and Engle Granger test to explain the long-run equilibrium association between the stock price and the selected macroeconomic variables. The study used monthly data for countries like Malaysia, Thailand, Korea and Japan and quarterly data for Hong Kong and Australia covering the period from 1993 to December 2002.

The findings indicated that there is a long run equilibrium relationship among the variables in only four developed countries which are Japan, Korea, Hong Kong and Australia. However, the Error Correction Model (ECM) results indicated that there is no co-integration in the short-run relation between all variables in all the selected countries except in Hong Kong and Thailand where the results show that there is co-integration between foreign exchange rates with Hong Kong stock price and co-integration between real industrial production output and Thailand stock price.

Another study conducted by Büyükşalvarcı (2010) employed the use of multiple regression model to examine the effect of the macroeconomic variables which are consumer price index, money market interest rate, gold price, industrial production index, international crude oil price, foreign exchange rate and broad money supply on the Turkish Stock Exchange Market (TSEM) in the Arbitrage Pricing Theory framework, using monthly data from January 2003 to March 2010. The results of the study showed that variables like interest rate, industrial production

index, oil price, foreign exchange rate negatively influenced the TSEM return, while the money supply positively influenced it. However, inflation rate and gold price did not show any significant effect on the TSEM index returns.

Kuwornu (2011) employed the Full Information Maximum Likelihood Estimation Procedure (FIMLEP) to examine the impacts of four macroeconomic variables namely, consumer price index, crude oil price, exchange rate and 91day Treasury bill rate on the stock portfolio returns in Ghana. The study utilized monthly data from January 1992 to December 2008. The empirical findings showed that all the selected macroeconomic variables significantly affected the stock portfolio return in Ghana except the oil price, which showed insignificant effect on the portfolio return. In particular, both the exchange and treasury bill rates had negative effect on stock market returns, while consumer price index which represents the inflation rate had a positive significant effect on the portfolio return.

More recent study of Rasool et al. (2012) used the monthly time series data for the period of January 2001 to December 2010 to examine the causal relationship between Karachi Stock Exchange (KSE) and macroeconomic variables which are exchange rate, foreign exchange reserves, industrial production index, interest rate, imports, exports, money supply and wholesale price index. The study employed the Johansen Co-integration test, Vector Error Correction Model (VECM) and Granger Causality test to investigate this relationship.

The results of the study found that foreign exchange reserves, interest rate, imports, money supply and wholesale price index showed significant positive relationship with stock prices, while Industrial Production Index had significant negative relationship with stock prices. However, the Exchange Rate and Export showed negative none-significant effect on stock prices. The overall outcome showed

the existence of long-run relationship between the selected macroeconomics variables and stock prices in Pakistan.

In summary, the relationships between macroeconomic variables and stock prices have been examined in emerging stock markets such as Pakistan stock market, Ghana stock market, Nigeria stock market, Turkish stock market, Asian pacific region, Indian stock market and Singapore stock market. The overall results revealed that there are significant short and long-run relationships between the equity prices or equity returns and the macroeconomic variables in the emerging stock market.

3.2.3 Study from the Malaysian Equity Market

A number of studies were conducted on Malaysian equity market behaviours in recent years and contained an investigation of the relationship between macroeconomic variables and both Islamic and conventional stock prices. For instance, Fadhil and Azizan (2007) examined the possible linkages between the UTFs NAV and the macroeconomic variables- including the Consumer Price Index (CPI), the money supply (M2) and the Inter-bank rate (IBR) and KLCI. Another objective of the study was to examine the causal relationship between the inter-linkages of the variables. This study utilized the Pearson correlation test, the unit root test, the Johansen co-integration test and the error correction model for the data covering the period from 2002 to 2005. The results showed that the NAV of the UTFs in Malaysia had a long-term relationship with the macroeconomic variables. In particular, the KLCI, the M2 and the CPI have strong positive relationship with the NAV of the unit trust, while the IBR had a weak negative relationship with the NAV of the unit trust. The study suggested that the fund manager has to keep track of the movement of the KLCI and

the macroeconomic variables to be able to predict the movement of the NAV of the unit trust in Malaysia.

Majid and Yusof (2009) examined how the macroeconomic variables affect the Islamic stock market behaviour in Malaysia by applying the autoregressive distributed lag (ARDL) model approach to co-integration, during the post 1997 financial crisis period until the beginning of 2006. The macroeconomic variables examined are the money supply (M3), the Treasury bill rates, industrial production index, real effective exchange rate and Federal Reserve rates. These represent the explanatory variables, while the KLSI represents the explained variable.

Findings of the study indicated that money supply (M3), industrial production index, treasury bill rate, real effective exchange rate and federal reserve rate predict the Malaysian Islamic stock market return. As for the relationship between interest rates and stock returns, the results indicated that when interest rates rise either domestically (treasury bill rate) or internationally (Federal Fund Rate), the Muslim investors will buy more *Sharī`ah* compliant stocks. Thus, the study recommended that the macroeconomic variable policy seems to be appropriate objective for the Malaysian government to focus on, in order to stabilize the Islamic stock market and to promote additional capital flows into the market.

Hussin et al. (2012) investigated the relationship between the Islamic stock market represented by Kuala Lumpur *Sharī`ah* Index (KLSI) and the macroeconomic variables namely, industrial production index, consumer production index, aggregate money supply (M3), Islamic interbank rate and exchange rate (MYR/USD). The study applied Vector Auto Regression (VAR) method using monthly data from April 1999 to October 2007. The results indicated that Islamic stock prices are co-integrated with the selected macroeconomic variables. Industrial Production Index (as proxy of

economic growth) and Consumer Production Index (as proxy of inflation) had significant positive effect on the Islamic stock prices. Money supply (M3) and foreign exchange rate variables had significant negative effect on the Islamic stock prices. However, the Islamic investment rate had insignificant negative relationship with the changeability of the Islamic stock price in Malaysia.

Another study done by Hussin et al. (2012) applied a Vector Auto Regression (VAR) method and Granger causality test to investigate the relationship between oil price, exchange rate and the Islamic stock price in Malaysia by using monthly data from January 2007 to December 2011. The outcome of the study demonstrated that Islamic stock prices are co-integrated with both variables- oil price and exchange rate. Furthermore, the co-integration relationship analysis showed that Islamic stock prices are positively and significantly related to the changes in the oil prices, while the exchange rate is inversely and not significantly related to the Islamic stock prices. Further, the Granger causality test indicated that only oil price variable is Granger-caused by the Islamic stock return and will affect the Islamic stock return in the short and long run in Malaysia.

In the conventional equity market, Ibrahim and Aziz (2003) applied the co-integration and vector auto regression methods to examine dynamic relationships between equity prices measured by the KLCI and four macroeconomic variables. The selected macroeconomic variables are industrial production index, consumer price index, money supply (M2) and the exchange rate. The data utilized in the study were monthly and covered the period from January 1977 to August 1998.

The findings of the study indicated the presence of a long-run relationship among the variables. The stock prices and substantial short-run interactions among them have also been observed. Specifically, there was a positive short-run and long-

run relationship between the stock prices and the consumer price index, as well as the long-run positive relationship between the stock prices and the industrial production index. However, there is a negative relationship between the stock price and the exchange rate. The study documented immediate positive liquidity effects and negative long-run effects of money supply expansion on the stock prices. The study seemed to suggest that the predictive role of the stock prices can be on the macroeconomic variables.

Thaker et al. (2009) applied the time-series econometric techniques, such as the unit root test, the co-integration test, the error correction model (ECM), the variance decomposition and the impulse response function to analyse the interaction between the stock price and the selected macroeconomic variables, which are the inflation, the money supply and the nominal effective exchange rate. The study period consisted of two different periods. The pre–crisis period (January 1987 to January 1995) and the post–crisis period (January 1999 to January 2007) of Asia financial crisis. The findings indicate that there is co-integration between the stock price and the macroeconomic variables in Malaysia. Thus, the study recommended that as the monetary system (money supply, inflation and exchange rate) in Malaysia are found to be significantly related to stock market. It is imperative therefore for the Malaysian government to use the monetary system as an effective policy instrument to stabilize the stock price.

Rahman et al. (2009) examined the variables that influenced the Malaysian stock market from the macroeconomic perspective, using the monetary policies variables namely, industrial production index, a real exchange rate, a money supply, reserves and an interest rate. The study employed time-series regression technique on the monthly price of the KLCI covering the period from January 1986 to March 2008.

Empirical findings showed that all the six variables contributed significantly to the co-integrating relationship. In particular, reserves and industrial production index showed stronger dynamic interactions with the Malaysian stock market as compared to the interest rate, the exchange rate and the money supply. The study concluded that the Malaysian stock market was sensitive to the changes in the macroeconomic variables.

Bekhet and Mugableh (2012) investigated the long-run and short-run equilibrium relationships between macroeconomic variables and the stock market index in Malaysia using annual time-series data over the period of 1977 to 2011. The macroeconomic variables were Money supply (M3), Exchange Rate (ER), Gross Domestic Product (GDP), Producer Price index (PPI) and Consumer Price Index (CPI). The study adopted Ng and Perron (NP) bounds statistics test to detect the boundaries of variables' stationarity. The study also utilized Pesaran, Shin and Smith (PSS) bounds test approach to examine the long-run and short-run equilibrium relationships. The outcome indicated that all variables are co-integrated with Malaysian stock market index. In particular, in the long-run the PPI, CPI, ER and M3 were negatively related to Malaysian stock market index, while the GDP was positively associated. However, in short-run GDP, PPI and ER were negatively related with Malaysian stock market index, while CPI and M3 were positively associated.

In summary, the extant literature on the effect of macroeconomic variables on the stock market price as reviewed in this section can be broadly classified into three main groups namely, the studies that focused on developed, emerging countries and specifically those that discussed the impact of the macroeconomic variables on stock market price in Malaysia. The literature has shown that different studies have used varieties of macroeconomic variables to explore their influence on the equity price in both developed and developing countries including Malaysia. These macroeconomic

variables included consumer price index (as proxy of Inflation), industrial production index (as proxy of economic growth) and monetary policy system (interest rate and money supply) and international variables (foreign exchange rate and variation of crude oil price).

Overall, the findings of these studies show that equity market prices are affected by macroeconomic variables in most cases. However, the findings show a variety of outcomes depending on the objective and scope of the study. Hence, it is difficult to generalize these findings on specific market, since each market was surrounded by various conditions. For example, each equity market had its own rules and regulations, type of investors, country of location and other factors that provides the basis of its uniqueness. To overcome this concern, the current research efforts to investigate the effect of all the macroeconomic variables applied by the previous studies to come with more sophisticated findings that can help to estimate the future behaviour of the NAV of Islamic equity UTFs.

Several studies that focused on developed nations have shown evidence of long run relationship between the stock market price and selected macroeconomic variables (i.e. Gosway and Jung, 1997; Hump and Macmillan, 2007; Landgoster and Monzzani, 2002; Chaudhuri and Smiles, 2004; Lahrech, 2009; Gunsel and Cukur, 2007; Patwardhan, 2009; Altan and Sahin, 2011; Hsing, 2011; Sirucek, 2012), using varieties of methodologies and models (such as VECM, ECM, VAR, ARCH and GARCH Models and linear regression models). Surprisingly, despite the low level of macroeconomic development in the developing and emerging economies relative to the developed countries this review has demonstrated clearly that the related studies on these countries (i.e. developing and emerging economy) produced results that are corresponding with those of developed countries (i.e. Dash and Kumar, 2008;

Maysami et al., 2004; Acikalin et al., 2008; Mohmood and Dinniah, 2009; Buyuksalarci, 2010; and Rasool et al., 2012) applied varied methodologies such as (Engle and Granger's (1987) error correction model, Johansen Co-integration test and Juselius maximum likelihood method and multiple regression models). A new method referred to as Full Information Maximum Likelihood Estimations procedure (FIMLEP) was utilized by Kuwornu (2011).

In the Malaysian context, studies that focused on the determinants of equity prices are highlighted. For instance, model the relationship between Islamic stock market and money supply (M3), the treasury bill rates, industrial production index, real effective exchange rate and federal reserve rates, using Autoregressive distributed lag (ARDL). The findings indicate that these determinants improved the predictability of the Malaysian Islamic stock market return as well as evidence of co-integration of Islamic stock prices with the selected macroeconomic variables. This result is consistent with similar studies in both developed and the emerging economy. Specifically, it is evident that the NAV of the UTFs in Malaysia had a long-term relationship with the macroeconomic variables. Particularly, the KLCI, the M2 and the CPI have strong positive relationship with the NAV of the unit trust, while the IBR has a weak negative relationship with the NAV of the UTFs.

These studies have clearly revealed that country-effect such as local stability factor of political election and corruption level on the behaviour of the equity prices and its returns were not taken into consideration in their models. Nonetheless, understanding the effect of the local stability on the equity price is a very important issue since this factor has direct impact on the investment environments and it has power to influence the investment decision makers in the equity market. The current research analysis therefore includes the local stability factor in the analysis, which was

not considered by the previous studies to explore their effects on the NAV of the Islamic equity UTFs in the context of Malaysia.

3.3 IMPACT OF THE FINANCIAL CRISIS ON ISLAMIC UTFS PRICES

The 2007/2008 Global Financial Crisis can be traced back to a subprime mortgage lending that occurred in August 2007 and the beginning of 2008 in the United States (Kassim, 2010). It started as a loss of confidence by investors in the value of securitized mortgages that resulted in a liquidity crisis which encouraged an extensive injection of capital (Zerban, Elkady and Omar, 2012). This crisis was initially stated in the media as credit crisis which affected both the financial systems and the economic activities in all the countries around the world.

In particular, the 2007/2008 financial crisis first hit the stock markets in the United States and other developed stock markets (Collina, 2009). However, the impact of the crisis spread around the world to hit the stock markets in the developing countries as well (Collina, 2009) in which the Malaysian stock market was also not spared. The spread of the crisis was due to the financial contagion of the Global Financial Crisis and the interaction among the global stock markets. The KLCI, which represents the market indicator in Malaysia, dropped around 670 points during the period (14th of January 2008 to 12th of September 2008) and this accounted for around 45 percent drop in its value. This decline in the KLCI index was recorded as the largest deterioration in the KLCI value after the Asian financial crisis in 1997 (Angabini and Wasiuzzaman, 2010).

A lot of studies investigated the performance of the UTFs during the crisis period in Malaysia. For example, Mansor and Bhatti (2011) examined the return performance of the Islamic and conventional mutual funds with the market benchmark

before and during the Asian financial crisis (1997-1998), and the Global Financial Crisis (2007-2008) in Malaysia. The study applied the various risk-adjusted performance measurements (Sharpe Ratio and Treynor Index) to estimate the fund's overall performance from the periods of January 1995 to December 1998 and from January 2005 to December 2008. The empirical results indicated that on the average both portfolios outperformed the market return. The findings also revealed that Islamic mutual funds slightly outperformed the conventional mutual fund during the crisis period while the conventional funds performed better during non-crisis period. This was because the Islamic funds management companies operate their business transactions following the *Sharī`ah* principles. This helped them to eliminate the causes and the harsh of the crisis on their portfolios returns.

Another study by Kamil (2010) analyzed the impact of the 2007/ 2008 Global Financial Crisis on the performance of 33 Islamic UTFs, using the Adjusted Sharpe index, the adjusted Jensen Alpha index and the Treynor as tools for the performance measurements. The monthly average of the closing price of the NAV was taken through the period starting from January 2000 to December 2009. The results revealed that the Islamic UTFs performed better during the financial crisis than the sub-period of the whole sample period. The study suggested that the Islamic UTFs can be recommended to be the hedging financial instrument during the financial crisis period due to the highest average outperforming achievement of the Islamic unit trust during this crisis period.

Similarly, Abdullah, Hassan and Mohamad (2007) employed three standard methods of tests, namely, the Treynor's Index, the Sharpe Index, the Jensen Index and the Adjustment Jensen Index in order to investigate the performance of 65 UTFs (14 Islamic Funds and 51 conventional funds) for a 10-year period starting from January

1992 to December 2001. The period was divided into three sub-periods, namely the pre-crisis (1992-1996), during-crisis (1997-1998) and the post-crisis (1999-2001). The results of the study showed that the Islamic UTFs performed better than the conventional funds during the crisis period than the pre-crisis period. On the other hand, the results of the post-crisis period revealed that the market of the KLCI experienced the highest level of the average monthly return. Thus, the study concluded that the Islamic UTFs performed better than the conventional UTFs during the bearish economic trends while the conventional performed better during bullish economic conditions.

Dewi and Ferdian (2008) applied five measurements namely, the Treynor (1965), the Sharpe Index, the Jensen Index, the Snail trail and the Market Timing to evaluate the comparative performance of the Indonesian and the Malaysian Islamic UTFs by using 10 Indonesian UTFs and 14 Malaysian Unit trusts funds. The daily funds returns were taken within the period starting from January 1, 2006 to April 30, 2009. This period was specifically chosen to investigate how the 2007/2008 Global Financial Crisis interactively affected the performance of the Islamic UTFs in both countries. The study used the Jakarta Islamic Index (JII) and the Malaysian Dow Jones Islamic Market Index (DJIM) as the benchmarks of the Islamic stock returns. The outcome of the study showed that the Malaysian Islamic UTFs seem to outperform the Indonesian Islamic UTFs. The result also revealed that the Islamic UTFs outperformed the market even in the situational circumstances of the global financial crisis.

In summary, the third category of literature reviewed dealt with the impact of financial crisis on Islamic UTFs in Malaysia. The findings revealed that Islamic mutual funds slightly outperformed the conventional mutual funds during the crisis

period while the conventional funds performed better during non-crisis period. Even with the slightly different methodology of Snail trail and the market timing in addition to Treynor (1965), the Sharpe index, the Jensen index adopted by Dewi and Ferdian (2008) the result followed similar pattern.

The reviews of past studies on the effects of the Global Financial Crisis on the UTFs industry were focused more on understanding the funds' performance during the crisis period. Specifically, such studies have given more attention to comparing the performance of both the Islamic and conventional funds during the economic crisis period. The purposes of these studies in general were only to insure whether the *Sharī`ah* principles have some beneficial effect on steering the Islamic funds away from those high-leveraged companies that were affected by the Global Financial Crisis that conventional UTFs invest with. However, these studies did not pay attention to identifying how the Global Financial Crisis affected the NAV of the Islamic equity UTFs. Therefore, the gap is observed in these studies analyses as they showed a lack of research on funds units' prices behaviour during the global financial crisis period. In spite of the Islamic funds unit's prices experiences high volatility in Malaysian unit trust industry was observed during the crisis period. Thus, this research fills the gap by investigating the relationship between the NAV of the Islamic equity UTFs and the effect of 2007/2008 Global Financial Crisis.

3.4 RESEARCH GAP

Although a lot of studies were carried out on the behaviour of the equity prices or equity returns and their determinants, but there is no published work on the effect of both the micro and macroeconomic variables on funds unit prices behaviours in the same model and research setting according to the best of this researcher's knowledge.

Aanalyses on both levels of the micro and macroeconomic variables in model research setting helped in analyzing the performance of the industry.

If the decision makers ignore one salient factor and lay emphasis on the other, it will lead to wrong, irrelevant or inadequate decisions, which may be considered as only a partial decision-making. This research therefore attempts to bridge this gap in research by conducting an empirical analysis on micro and macroeconomic determinants of the NAV of Islamic equity UTFs in Malaysia during the period of January 2006 to December 2012. In other words, this research intends to propose models that can be used by Islamic funds' operators and investors to predict the behaviours of the NAV of the Islamic equity UTFs.

In particular, from the microeconomic point of view, the assessments of the above literature show that even though a number of studies have investigated the relationship between the microeconomic variables and the equity price, yet there is still a limited research on the impact of the microeconomic variables on the NAV of the Islamic equity UTFs in the case of Malaysia. The present research therefore fills the gap by including the microeconomic variables, namely, income distribution (dividends), fund historical performance, fund risk, fund size, fund management experience and hedge funds to explore their relationship with the NAV of the Islamic equity UTFs in Malaysia.

From the macroeconomic point of view, the literature show that different studies have used different variables to explore their influence on the equity price in both developed and the developing countries. The macroeconomic variables applied for these studies can be categorized into four groups. The first group refers to the overall economic conditions (i.e. employment level, GDP and the industrial production index). The second group contains variables concerning with monetary

policy (i.e. money supply, Treasury bill rate, interest rate). The third group of variables focuses on price level (i.e. consumer price index, inflation). The fourth group concerns with international activities (i.e. foreign exchange rate, oil price and global stability).

However, the assessments of the literature demonstrate that all the studies did not consider the effect of the country's local stability factor on the behaviours of the equity prices and its returns in their models. So, understanding the effect of local stability on the equity price is very crucial for the investors, fund managers and financial analysts, since this factor has direct impact on the investment climate prospective and it has strong power to influence the investment decision makers to either continue to invest in local equity market or shift to another equity market that are more stable (Kaminsky and Schmukler, 2002). It has also strong power to attract the foreign investments, resulting to an increase in the capital inflow to the country and enhance the local market performance (Kaminsky and Schmukler, 2002). The present research therefore fills this gap by including all the macroeconomic variables used in the previous studies together with the local stability factor of the country as measured by national political elections and the corruption index in the model to explore their effects on the NAV of Islamic equity UTFs in the context of Malaysia.

In addition, the review of the past financial literature that investigated the funds' performance revealed that the Islamic UTFs performed better than the conventional counterparty during the financial crisis period while the conventional UTFs showed a better performance during the bullish economic conditions. This was because the Islamic funds management companies operated their business transactions following the *Sharī`ah* principles, that helped them to eliminate the sources of the crisis (e.g. prohibition on transactions involving, *Riba* (interest-based), *maysir*

(speculation or gambling) and *gharar* (uncertainty). All these helped to reduce the harsh of the crisis on their portfolios returns. Further, the Islamic finance gives more emphasis on equity investments and it is acknowledged that a lack of adequate equity investment that is in line with the *Sharī`ah* principles is one of the main causes of the 2007/ 2008 Global Financial Crisis (Chapra, 2008).

The motivations of the previous studies on the financial crisis effect on the UTFs were derived by the investors' needs to know whether the performance of the Islamic UTFs, whose operations are based on *Sharī`ah* principle is under or out of the market performance during the financial crisis period, compared to the conventional unit trust companies, whose operations are based on the conventional capital market law. This was one of the major challenges in the fund-selection decision making during the economic slowdown for the researchers and both the individuals and institutional investors in order to either eliminate their portfolios risk or enhance their return. However, the previous studies in this regard did not make any direct study or an investigation on the effect of the 2007/2008 Global Financial Crisis on units' prices behaviours of the Islamic UTFs in the context of Malaysian unit trust industry. This research therefore, attempts to address this issue by including the 2007/2008 financial crisis in the current research model to achieve some insights on the impact of the financial crisis on the NAV of the Islamic equity UTFs. This may provide further understanding to which degree the 2007/2008 Global Financial Crisis can make an influence on the fund unit prices behaviours either positively or negatively. This may provide vital indication for the decision-making of fund managers or investors in terms of buy, hold, or sell the funds' unit during the crisis period as well as diversification strategy.

3.5 CONCLUSION

This chapter begins with the discussion on the effects of the microeconomic variables on the equity price and funds' performance. It discussed the macroeconomic variables that influence the equity market prices and its returns. The impact of the 2007/ 2008 Global Financial Crisis on the equity market was then discussed. Finally, the research gaps in the literature were identified and discussed.

CHAPTER FOUR

THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

4.0 INTRODUCTION

This chapter focuses on the development of the theoretical framework and the hypothesis of this research. Specifically, this chapter begins the discussion on the theories that are relevant to the objective of this research such as Modern Portfolio Theory (MPT), Capital Assets Pricing Model (CAPM) Theory, Arbitrage Pricing Theory (APT), Dividends Discount Model (DDM), Microeconomic Theory, and Macro-economic Theory. This is followed by the construction of a closely relevant theoretical framework for this research relationship. Next, the basic discussion for developing research hypotheses is provided. The hypotheses are formulated to depict the relationship between the selected micro and macroeconomic variables, as well as the 2007/2008 Global Financial Crisis with the NAV of the Islamic equity UTFs.

4.1 PORTFOLIO THEORY

Portfolio Theory or the Modern Portfolio Theory (MPT) was first discovered and established by Harry Markowitz in the 1950s and formed the foundation of modern finance that allows investors to analyse the risk of their investment relative to their expected return (Elton and Gruber, 1997). MPT encourages an asset diversification to hedge against a market risk as well as a risk that is unique to a specific firm (Rani, 2012). By definition, "the MPT is a theory of finance that can maximise the portfolio of expected returns for a given amount of portfolio risk, or, in other words, it tries to

minimize the portfolio's risk for a given level of expected returns through carefully chosen proportions of various assets" (Omisore et al., 2012).

In the MPT, it is usually assumed that returns are normally distributed over the time period under analysis, where an investor is assumed to estimate the mean returns and variance of returns for each asset being considered for the portfolio over the single period (Elton and Gruber, 1997). With this assumption, the efficiency of the investment portfolio is determined by the expected returns and the standard deviations of the simply compounded returns (Markowitz, 1950).

The portfolio theory assumes that the investors are risk-averse, whereas when given two securities with equal returns, the investors will invariably prefer to select the security with the lowest risk (Markowitz, 1999). Markowitz (1952) documented that correlation between securities could be quantified and as long as securities were not perfectly positively correlated, their combination in a portfolio would result in a reduced overall portfolio risk in which the efficient frontier of the optimal portfolio represented the lowest level of risk for a higher given level of return. Omisore, Yusuf and Christopher (2012) summarised that the foundation requirements to the portfolio theory were their quantification of the relationship between the risk and the returns and the assumption that the investors should be compensated for assuming the risk.

MPT mathematically formulates the idea of diversification in investments with the object of choosing a collection of investment assets that have collectively lower risk than any individual asset (Witt and Dobbins, 1979; Gökgöz, 2009; and Omisore, Yusuf and Christopher, 2012). This is illustrated by the following equations:

In general:

i. Expected return:

$$\mathrm{E}(R_p) = \sum_i w_i \, E(R_i)$$

Where: R_p the returns on the portfolio, R_i denotes the returns on asset *i*. while, w_i represents the weighting of component asset i (that is, the share of asset *i* in the portfolio).

ii. Portfolio returns variance:

$$\sigma_p^2 = \sum_i \sum_{j \neq i} w_i^2 \, \sigma_i^2 + \sum_i \sum_{j \neq i} w_i \, w_j \sigma_i \sigma_j p_{ij}$$

Where, p_{ij} the correlation coefficient between the returns on assets *i* and *j*.

Alternatively the expression can be written as:

$$\sigma_p^2 = \sum_i \sum_j w_i \, w_j \sigma_i \sigma_j p_{ij}$$

Where, p_{ij} = 1 for *i* = *j*.

i. Portfolio returns volatility (standard deviation):

$$\sigma_p = \sqrt{\sigma_p^2}$$

For a two-asset portfolio:

i. Portfolio returns:

$$\mathrm{E}(R_p) = w_A \, \mathrm{E}(R_A) + w_B \, \mathrm{E}(R_B) = w_A \, \mathrm{E}(R_A) + (1 - w_A) \, \mathrm{E}(R_B).$$

ii. Portfolio variance:

$$\sigma_p^2 = w_A^2 \sigma_A^2 + w_B^2 \sigma_B^2 + 2 w_A w_B \sigma_A \sigma_B \rho_{AB}$$

For a three-asset portfolio:

i. Portfolio returns:

$$w_A \, \mathrm{E}(R_A) + w_B \, \mathrm{E}(R_B) + w_C \, \mathrm{E}(R_C)$$

Portfolio variance:

$$\sigma_p^2 = w_A^2\sigma_A^2 + w_B^2\sigma_B^2 + w_C^2\sigma_C^2 + 2w_A w_B \sigma_A \sigma_B \rho_{AB} + 2w_A w_C \sigma_A \sigma_C \rho_{AC} + 2w_B w_C \sigma_B \sigma_C \rho_{BC}$$

The fundamental concept behind the MPT is that assets in an investment portfolio should not be selected individually and investors have to consider how each asset changes in price relative to how every other asset in the portfolio changes in price (Omisore et al., 2012). In other words, this theory recommends that the risk of a particular security should not be considered as a stand-alone basis, but rather in relation to how that particular security's price fluctuates in relation to the variation in price of the overall market.

In the context of the current study, diversification strategy across asset classes in the UTFs' portfolios investment can increase return or reduce risk of the fund unit prices or fund NAV. This is because the MPT encourages asset diversification to hedge against market risk (macroeconomic variables) as well as risk that is unique to a specific fund (microeconomic variables). On the more methodical side, there are several statistical risk measurements used in MPT such as alpha, standard deviation, beta, R-squared and the Sharpe ratio. All of these indicators are expected to assist investors determine potential risk-reward profiles for investments as reflected in the fund's NAV. In addition, based on the valuation theory, the micro and the macroeconomic variables can increase or decrease the market risk thereby effecting market perception and investors investment decisions. Through the buying and selling, the price of the shares will change and so will the NAV of the Islamic equity UTFs. However, the MPT theory is limited in the sense that it is unaware of its own effect on asset prices, and focuses more on the diversification strategy that eliminates non-systematic risk, which forces the portfolio manager to invest in assets without analysing their fundamentals (Chandra, 2003).

4.2 CAPITAL ASSET PRICING MODELS THEORY

The establishment of the CAPM theory is based on the model of a portfolio choice developed by Markowitz (1952) (Kapil and Sakshi, 2010). It was considered as the birth of the asset pricing theory developed by Sharpe (1964), Lintner (1965), Mossin (1966), and Black et al. (1972) and was established to explain how risky securities were priced in the market. The CAPM theory proposes a more practical approach to stock valuation, while the Markowitz theory is more theoretical (Fama and French, 2004). In a CAPM context, a security's systematic risk is measured by its beta factor with respect to a diversified stock index (Shanken and Weinstein, 2006).

Sharpe described the quantified risk concept as defined by Harry Markowitz (1952), that risky securities should be preferably based on a pricing theory which includes the returns of a risk-free rate that represent the returns of a security with no default risk (for instance, Treasury Bill) and the market risk premium relative to the systematic risk coefficient of risk responsiveness as measured by beta (Sharpe, 1964). Thus, the expectation of the CAPM is that the market should be in an equilibrium and the expected rate of returns should be equal to the required rate of returns for a given level of risk (Fama and French, 2004). Accordingly, the CAPM presents a linear relationship between the required rates of returns of a security and market risk that cannot be diversified. To sum up, the CAPM outlines that the expected returns rely on the risk-free rate of interest plus a risk premium. This is explained by the following equation of Sharpe (1964) and Lintner (1965):

$$R_j = R_f + B_j (R_M - R_f)$$

Where:

R_j = Expected rate of return on security '*j*'

R_f = Risk free rate

B_j = Beta coefficient or a risk measure for the non–diversifiable part of total risk

R_m = Return on Market Portfolio

$R_M – R_f$ = the excess return for the extra risk which is also called market risk premium.

Black, Jensen, and Scholes (1972) developed this model and introduced a time series test of the CAPM. The test was based on the time series regression of excess portfolio returns on the excess market returns, which can be expressed by the following equation:

$$R_{it} - R_{ft} = \alpha_{it} + \beta_i(R_{mt} - R_{ft}) + \boldsymbol{\varepsilon}_{it}$$

Where:

R_{it} = the rate of returns on an asset *i* (or portfolio) at time *t*.

R_{ft} = the risk-free rate at time *t*.

α_{it} = the intercepts (slope of the difference between the estimated expected returns by time series average and the expected returns predicted by (CAPM).

R_{mt} = the rate of returns on the market portfolio at time *t*.

β_i = the beta of stock *i*.

$\boldsymbol{\varepsilon_{it}}$ = The random disturbance term in the regression equation which is assumed to have a zero value for each asset.

The current study applied the CAPM theory for modelling the fund unit price or fund NAV to help investors measure the portfolio market risk caused by unpredictable economic events (macroeconomic variables) using the CAPM beta. This helps to better understand the asset allocation problem between the risk-free asset and risky asset, as well as help investors make effective investment decisions, especially in long-term trade-offs between risk and return in the financial markets.

Despite the fact there are numerous studies that have used the CAPM, there is a great debate on the empirical validity of the CAPM to interpret and understand the relationship between the expected returns on individual assets or portfolio and their systematic risk (Kapil and Sakshi, 2010). The CAPM is also commonly used as a financial model in finance for computing the cost of capital portfolio performance which identifies the riskiness of the assets (Gökgöz, 2009). The limitation of the CAPM theory is that it summarises the effect of all factors in the equity market in only one factor, whereas the equity market may be affected by various factors (Yahyazadehfar and Babaie, 2012). Due to the inadequacy of the CAPM, the APT by Ross (1976) was propounded to address this limitation. In other words, the APT measures the non-diversified risk factors which would overcome the shortcomings of the CAPM created by the unobservable market portfolio (McGowan et al., 1993).

4.3 ARBITRAGE PRICING THEORY

The theoretical framework of the equity market prices and the economic activity are based on Ross (1976) who established that APT links the equity price or returns to a number of factors that characterise several causes of income volatility (Rahman et al., 2009). The arbitrage pricing theory hypothesises that a security returns is a linear function, not only of one factor, but of a set of common factors (Iqbal and Haider, 2005). The APT thus indicates that the risk premium in an asset is related to the risk premium in each factor as well as the asset's sensitivity to each factor which when increases also increases its risk premium.

Paavola (2006) stated that the APT assumed that equity price was influenced by limited and non-correlated common factors and by a specific factor independent of the other factors. The risk associated with holding a specific security comes from two

sources. The first source is macroeconomic variables which influence the asset market and cannot be diversified, while the second source of risk is the individual element which is unique to each security and can be diversified through portfolio investments (Morel, 2001).

Despite its advancement of the asset pricing model, one of the defects of the APT is that the factors to be included in asset pricing are unspecified (Somoye, 2009). Byers and Groth (2000) defined the asset pricing process as a function utility for both economic and the non-economic factors. Due to this imperfection of the unspecified variables that should be included in the model, one may rely on certain economic beliefs when choosing the factors to perform the test.

Furthermore, the assets' expected returns and their covariance with other random variables obtain a linear relationship between them through the APT as an alternative to the CAPM. Investors cannot avoid diversification on the measure of risk through the slope coefficient in the linear relation between the covariance and the expected returns which are interpreted as a risk premium that is closely related to a mean-variance efficiency as expressed in the following formula of Ross (1976; 1977), and Solnik and Bruno (1983):

$$E(r_j) = r_f + b_{j1}RP_1 + b_{j2}RP_2 + b_{j3}RP_3 + b_{j4}RP_4 + ... + b_{jn}RP_n$$

where:

$E(r_j)$ = the asset's expected rate of return

r_f = the risk-free rate

b_j = the sensitivity of the asset's return to the particular factor

RP = the risk premium associated with the particular factor

In view of the above, the APT overcomes the shortcomings of the MPT theory and the CAPM model for measuring assets risks. It states that asset price is a linear

function to a set of common factors and the risk premium for an asset is associated with the risk premium for each factor (Ross, 1976). However, it does not specify or state the factors that are expected to influence asset prices. This ambiguity opens the door for researchers or investors to investigate the extensive range of related economic indicators or relevant events at both the micro and the macroeconomic levels on the NAV fund. Thus, in the current research the fund unit trust price or the NAV of the Islamic equity UTFs will be modelled following the APT.

4.4 DIVIDEND DISCOUNT MODEL

Miller and Modigliani developed a valuation model for an infinite horizon firm under the assumption of perfect certainty, perfect capital markets, and rational behaviour (Miller and Modigliani, 1961). The valuation model is established based on the fact that the price of any asset should be a function of generated future cash flows (dividends), the expected time of cash flows to occur, and the uncertainty associated with these cash flows (Miller and Modigliani, 1961). Based on this model, investors can recognise that the value of any asset is linked to the expected future cash flows and its associated uncertainty, which can be expressed by the following equation of Miller and Modigliani:

$$p_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+k_e)^t}$$

Where: p_0 denotes the asset price, D_t donates the future cash flow (dividend) from an asset at time "t" and k_e refers to required rate of return.

Since projections of future cash flows (dividends) cannot be modelled through infinity, many versions of DDM have been developed based on different assumptions

about future growth (Gordon, 1959). For example, the Gordon growth model links the price of equity shares to its expected future cash flow (dividends) in the next time period, the required rate of return (the cost of equity), and the expected growth rate in dividends as exposed by the following equation:

$$p_0 = \frac{D_1}{ke - g}$$

Where: D_1 refers to the expected dividend one year from now (next period), k_e denotes the required rate of return for equity investors and g indicates the projected dividend growth rate forever.

In summary, the two basic inputs to the DDM are expected future cash flow (dividends) and the required rate of return (the cost on equity). To get the expected dividends, investors have to make assumptions about expected future growth rates in earnings and pay-out ratios (Vecchio, 2000). While, the required rate of return (the cost on equity) is determined by its riskiness as measured by different models in different ways. For example, the market beta in the CAPM model and the factor betas in the APT models. In addition, the DDM is sufficiently elastic to tolerate for time-varying discount rates, where the time variation is caused by expected changes in risk across time (Vecchio, 2000).

4.5 MICRO AND MACROECONOMIC THEORIES AND EFFICIENT MARKET HYPOTHESIS

Microeconomic Theory was developed by a number of economic scholars starting from Bernoulli (1695-1726), Adam Smith (1723-1790), Alfred Marshall (1842-1924), and John Maynard Keynes (1883-1946). By definition, microeconomic theory is a branch of economics that elaborates on the interactions of how individuals,

households, and firms have to arrive at decisions on limited resource allocations. It has several relevant major targets one of which is to scrutinise and evaluate the market means of ascertaining, from numerous alternative uses, the relevant relative price from the goods and services and allocation of limited resources (Mas-Colell, Whinston and Green, 1995).

On the other hand, the macroeconomic theory was developed by Keynesian (1936), Tinbergen (1939), Phillips (1958), and Lucas (1972), in which the Keynesian macroeconomic model was the first model of this theory (Aoki and Yoshikawa, 2007 and Vroey and Malgrange, 2011). Macroeconomic is a branch of economics which delves into the overall performance and major crucial components of an economy instead of just individual markets (Ezigbo, 2012). Macroeconomists study the major economic or aggregated indicators such as the Gross Domestic Products (GDP), unemployment, monetary system policies, balance of payment, and price indices to understand how the economy functions (Dornbusch and Fischer, 1981).

To understand the nature of the relationship between the two divides of economics, Fatima (2010) affirmed that the strengths or weaknesses of the macro economy depend on the contribution of cumulative performance from micro level organisations. It also posits that the strengths or weaknesses of the micro constituents would be fully reflected into the solid attributes of the macro economy. Furthermore, Michael Porter (1999) found that corporate and government competitiveness for economic development are highly dependent on conducive microeconomic conditions. Thus, the micro and macroeconomic are interdependent as they are complementary and not conflicting.

According to the EMH, the efficient financial market does not allow individual investor to earn above-average returns without accepting the above-

average risks (Malkiel, 2003). The EMH suggests that competition among the profit-maximising investors in an efficient market will ensure that all the relevant information currently known on the changes in the economic condition is fully reflected in the current share prices (Mohammad, Hussain, Jalil and Ali, 2009). Thus, the capital market responds to the arrival of new information (from micro or macro level) which believes that securities markets are extremely efficient in reflecting the information on the individual shares and on the equity market as a whole (Fama, 1965; 1970).

However, there exists a contradictory argument on the behavioural finance theory against the EMH because adverse situations may arise in which the investor's sentiment and irrational investment transactions create a scenario whereby prices do not represent their fundamental values due to irrational and inexperienced gullible market participants (Tornau, 2011). Furthermore, it is notable that some investors in the financial market behave contrariwise to the typical rational investor either for psychological or in some cases, even religious reasons (Wall Street, April 14, 2012).

Accordingly, it is possible, for instance, that the price of the securities may not be best represented by normally-distributed random fundamentals in all cases. This concept applies to all types of investments including Islamic UTFs. As this research focuses on Islamic equity UTFs in Malaysia, a concerted effort is made to study the relationship between the micro, macroeconomic variables, and NAV of Islamic equity UTFs to measure the price efficiency of the Islamic equity unit trust industry in Malaysia.

4.6 THEORETICAL FRAMEWORK OF THE RESEARCH

The theoretical framework of this research focuses on the determinants of the NAV of the Islamic equity UTFs. A number of financial economists and statisticians started to believe that equity prices were at least partly predictable (Malkiel, 2003). A new class of economists highlighted the psychological and behavioural basics of equity-price determination and are convinced that future equity prices would be rather predictable on the basis of past stock price shapes, as well as to ascertain important valuation metrics (Malkiel, 2003). Equity share price volatility is generally related with the internal and the external factors (Govindarajan et al., 2012). Internal factors can be classified as microeconomic variables related to the individual operation of the firms (Özlen and Ergun, 2012), while the external factors can be defined as the factors related to the market and country conditions (Govindarajan et al., 2012).

This research investigates the effect of micro and macroeconomic variables on the NAV of Islamic equity UTFs invested in the stock market. The theoretical linkage between the micro, macroeconomic variables, and movement of the NAV of Islamic equity UTFs can directly be derived or established based on the dividend discount model (DDM) or the present value model and the Arbitrage Pricing Theory (APT). According to these theories, the fund NAV should reflect all the new information available of both levels the micro and the macroeconomic variables (Chen et al., 1986). In other words, the fund NAV should be equal to the present values of the funds expected future cash flows. However, if fund NAV does not immediately reflect the available information about these variables, then the past information of these variables will be useful to forecast the future movement of NAV of Islamic equity UTFs, since these variables may influence the fund's operating activities, its investment risks, and subsequently the funds' future cash flows.

In summary, the theoretical framework of the NAV determinants contains microeconomic variables such as DIV, HP, S, FZ, MEX and HF, and macroeconomic variables such as CPI, the IPI, TBR, M3, FER, OP, NPE and CI, as well as the FC. This approach is adopted to better understand the effect of each set of variables on funds NAV, due to the interdependent relationship between the two set of variables. In addition, including the 2007/2008 global financial crisis in the current research framework was motivated by the fact that most of the global stock market shares prices including the equity unit trust industry in Malaysia experienced high volatility during the crisis period. This effect of the crisis is an indication of the risk premium of the equity market that should be considered by the financial analysts to make adequate investment decisions. The theoretical framework of this relationship is illustrated in Figure 4.1.

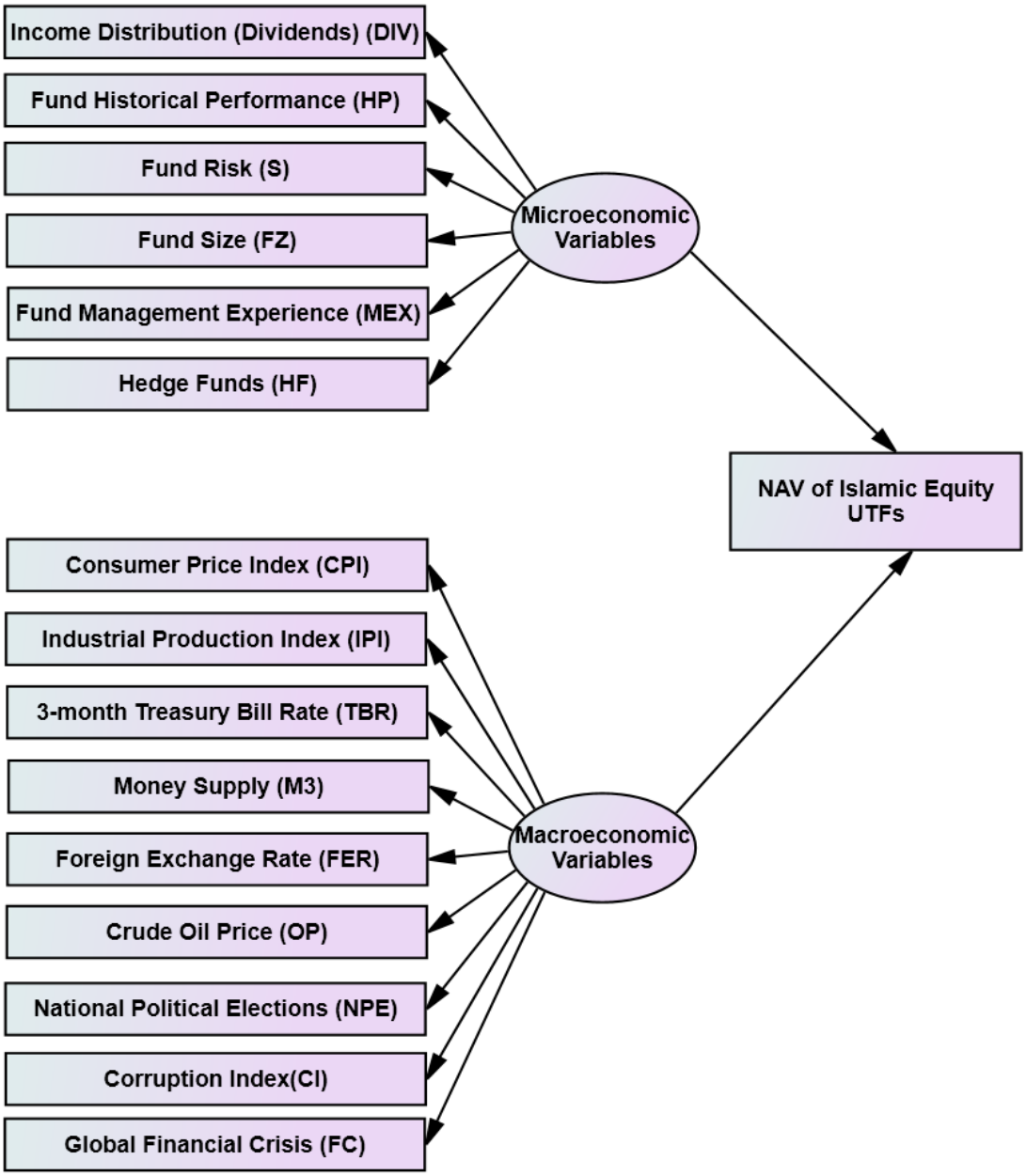


Figure 4.1 Theoretical Framework of Research

4.7 DEVELOPMENT OF RESEARCH HYPOTHESES

A number of studies have successively used different approaches to model equity price or returns on financial markets. The existing financial literature shows the movement

of the equity price as a consequence of the movement of the micro and macroeconomic variables. According to economic theory, the relationship between the micro and the macroeconomic variables may have been derived from the fact that the microeconomics is highly related with the investor's individual behaviour which can be subjected to deductive reasoning, whim and fancy, while the macroeconomic focuses on systematic behaviour (Akdeniz and Milliken, 1975). The bottom line is that the microeconomic analysis utilises a bottom-up approach when individual cases are to be examined, while the macroeconomic utilises a top-down approach where aggregate entities are involved (Becker, 2006).

Furthermore, both micro and macroeconomic analysess help in evaluating the performance of the industry and economy as a whole. If the decision makers ignore one and lay emphasis on the other, it will lead to wrong or inadequate decisions and the decision may be considered to be only half decision-making. Therefore, the current research will utilise the two approaches for the successful analysis of the unit trust industry with the economics system and to understand how companies or funds operate and fix their prices. Accordingly, the current research developed hypotheses of the relationship between the selected micro and the macroeconomic variables and the NAV of the Islamic equity UTFs.

4.7.1 Relationship between Microeconomic Variables and NAV of Islamic UTFs

This section focuses on the development of hypotheses on microeconomic variables. This research expected a positive long run equilibrium relationship between each microeconomic variable and the NAV of Islamic equity UTFs.

4.7.1.1 Income Distribution (Dividends)

In unit trust investments, the Islamic equity fund investment makes money by earning dividends (from stocks), or by selling (stocks) investments that have increased in price and bond maturities that are *Shari'ah* compliant. On the other hand, unit trust investment offers the unit-holders income distribution and the capital appreciation. Thus, investors choose investment in funds based on their preference of income distributions and capital gains.

The current research examines the effect of the income distribution policy (dividends pay-out) on the fund NAV, since dividends policy has the power to attract the attention of investors to invest in the fund's portfolio, especially new investors. However, through capital appreciation it is difficult for investors to make their investment decision since capital gains may fluctuate with or in reverse to investors' favours and it is incorporated daily in the NAV of Islamic equity UTFs.

Income distribution is profit that is provided by the unit trust management company (funds manager) which distributes this profit among the unit-holders according to their investment amount in related funds and the funds' declared policy. In general, some funds' policy pays out earnings annually while some pays out semi-annually. According to the SC of Malaysia, UTFs have two policies of distribution and pay-out. Firstly, by way of given cash to the unit-holders. Secondly, by way of unit splits, where the investors' total number of units in the funds increases but the total NAV remains the same.

In financial literature, numerous studies have examined the linkage between the dividend policy and the equity market price behaviour. For example, Molodovsky (1995) found that dividends play the hard core of stock value, in which the value of any company asset equals the present value of all cash flows

(dividends) of the asset. Bhattacharya (1979) suggested that transmission of critical information on the financial viability of a company is crucial to all the stakeholders of a firm on dividend pay-out policy.

This was supported by Litzenberger and Ramaswamy (1982) who found that there was a positive correlation between the common stock returns and the dividend yields, while the fluctuations in stock prices were due to the information or tax effects on the dividends. Gordon (1963) found that the dividend policy of a company affected the market price of the shares, wherein the justification of this result was that the investors were habitually risk averse and this was why investors prefer current and stable returns such as dividend income over uncertain returns such as capital gains. Therefore, it is expected that income distribution has a positive impact on the NAV of the Islamic equity UTFs.

H_1: Fund dividends have a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.1.2 Fund Risk

It is difficult to avoid risk when investing in equity UTFs. Peterson, Pietranico, and Riepe (2001) stated that equity investors are rewarded for taking risk in long-term investments. Thus, it is intrinsic in every business decision made by the executives of organisations such as funds' managers to choose their portfolio investment securities or by investors themselves to select the appropriate funds for their potential investments. Risk is estimated and measured based on the deviations of real returns of an investment from its expected returns (Ricciardi, 2004).

In UTFs, volatility is a widely accepted measure of the risk which is the amount of a unit's returns that varies through straight time periods. Allen et al. (2009)

demonstrated that there is a greater risk involved for assets (unit) whose returns fluctuate more dramatically than the others. Thus, the fund that has a higher volatility has higher returns and will be in greater demand by investors, especially aggressive-risk investors (risk-taker). See and Jusoh (2012) examined the fund characteristics that affect fund performance in Malaysian equity mutual funds. The examined funds' characteristics comprise funds' risk of 69 conventional funds and 25 Islamic funds over the period of five years. Their results indicate that higher risk fund provides higher returns. The current research therefore expects that an increase in the volatility of a specific fund will have a positive impact on the NAV of the Islamic equity UTFs.

H_2: Fund risk has a positive long-run equilibrium relationship with the NAV of Islamic equity UTFs in Malaysia.

4.7.1.3 Fund Historical Performance

The fundamental objective of a managed UTFs is to maximise unit holders' returns by controlling the level of risk. However, most of the performance advertising and reporting focus only on the returns achieved, but in reality all investment portfolios are subjected to risk. Therefore, an indication of a funds' riskiness is required before any declaration of historical returns can be meaningful. This suggests that return and risk must be included in any performance measure because predictability is difficult to establish when funds are ranked through their return rather than by their risk adjusted returns (Carhart, 1997 and Daniel et al., 1997). The recognition of the increasing dominance and importance of unit trusts as an investment instrument has encouraged researchers and academics to develop appropriate techniques to assess portfolio performance.

The previous works of Treynor (1965), Sharpe (1966), and Jensen (1968) represent significant contributions to the evaluation of portfolio performance (Abdullah and Abdullah, 2009). These indicators help investors evaluate the potential risk and reward of investing in the UTFs by observing changes in the UTFs' performance from time to time. In recent literature, the issues of funds' performance has been tested through the risk-adjusted returns performance, level of diversification of UTFs, the selection and market timing abilities of funds managers, and the individual funds manager's risk tolerance (Abdullah et al., 2007; Talib and Isa, 2007; Low, 2007; and Mahat and Nasir, 2010).

Hence, in selecting which funds to be purchased, investors usually look at the historical performance of that funds, brand reputation, and editorials in the financial press (Blake and Timmermann, 2003). Accordingly, it is possible for the investors or the funds' managers to use the past performance information of the funds to assist their future investment decision making. In general, funds with good historical performance will generate higher returns on an average. Thus, it is hypothesised that good past performance of the funds has a positive effect on the NAV of the Islamic equity UTFs.

H_3: Fund historical performance has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.1.4 Fund Size

Size of a firm serves an arbitrary indicator variable associated with the risk factor in explaining the average returns of the firm and it has an effect on the valuation of the firms' assets prices (Roselee and Fung, 2009; and Irfan and Nishat, 2002). This is emphasised by Banz (1981), who found a negative relationship between the stock

returns and the stock market value after controlling the risk. Thus, he documented that the statistical relationship between the size of the firm and the average stock returns is comparable to the association between the average returns and the risk.

Reinganum (1983) found that the average portfolio returns are systematically related to market capitalisation, where smaller firms outperformed larger ones on an average even after returns were adjusted for risk as measured by beta. Chan et al. (1985) investigated the firm's size in the New Yurok Stock Exchange by using a multi-factor pricing model for the period between 1958 to 1977. He found that size related returns could be explained by a complete measure of risk and that smaller firms are riskier than larger firms due to the small firms experiencing more price fluctuations with economic expansions and shrinkages.

Lai, Lim, and Yap (1999) examined the relationship between seasonal stock returns and firms' size for Kuala Lumpur Stock Exchange (KLSE). They found that the effect of the size was related to the performance of the entire economy of the country. Smaller firms tend to outperform the larger firms when the market is optimistic, while the larger firms tend to have smaller negative returns during economic slowdown. Conversely, smaller firms tend to suffer more losses compared with larger firms during bearish situations.

On the other hand, the size of a firm which is captured through total capital employed is expected to positively influence the share prices as large firms are better diversified than smaller ones and thus are less risky (Benishy, 1961). Similarly for the UTFs, when the fund size is large, it will increase the funds' portfolio diversification chance thereby decreasing the risk and enhancing portfolio returns. This market phenomenon was supported by Atiase (1985) who found that as the size of the firm

rose, their share price volatility declined. Thus, the research postulated that size of the funds has a significant positive relationship with the NAV of the Islamic equity UTFs.

H_4: Fund size has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.1.5 Fund Management Experience

One may address the question of whether the fund manager has a superior stock picking ability in the portfolio investments. Funds' managers typically make investment decisions based on their personal experiences and risk preferences in order to buy stocks that outperform the stocks they sell (Nicolosi, 2009). According to the human capital theory, fund managers with a greater human capital (intelligence) should produce better performance and receive better compensation (Golec, 1996). Thus, the fund manager's characteristics instantaneously determines the portfolio returns performance and risk as well as their own compensation (Golec, 1996).

Furthermore, in efficient markets, investors and fund managers cannot exercise public information to beat the market and all managers (who hold portfolios of the same risks) are expected to earn the same returns regardless of their skill level. However, if investors find a manager who can consistently beat the market by utilising his skills such as stock selecting ability and timing skills, they will flock to invest with this manager (Berk, 2005). This indicates that the fund manager's characteristics play a key point in explaining a portfolio's performance for the funds (Ding and Wermers, 2009). This was maintained by Baks (2003), who found that up to 50% of mutual funds' performances were attributed to the funds managers' investment skill. The present research therefore expects that fund management experience has a positive

effect on the funds portfolio's performance, which consequently affects the NAV of the Islamic equity UTFs.

H_5: Fund management experience tenure has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.1.6 Hedge Funds

Hedge funds are privately managed investment partnerships that use alternative investment styles to perform well in bull and bear markets (Siddiqui, 1999). Hedge funds' investments are similar to UTFs' investments in many ways but differ in its investment strategies, where investments in hedge funds are illiquid investments and the funds generated share illiquidity premiums for investors as a compensation for limited liquidity (Maier, Schaub and Schmid, 2011). They are sharply focused on investment strategies, namely, short selling, risk arbitrage, trade in derivatives, buy and sell options, deal in futures and commodities or deal in equities in both the long and the short positions (Fung and Hsieh, 2001; and Daglioglu et al. (2003).

Hedge funds are structured to be exempted from the Securities Exchange regulation and most investments have accepted hedge funds with a clear understanding of their horizon or maturity period (Siddiqui, 1999; and Oesterle, 2006). This slight difference in the regulatory environment provides hedge funds with a significantly greater option in their operations as compared to the regulated investment vehicles such as mutual funds (McVea, 2008). Thus, hedge funds have more capability to reduce portfolio volatility risk and enhance portfolio returns in economic environments (Daglioglu et al., 2003).

In general, hedge funds' investments have become a significant factor in investment and wealth management. More recently, institutional investors such as

corporates, public pension funds, and UTFs have included hedge funds as one segment of a well-diversified portfolio. The relationship between Hedge Funds investment and private equity investment is growing steadily each year (Daglioglu et al., 2003). There are a number of hedge funds owned by private equity groups and many private equity firms are making long-term investments in the ownership of hedge funds. In view of that, the characteristics and the advantages of hedge funds give fund managers of Islamic equity funds valuable opportunities to use them as tools to reduce portfolio volatility risk and enhance their portfolio returns. Besides, the limited regulations on hedge funds also gives fund managers freedom and chances to run the funds' operations according to *Shari'ah* principles (Siddiqui, 1999). Thus, the research expects that hedge funds have a positive effect on the NAV of the Islamic equity UTFs in Malaysia.

H_6: Hedge funds investments index has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.2 Relationship between Macroeconomic Variables and NAV of Islamic UTFs

Based on the stock dividends discount model, macroeconomic variables may have systematic influences on the share prices via their influences on the expected discounted future cash flows that may consequently affect the NAV of the Islamic equity UTFs. This research therefore expects a long run equilibrium relationship between each macroeconomic variable as well as the 2007/2008 Global Financial Crisis and the NAV of Islamic equity UTFs.

4.7.2.1 Consumer Price Index

Consumer Price Index (CPI) is a measure of the overall movements of the prices of the consumer's basket of goods and services (Geetha et al., 2011). Movements in the CPI indicate whether the economy of the country goes through inflation or not (Cai et al., 2009). Existing empirical studies have identified that inflation may affect the economy and the market share prices in different ways.

Firstly, positive effects include the mitigation of an economic recession and reduce the level of debt. This means the reduction level of corporate debt will lead to increasing the equity value and, thus, drive the equity prices upwards (Garmendia, 2010). Secondly, inflation may influence the equity share price negatively through three channels. The first channel gives emphasis to real costs of inflation on the country's economy (for example, inflation acting as a distortionary tax and inflation difficulties inter-temporal capital allocation) (Garmendia, 2010). Therefore, increasing inflation leads to a reduction in future real earnings of the firms, causing the stock prices downwards.

The second channel is when inflation causes a reduction in the real value (the purchasing power) of money and other monetary items over the time which may discourage investment in saving. The uncertainty in inflation may cause reductions in investment of productive capital and may increase savings in non-productive assets by selling of shares and the buying of goods, which cause reduction in stock demand and upsurge the stocks supply, thereby driving the shares prices down (Othman, 2011).

In the third channel, the relationship between the equity price and the inflation is demonstrated in the context of a dividend-discount model (Mousa et al., 2012). In particular, inflation influences the value of a nominal interest rate, where; (nominal interest rate = real interest rate + inflation rate) (Kandel, et al., 1996). It is argued that

real interest rates are stable over a period of time, while the variations in interest rates are caused by a change in the inflationary expectations and not by movements in real interest rates (Ozbay, 2009). Thus, an increase in inflation will cause an increase in the nominal interest rate resulting in an increased discount rate, which causes the reduction of the present value of the cash flow (Mitchell-Innes, 2006). As the portfolio of Islamic equity UTFs are invested in the stock market, it is therefore expected that an increase in inflation has a negative influence on the NAV of the Islamic equity UTFs in Malaysia.

H_1: Consumer price index has a negative long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.2.2 Industrial Production Index

The Industrial Production Index (IPI) is a macroeconomic variable that represents a proxy of the growth rate of the overall economic activity in the economy, which contains the amount of production such as mining, gases, manufacturing, and public utilities of the country (Bellalah et al., 2012; and Hussain et al., 2012). Fama (1990) and Büyükşalvarcı (2010) identified that industrial production influenced the equity prices by affecting the future earnings or future cash flow of the firms.

Moreover, as emphasised by Hosseini, Ahmad and Lai (2011), the IPI affects the equity market index positively, as industrial production increases, sales and earnings of firms also rise, causing an increase in stock prices as investors feel confident of investments in the stock market. Investors can use the IPI of various industries to examine the growth of the respective industries. If the IPI for a specific industry is continuously growing, it is a sign that the companies in the industry are

performing quite well and this motivate investors to buy the share of the companies for this specific industry (Othman, 2011).

Existing literature such as by Chen et al. (1986), Ibrahim and Aziz (2003), Mahmood and Dinniah (2009), and Hussin, Muhammad, Abu and Awang (2012), showed that the industrial production index has a positive impact on equity prices. Therefore, this research assumes that an increase in IPI may positively affect the NAV of the Islamic equity UTFs through its influence on the funds' expected future cash flows.

H_2: Industrial production index has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.2.3 Three-Month Treasury Bill Rate

The Islamic equity unit trust investments and the interest rate are not mutually exclusive because Islamic investments are still using the interest rate as a benchmark that affects the present value of the fund's assets. Thus, instability of the interest rate is dangerous for funds asset pricing. Therefore, this research involves the three-month Treasury Bill Rate as a proxy of the interest rate in the model.

The interest rate and the share market prices or returns are inversely related, which means as the interest rates go up, the equity market activities tend to come down (Zafar et al., 2008). There are three main reasons for this inverse relationship. Firstly, according to the discounted present value model, stock prices are determined by the future cash flows or dividends and discount rates (Ibrahim, 2002). As the Islamic equity UTFs are invested in the stock market, thus an increase in the interest rate leads to an increase in the discount rate and it ultimately results in the decrease of

the present value of the fund's future cash flow which represents the fair intrinsic value of the unit in the UTFs.

Secondly, when the interest rate goes up, investors will shift their investments from higher risk instrument such as the stock market to savings or fixed deposit accounts. This is because an increase in the interest rate would raise the opportunity costs of holding cash and the trade-off to holding other interest bearing securities such as bonds, which would lead to a decrease in equity share prices (Kuwornu, 2011). In contrast, when the interest rate goes down, investors will shift their investments out to invest in equity markets in the hope of getting a higher return (Thang, 2009).

Thirdly, in general, the interest rate represents the cost of capital, in which most companies finance their capital equipment and investments through borrowings (Alam and Uddin, 2009). Thus, the interest rate has an imminent impact on a company's operations whereby any increase in interest rates will raise the cost of capital and influence the level of a company's profits thereby driving the company's share prices downwards (Maysami et al., 2004). Therefore, it is anticipated that an increase in the treasury bill rate has a negative effect on the NAV of the Islamic equity UTFs.

H_3: Three-month treasury bill rate has a negative long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.2.4 The Money Supply (M3)

The money supply (M3) represents the money stock in economic circulation within a specific time. Money is defined as anything that serves as a means of payment, a standard of measurement and a store of value (Ismail, Abdamia and Bakar, 2005). Changes in the money supply are significant indicators of changes in the future

macroeconomic environments such as inflation and interest rate that affect equity prices (Nguyen, Islam and Ali, 2011). In particular, an increase of the money supply in economic circulation has different effects on the equity of share prices with consideration of the time period. In the long-term, an increase in the money supply in economic circulation may cause expected inflation, resulting in an increase in the nominal interest rates which represents the discount rate in an equity valuation-model leading to lower equity prices as future cash flows are discounted at a higher cost of capital (Fama, 1981; Ibrahim and Yusoff, 2001; and Alatiqi and Fazel, 2008).

On the other hand, an increase in money supply has immediate positive liquidity effects on equity prices in the short-term (Bulmash and Trivoli, 1991). This view was supported by Mukherjee and Naka (1995), who advocated that if an increase in money supply directed to an economic expansion by increased cash flows, equity prices would benefit from economic growth as a result of such an expansionary monetary policy. In addition, an increase in the monetary growth reduces the interest rate resulting in a reduced cost of the capital and increasing the earning of the firms (Mohammad et al., 2009). Overall, an increase in money supply leads to an increase in monetary liquidity ultimately resulting in the uplift of nominal equity prices in the short-run (Ibrahim and Yusoff, 2001). Thus, it is assumed that an increase in the money supply is negatively related to the NAV of the Islamic equity unit funds in the long-term.

H_4: Money supply (M3) has a negative long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.2.5 Foreign Exchange Rate

The impact of change in the foreign exchange rate on the economy depends to a large extent on the level of international trade and the trade balance (Maysami et al., 2004). The on-going increases in the world trade and capital movements have made the foreign exchange rates as one of the significant determinants in the business profitability factor and equity prices (Kim, 2003). The inclusion of the foreign exchange rate in the analysis is encouraged by the fact that Malaysian incomes and resources are highly dependent on international trade, as Malaysia is considered an export oriented country (Thang, 2009).

The impact of the exchange rate on the equity market can be explained through two scenarios. The first scenario is when the local currency (Ringgit) depreciates and the country is considered an exporter country. A depreciation of the Malaysian Ringgit will lead to an increase in demand for Malaysian exports due to increased competitiveness of the products which increases the cash flows into the country. This causes an increase in the profit of the companies, assuming that the demand for exports is sufficiently elastic and consequently enhancing the average level of equity prices. The second scenario, if the country is not considered as an export country, then this situation will decrease the demand of the local currency, which causes currency depreciation which will be understood to mean that the country is not doing well in managing its economy. This scenario also implies that the country is spending more than it earns, leading to a decrease in foreign reserves (Thang, 2009). In such an economically precarious situation, foreign investors tend to lose their confidence to invest in the local stock market thereby causing capital outflows resulting in the decrease of the equity price (Aydemir and Demirhan, 2009).

Advantageously, most of the Islamic UTFs in Malaysia are invested overseas such as the Middle East and South Africa for hedging and diversifying their portfolios investments to improve their returns (Ong, Teh, Soh and Yat, 2012). Thus, establishing the relationship between the equity prices and the exchange rates is very important for funds managers or management companies to manage their viability of foreign contracts and exchange rate risk to stabilise their earnings. It is further mentioned that since currency is more often included as an asset in investment funds' portfolios, it is therefore highly relevant that awareness of the relationship between the currency rates and other assets in a portfolio is vital for the performance of the funds (Dimitrova, 2005). Thus, the research assumes a positive relationship exists between the foreign exchange rate (MYR/USD) and the NAV of the Islamic equity UTFs.

H_5: Foreign exchange rate has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.2.6 Crude Oil Price

The significance of oil to economic activities and its influence on the equity market has been well documented in economic literature such as in Basher and Sadorsky (2006), Adjasi (2009), Hosseini et al. (2011), and Raheman, Sohail, Noreen, Zulfiqar, Mehran and Irfan, (2012). The influence of rising oil prices on the equity market is different from the oil importing countries to the oil exporting countries.

In oil importing countries, the rise in world oil prices deteriorates the trade balance, leading to a higher current account deficit and a declining net foreign asset position and a depreciating exchange rate that is associated with share prices (Abdelaziz, Chortareas and Cipollini, 2008). In addition, an increase in the oil prices means a corresponding increase in the production costs of inputs such as gas,

electricity, and transportation, resulting in the reduction of the companies' earnings or future cash flows, which can have very serious negative effects on equity market prices and returns (Adjasi, 2009; Jalil, Ghani and Duasa, 2009; and Hosseini et al., 2011).

Furthermore, an increase in oil prices means impending rising concerns on inflation **(**Basher and Sadorsky, 2006**)**. This leads to a drastic reduction in the consumers' potential spending and the financial risk of investments will accordingly increase due to the erratic wide fluctuations in oil prices which consequently affecting the stock prices negatively and reducing wealth and investments (Le and Chang, 2011). O'Neill, Penm and Terrell (2008) objectively adduced that justification for a relatively large increase in oil prices would lead to a considerable rise in production costs with the upward spiralling pressures upon wages and the resultant inflation. The resulting change in the investors' inflationary expectations will have substantial devastating implications on their portfolio investment activities.

On the other hand, in oil exporting countries such as OPEC countries, the procedure generally works in the reverse. Trade surpluses are balanced by stronger economic growth and, with time, the real exchange rate appreciates and share prices increase accordingly (Abdelaziz et al., 2008). The reason for this positive relationship in the oil producing countries is due to the fact that oil is their fundamental source of revenue. Thus, an increase in the oil price will lead to an increase in the cash flow and the revenue of firms in the oil producing countries which in turn increases the returns from the equity market, thus resulting in the rise of the equity value (Raheman et al., 2012).

Malaysia represents both an oil exporting and importing country. The surplus of exporting value over the importing value makes Malaysia a net oil exporting

country (Jalil et al., 2009). The huge surpluses built up by the exports of oil were recycled through the sovereign wealth funds, the banking system (through the money multiplier) that greatly increased investments in equity industry (Othman, 2011). In general, the Malaysian oil market does not experience price fluctuations and the local retail fuel price is commonly stable to some degree. This is due to the fact that the Malaysian government is subsidising the fuel prices (Noordin, 1999).

In 1983 the Automatic Pricing Mechanism policy was introduced by the Malaysian government to determine the fuel prices and stabilise the price of petrol and diesel in the country to a certain extent, through a variable amount of sales tax and subsidy (Noordin, 1999). Further, this new policy stated that the retail price has to be changed only if the difference in price exceeds the threshold of the tax and subsidy, at the discretion of the government (Noordin, 1999). Thus, the stock markets' companies operating in Malaysia will benefit from this subsidy in the form of cost input reduction and improve their competitiveness profile and boost their profits, which will be positively reflected in the companies' shares prices and subsequently the fund NAV. In view of that, this research postulates that an increase in world oil prices will positively influence the NAV of the Islamic equity UTFs in Malaysia.

H_6: Crude oil prices have a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.2.7 Local Stability Factors

Local stability factor usually refers to an absence of excessive fluctuations in the country's political risks and corruption levels (Durnev, 2010). This factor has a strong power to influence the investment decisions and attract the foreign investments, resulting in an increase in the capital inflow to the country (Brada, Kutan and Yigit,

2006). This factor can be viewed and measured by the national political election and corruption indices that influence the investment decision climate in the Malaysian unit trust industry or the equity market as a whole.

i) **National Political Elections**: In democratic countries, political elections may be considered as national procedures that can bring important impacts on the equity market propensity (Torkzade and Moghadam, 2012). A number of studies have argued that political environments can influence the economic activities which directly impact on the asset prices and can either increase or decrease investment risks (Durnev, 2010). Specifically, the election outcomes may influence business performance through changes in the overall economy of the country, such as changes in government spending, taxation system, and labour or fiscal changes through the regulatory environment of the industry or company (Oehler, Walker and Wendt, 2008). Thus, uncertainties in the future political scenario of the newly elected government policies might seriously affect the prospective investment climate, which can have an impact on corporate decision-making and future business performance either in the short-term or in the long-term investment environments (Snowberg, Wolfers and Zitzewitz, 2007 and Bialkowski, Gottschalk and Wisniewski, 2008).

In addition, during the election years, the government may not be too attentive to the information on the stock prices as more efforts may be channelled into the assurance of a political victory. Thus, in making investment decisions during election periods, fund management companies and investors rely less on the stock prices because of increased information irregularities during this period (Durnev, 2010). Generally, the political uncertainty creates an overall atmosphere of ambiguity on the future investment pay-out and as a logical response to this situation the rational funds managers or investors may delay investment payment until a conducive political

certainty is determined (Durnev, 2010). Thus, an increased uncertainty in the market during election period may negatively affect the decision making by both fund managers and investors to make any additional investment in the stock market, which causes reduction in the investment level that may reflect on the companies stock market prices and subsequently have a negative effect on the NAV of the equity UTFs.

In Malaysia, the opposite usually occurs. Knowing the common strategy of the ruling party in Malaysia during several months leading to the election, the government through its government-linked companies (GLCs), the Employees Provident Fund (EPF), and Permodalan Nasional Berhad (PNB) tends to pump a large amount of funds into the stock market in order to boost the KLCI performance (Mokhtar, 2005). The motive is to create a 'feel good' factor among the people that the economy is doing well and the rally on stock market performance provides some sort of attestation to that. The uncertainty in the capital market during this period is more of the result of the concern of the investors that there will be policy changes and political instability in case there is a change of government that will affect the viability of the business environment. As a result, many investors tend to leave the market or adopt a 'wait-and-see' attitude. This negative perception and the decision to sell-out the investment could possibly affect the NAV of Islamic equity UTFs negatively.

H_7: National political election events have a negative long-run equilibrium relationship with the NAV of Islamic equity UTFs in Malaysia.

ii) **Corruption Index**: Corruption is commonly defined as the misuse of public power for personal benefit (Sarkar and Hasan, 2001). It is normally associated with the activities of politicians (Blechinger, 2002), which creates substantial costs on the economy of the country. For example, loss of taxes, economic deterioration, lack of investment in public goods, loss of public revenues, loss of confidence in the law and

institutions. All these lead to a reduced quality of life and subsequently the lowering of investment opportunities and the retardation of economic growth (Otusanya, 2011).

Corruption level affects investment efficiency in two different ways. Firstly, resources from potentially productive sectors to unproductive sectors can be unscrupulously diverted by corruption which irrationally misrepresents the sectorial allocation of investible resources. This leads to the overall output-generating capacity of the investment can be seriously reduced. Secondly, a higher output price increase, reduction in demand, and the eventual reduction in the incremental output capital ratio to be unnecessarily caused by any act of corruption, which consequentially increases the cost of production (Sarkar and Hasan, 2001). Therefore, an increase in corruption will lower the efficiency of investment. This results in weak performance of the equity funds which in turn reduces the NAV of the Islamic equity UTFs.

H_8: Corruption level in the country has a negative long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.

4.7.3 The 2007/2008 Global Financial Crisis

Islamic financial institutions were not spared from the 2007/2008 global financial crisis due to their exposure to the global economic slowdown (Othman, 2011). However, the Islamic financial system had the strong ability to withstand the harshness of the global economic turbulence during the crisis period and helped in preventing or could partially eradicate the deleterious financial effects of such a crisis through eliminating the causes of the crisis (Zerban et al., 2012). This was emphasised by Salah (2010) who stated that those market operators who were quick to strictly observe the *Sharī`ah* principles were showing superior performance in the Islamic funds during the economic slowdown. Similarly, Kamil (2010) applied the adjusted

Sharpe index, the adjusted Jensen Alpha index, and the Treynor to determine the impact of the global financial crisis on UTFs performance, whereas, the results indicate that the Islamic UTFs performed better than the conventional funds during the crisis period than the pre-crisis period.

An excessive lending of high leverage is explained by Chapra (2008) as one of the major causes of financial crises due to the lack of adequate market discipline in the financial system. The *Sharī`ah* principles on the prohibition of making or receiving interest have been fully adhered to reduce the crisis. Besides, the *Sharī`ah* also has the beneficial effect of steering the Islamic funds away from those high-leveraged companies (Salah, 2010). This is due to *Sharī`ah* principles which strictly forbid Islamic funds to be invested in the shares of a company that is interest-based or selling debts, in which securitisation was one of the main reasons behind the 2007-2008 Global Financial Crisis.

By virtue of these facts, the financial capital must have a social and ethical purpose which includes prohibition on transactions involving *maysir* (speculation or gambling), prohibition on *gharar* (uncertainty) in the terms of contracts such as, selling something that one does not own (Zerban et al., 2012). In view of that, the prohibition on investment in those stocks that are non-*Sharī`ah* approved, will help the Islamic funds inculcate highly controlled discipline into the financial system and substantially reduces financial instability. It is therefore expected that the 2007/2008 global financial crisis has a positive influence on the NAV of the Islamic equity UTFs in Malaysia.

H_9: The 2007/2008 global financial crisis has a positive impact on the NAV of the Islamic equity UTFs in Malaysia.

4.7.4 Summary of the Main Research Hypotheses

The hypotheses for the relationships between the selected micro, macroeconomic variables, and the 2007/2008 global financial crisis with the NAV of the Islamic equity UTFs are summarised below and expressed in their alternative forms.

H_a: Selected microeconomic variables, namely, Fund income distribution (dividends) (DIV), Fund Historical Performance (HP), Fund Risk (S), Fund size (FZ), Fund Management Experience (MEX) and Hedge Funds (HF) share significant long-run equilibrium relationship with the NAV of the Islamic UTFs in Malaysia.

H_b: Selected macroeconomic variables, namely, Consumer Price Index (CPI), Industrial Production Index (IPI), 3-month Treasury Bill Rate (TB), Money Supply (M3), Foreign Exchange Rate (FER), Global Crude Oil Price (OP), National Political Elections (NPE) and the Corruption Index (CI) share significant long-run equilibrium relationship with the NAV of the Islamic UTFs in Malaysia.

In addition, the interrelated cause and effect relationship between macroeconomic variables and the equity market prices in the short-run analysis have been extensively studied in the past (Ibrahim and Aziz, 2003; Fadhil and Azizan, 2007; Acikalin et al., 2008; Rasool et al., 2012; Hussin et al., 2012. The overall findings of these studies revealed a causal relationship between the macroeconomic variables and equity market prices specifically in emerging markets including Malaysia. As the Islamic equity UTFs are invested in the stock market, it is therefore possible to hypothesis a causal relationship between the macroeconomic variables and NAV of Islamic equity UTFs in Malaysia for the short-run analysis. The hypotheses are stated to depict the causal relationship as:

H_c: Selected macroeconomic variables, namely, Consumer Price Index (CPI), Industrial Production Index (IPI), 3-month Treasury Bill Rate (TBR), Money Supply

(M3), Foreign Exchange Rate (FER), Global Crude Oil Price (OP), National Political Elections (NPE) and the Corruption Index (CI) have significant causal effect on the NAV of the Islamic UTFs in Malaysia in the short-run investment.

H_d: The 2007/2008 global financial crisis has significant causal effect on the NAV of the Islamic UTFs in Malaysia in the short-run investment.

4.8 CONCLUSION

The determinants of the NAV of Islamic equity UTFs in the Malaysian unit trust industry have been extensively discussed in this chapter based on the theories that are relatedly used with equity markets and their pricing. Based on these theories, the research draws the configuration framework of the relationships. The relationships between the NAV of Islamic equity UTFs and the chosen variables based on the existing literature (chapter 3) forms the basis of the hypotheses of these relationships which were established in order to depict their interrelated relationships. The summary of the hypotheses of these relationships are summarised in Table 4.1.

Table 4.1 Summary of the Research Hypotheses for the Long-Run Relationship between the Selected Micro, Macroeconomic variables as well as 2007/2008 Global Financial crisis and the NAV of the Islamic equity UTFs

HypothesisNo.	Research Hyotheses
	Microeconomic Variables
Ha: Selected microeconomic variables share significant long-run equilibrium relationship with the NAV of the Islamic UTFs in Malaysia.	
H1:	Fund dividends have a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H2:	Fund risk has a positive long-run equilibrium relationship with the NAV of Islamic equity UTFs in Malaysia.
H3:	Fund historical performance has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H4:	Fund size has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H5:	Fund management experience tenure has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H6:	Hedge funds investments index has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
	Macroeconomic Variables
H_b: Selected macroeconomic variables share significant long-run equilibrium relationship with the NAV of the Islamic UTFs in Malaysia.	
H1:	Consumer price index has a negative long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H2:	Industrial production index has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H3:	Three-month treasury bill rate has a negative long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H4:	Money supply has a negative long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H5:	Foreign exchange rate has a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H6:	Crude oil prices have a positive long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H7:	National political election events have a negative long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H8:	Corruption level in the country has a negative long-run equilibrium relationship with the NAV of the Islamic equity UTFs in Malaysia.
H9:	The 2007/2008 global financial crisis has a positive significant impact on the NAV of the Islamic equity UTFs in Malaysia
Hc: Selected macroeconomic variables have significant causal effect on the NAV of the Islamic UTFs in Malaysia in the short-run investment.	
Hd: The 2007/2008 global financial crisis has significant causal effect on the NAV of the Islamic UTFs in Malaysia in the short-run investment.	

CHAPTER FIVE

RESEARCH METHODOLOGY

5.0 INTRODUCTION

This chapter describes the methodology of this research. It comprises eight sections. The first section describes the research design followed by estimation model specification. The next section explains the data and samples of the research, which include data definitions, data collection and sources, population and sample size, and data processing. The descriptions and measurements of the micro and macroeconomic variables are covered in the section six. Sections seven and eight explain the data analysis method utilised for this research.

5.1 RESEARCH DESIGN

This research was designed to explore the relationships between the selected micro and macroeconomic variables and the NAV of Islamic equity UTFs by using quantitative analysis method. In particular, this research is designed to examine the long-run equilibrium relationship between the selected micro, macroeconomic variables, and the NAV of the Islamic equity UTFs. We investigate the causal relationship between selected macroeconomic variables and the NAV of the Islamic equity UTFs, and then analyse the impact of the 2007/2008 Global Financial Crisis on the NAV of the Islamic equity UTFs in Malaysia. The modelling methodology, data collection procedures, instrument and data analysis are chosen for their ability to identify the determinants of NAV of Islamic equity UTFs in Malaysia. The quantitative method was chosen as it best investigates the relationship between quantitative variables of this research. In addition, as the objective of this research is

to examine the causal relationship between selected macroeconomic variables and NAV of Islamic equity UTFs, this research also employed the VECM Causality Test and Granger (1969) Causality Test in its analysis.

5.2 ESTIMATION MODEL SPECIFICATION

The model specification of this research comprises two micro and macroeconomic variables which may have an influence on the NAV of the Islamic equity UTFs in Malaysia. In other words, changes in the NAV of the Islamic equity UTFs is expected to be explained by changes in the selected micro, macroeconomic variables, as well as the 2007/2008 Global Financial Crisis. As such, the models to be estimated are as follows:

Microeconomic model

$$\hat{Y} = \alpha + \beta 1\ (DIV) + \beta 2\ (S) + \beta 3\ (HP) + \beta 4\ (FZ) + \beta 5\ (MEX) + \beta 6\ (HF) + €\quad (5.1)$$

Macroeconomic model

$$\hat{Y} = \alpha + \beta 1\ (CPI) + \beta 2\ (IPI) + \beta 3\ (TBR) + \beta 4\ (M3) + \beta 5\ (FER) + \beta 6\ (OP) + \beta 7\ (CI) + \beta 8\ (NPE) + \beta 9\ (FC) + €\quad (5.2)$$

Where

DIV = Fund Income Distribution (Dividends)

S = Fund Risk

HP = Fund Historical Performance

FZ = Fund Size

MEX = Fund Management Experience

HF = Hedge Funds

CPI = Consumer Price Index

IPI = Industrial Production Index

TBR = Three-Month Treasury bill Rate

M3 = Money Supply

FER = Foreign Exchange Rate

OP = Global Crude Oil Price

CI = Corruption Index

NPE = National Political Elections

FC = The 2007/2008 Global Financial Crisis

$\hat{Y}$ denotes for estimated NAV of Islamic equity UTFs and the α, β_i and ϵ are the intercepts (slope of the dependent variable), coefficients of the independent variables and the error term, respectively.

5.3 DATA DEFINITIONS AND DATA SOURCES

The characteristics of the data whether primary or secondary data (penal-data or time-series data) influence the choice of an optimal estimator for data model analysis. Empirical research in finance commonly contains analysis of time series data, because through times series data it is useful to see how a given security or asset value changes over time. This situation is more common in the empirical asset pricing literature where researchers examine the price behaviour during specific time frames.

This research used secondary time series data in analysing the NAV of Islamic equity UTFs determinates using monthly frequency running over the period from January 2006 to December 2012. This period represents 84 months, which was the most appropriate period to be applied for examining the fund NAV behaviours since most of the Islamic funds were newly launched in Malaysia and most of them launched their business after 2008. Further, the data available could only be found for these funds in the stated period because some of the funds have insufficient

information in the data source. In addition, the sample period was designated to capture the changes in both micro and macroeconomic variables that would potentially explain the variations of the NAV of Islamic equity UTFs. This is because the sample period witnessed significant global and local events. For example, the 2007/2008 Global Financial Crisis was a major economic crisis affecting equity market behaviours either domestically or globally, in addition to national political elections. These events may cause various alterations in both the micro and the macroeconomic variables and policies in the unit trust industry in Malaysia.

The dataset of this research consisted of two groups. The first group contained micro variables DIV, HP, S, FZ, MEX and HF. The second group comprised macro variables CPI, IPI, TBR, M3, FER, OP, CI, NPE and FC. For statistical analysis, the macroeconomic variables have been defined into endogenous and exogenous variables. Endogenous variables represent the variables that are publicly perceived and observed regularly in the Malaysian economic system such as CPI, IPI, TBR, M3, FER and OP (Barro, 2007). While exogenous variables are denoted as variables that are not commonly observed in the economic system and it is difficult to measure them directly, but can be measured as dummy variables such as NPE and FC or may not exist officially in the economic system such as CI (Barro, 2007; Kozhan, 2010).

Data on the monthly NAV of the Islamic equity UTFs and fund size (total asset), dividends, risks of each equity UTF and the aggregate hedge fund index were obtained from the Bloomberg database. The historical performance data of each individual fund were gathered from the Eurekahedge Fund database. Data of fund management experience was obtained from the respective websites of each individual management company of the UTFs.

Data on the macroeconomic variables such as the consumer price index, the industrial production index, and the 3-month Treasury bill rate were gathered from the International Monetary Fund's International Financial Statistics database. Data on the money supply (M3) and foreign exchange rate were obtained from the Bank Negara Malaysia's website. Furthermore, data on the crude oil price were collected from the database of the United States Energy Information Administration. Data on the corruption variable were obtained from the Transparency International Corruption Perceptions Index respective website. Finally, data on the national political election and the 2007/2008 Global Financial Crisis were applied as dummy variables in the analysis.

5.4 POPULATION AND SAMPLE SIZE

The target population of this research consisted of the entire Islamic equity UTFs listed in Bursa Malaysia. According to the SC of Malaysia database, the Malaysian approved Islamic equity UTFs as at 31 December 2012 were 87 funds, as illustrated in Appendix (I). The sample size utilised for the current research is selected based on the criteria of active funds available during the period under observation. Based on these criteria, the study found 30 Islamic equity UTFs are operating and running their business during this observation period under the 16 management companies that were listed in Bursa Malaysia (Appendix (II)). The small size of the sample of 30 Islamic equity UTFs was unavoidable due to the limited number of Islamic equity UTFs that have been existing during the seven years observation period. This limitation in the data is due to the fact that most of the Islamic UTFs are newly launched and some of the funds have insufficient information in the data source.

5.5 DATA PROCESSING

Data processing was mostly based on four simple steps. Firstly, the data was collected from the sources identified earlier. The collected data was then first rearranged, edited, and calculated. Specifically, NAV, DIV, HP, S and FZ were calculated based on the weighted average of portfolio size. MEX was calculated based on the normal mean of the experience of 30 Islamic fund managers. In addition, FZ, MEX, HF, CPI, IPI, TBR, M3, FER, OP and CI were transformed into the natural logarithm, because they have difference units of measurements. For example, M3 and FZ values are in Malaysian Ringgit, HF, CPI and IPI are measured by unit of indices, TBR and FER measured as %age, and OP is measured by US dollar and MEX measured by years of experience.

The variables that contain zero and negative values such as the NAV, DIV, HP, S and the dummy variables NPE and FC were transformed into the natural logarithm. This is due to the fact that the zero and negative values do not appear define on a logarithmic scale, in which the log (0) = minus infinity, which may result in an incorrect estimation of the coefficients for the investigated model. This variable transformation was made to make these variables behave symmetrically and make the data meet the assumptions of the statistical inference process to be applied in the analysis, which may help improve the interpretability as well as enhance the appearance of the graphs of the applied model.

The remaining data represents the most useful data for the research analysis. Next, the useful data were transformed and analysed by using econometrics models such as ARDL model and VAR. Finally, the outcomes and findings were interpreted in the context of asset pricing theories, EMH, and the micro and macroeconomic structure of the Malaysian economy.

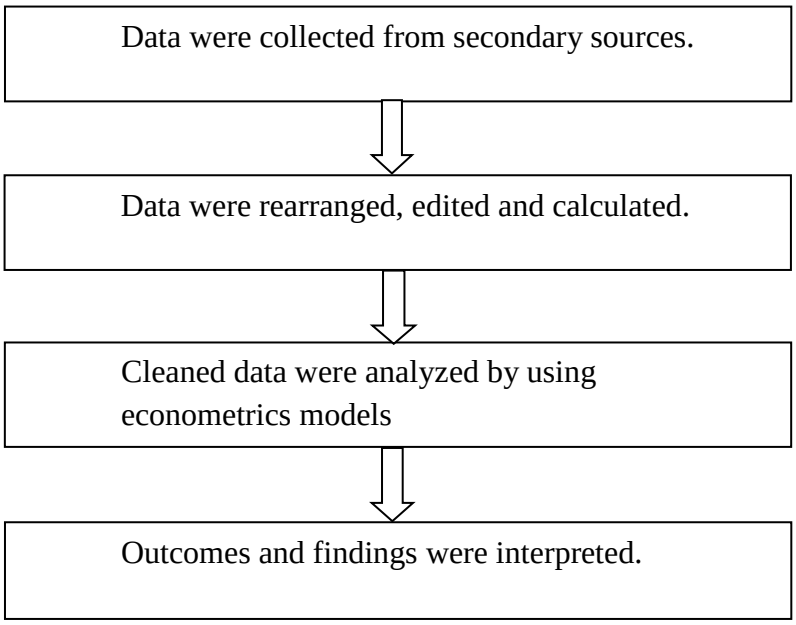


Figure 5.1 Map of Data Processing

5.6 VARIABLES SELECTION, JUSTIFICATION, AND MEASUREMENTS

The aim of this research is to empirically investigate the impact of micro and macroeconomic variables on the NAV of Islamic equity UTFs. The theoretical linkage between the micro, macroeconomic variables, and the movement of funds NAV can directly be obtained from the Dividend Discount model (DDM) of Miller and Modigliani (1961) and the arbitrage pricing theory (APT) of Ross 1976. According to these models, any new information from the micro or macroeconomic variables may influence the equity price or return through the impact of future cash flows (expected dividends) discount rate or, or both (Chen et al., 1986; Rahman et al., 2009). The variables selection for this research was established based on these models, which provides a useful foundation for understanding the relationship between fund unit prices movements, the stream of fund future cash flows and the discount rate.

Further, the choice of the relevant variables, which are microeconomic variables (Funds Returns, Funds Risks, Funds Historical performances, Fund sizes,

Funds Management Experiences and Hedge Funds), macroeconomic variables (Consumer Price Index, Industrial Production Index, Money Supply, Three-month Treasury Bill Rate, Foreign Exchange Rate, Crude Oil Prices, National Political Elections and Corruption Index), and the 2007/2008 Global Financial Crisis was based on their theoretical importance, performance measures of the economy and also their uses and findings in the earlier empirical literature as illustrated in chapters 3 and 4.

The measures of the variables involved in this research were also selected from the scales existing in equity market literature. The monthly average closing price of the NAV of Islamic equity UTFs was used as the dependent variable, while other variables were used as independent variables to examine their role in explaining the fluctuations of the NAV of Islamic equity UTFs in the Malaysian unit trust industry.

5.6.1 Dependent Variable

The Net Asset Value (NAV) represents the fund's price per share market value or the exchange-traded fund's per-share value (Othman, 2011). According to the SC of Malaysia Guidelines (2003), the NAV of the funds is determined by deducting the values of all the fund's liabilities from the values of all the fund's assets at the valuation point. For the purpose of computing the annual management and trustee's fee, the NAV of the funds should be inclusive of both the management and the trustee's fee for the relevant day. The annual management and trustee's fees should be accrued daily and should be calculated based on the NAV of the funds. Based on this price, investors can buy the UTFs units from a fund company and sell them back (redeem) to the company. The management company must agree to sell the units at the selling price of the units upon a suitable request from an investor and must accordingly

repurchase the units at the repurchase price of the units upon the appropriate request from a unit holder.

In the context of the current research, the NAV of the UTFs was calculated by dividing the mean of the monthly total value of all the securities in 30 Islamic equity UTFs' portfolios with a reduction of any liabilities by the number of funds' units outstanding which is expressed as follows:

$$\text{NAV} = (\text{Assets-Liabilities}) \div \text{Number of units in circulation} \quad (5.3)$$

5.6.2 Independent Variables

The independent variables consist of micro and macroeconomic variables indicated in section 5.2.

5.6.2.1 Income Distribution (Dividends) (DIV)

The returns of the UTFs were derived from income distribution and capital gain. The calculation of return in the research adopted the method applied by Lang and Niendorf (1993), Muhammad and Mokhtar (2008), and Abdullah, Hassan and Mohamad (2007)). Each fund's rate of returns was computed using the monthly holding periods by applying the following formula:

$$R(NAV) = DIV_t + (NAV_t - NAV_{t-1}) / NAV_{t-1} \quad (5.4)$$

Where:

R = Total returns of a portfolio (Individual funds).

DIV_t = Cash Distribution at time *t*.

NAV_t = Net Asset Value at time *t.*

NAV_{t-1} = Net Asset Value at one period before time *t*.

Nevertheless, the fact is that the capital gain already occurred and is included in the fund NAV fluctuation over the sample period. Thus, this research examined only the impact of income distribution (dividends pay-out) policies on the fund unit price behaviours. Therefore, the rates of returns for the equity UTFs were re-formulated by using the following formula:

$$R\ (NAV) = DIV_t \tag{5.5}$$

5.6.2.2 Fund Risk (S)

The widespread approach of measuring risk in unit fund is to calculate its beta or standard deviations (See and Jusoh, 2012). The choice of appropriate measure depends on the investment assumption. If the investment portfolio invests in several different funds, the beta measure is better to be used. However, if the UTF represents the entire investment for an individual investor, the standard deviation is a more appropriate measure (See and Jusoh, 2012). The present research therefore used standard deviation as a measure of fund risk since the current research aims to investigate the effect of the unsystematic risk related to each individual fund on fund NAV. By definition, standard deviation is a statistical measure of the variability of a distribution around its mean and is computed by the following formula (Abdullah, Hassan and Mohamad, 2007; Muhammad and Mokhtar, 2008).

$$S = \sqrt{\frac{1}{n-1}\sum_{t=1}^{n}(R_t - \bar{R})^2} \tag{5.6}$$

Where,

S = Standard deviation (total risk) of the Islamic equity UTF.

n = Number of monthly returns (number of observations) of the Islamic equity UTF.

R_t = Monthly returns of the Islamic equity UTFs.

$\bar{R}$ = Mean returns of the Islamic equity UTFs.

5.6.2.3 Fund Historical Performance (HP)

Earlier studies on fund performance indicated that the most common measurements of funds' performance applied are the Sharpe Ratio (1966), Treynor Ratio (1965), and Jensen's model (Abdullah and Abdullah, 2009). This research used the Sharpe index to rank the Islamic equity UTFs performance because it ranks each individual fund's performance related to its risk-adjusted return (used by Lang and Niendorf, 1993, and Kassim and Kamil, 2012).

The Sharpe index is a risk-adjusted measure established by the Nobel Laureate William Sharpe in 1996, which quantifies the concept that investors select optimum portfolios on the basis of their expected return and risk features. The Sharpe's index is calculated by deducting the risk-free rate from the rate of return for fund's portfolio dividing by the standard deviation of the fund's portfolio returns. The traditional Sharpe's index is formulated using the following equation (Lang and Niendorf, 1993; Kassim and Kamil, 2012):

$$\text{Sharpe's Index} = (R_j - R_{rf}) / \sigma \quad (5.7)$$

Where:

Sharpe's Index = 'reward to variability' as stated by Sharpe

R_j = average monthly returns of portfolio *j* over the evaluation period

R_{rf} = Average risk-free rate over the evaluation period (Treasury bill returns).

σ = standard deviation of the portfolio's returns.

5.6.2.4 Fund Size (FZ)

The size of the UTFs refers to the total asset base or total amount of money that fund manager must manage and invest (Chen, Hong, Huang and Kubik, 2004). The calculation of fund size in this research adopted the method studied by Le and Chang (2011), Kolosov and Soltanmammedov (2011), and Abbasi and Dadashinasab (2012) who applied a mean of monthly fund total assets under management as proxy of fund size effect because the data of the current research is spared over 84 months.

5.6.2.5 Fund Management Experience (MEX)

The fund managers' tenure was used as proxy to measure the performance of the experienced funds managers and their ability to demonstrate a consistent performance with the same funds over seven-year period (Golec, 1996). The funds managers' tenure was measured in years and converted to monthly cumulative time period. When more than one manager is involved in the funds, the lead or more senior funds managers' characteristics is used (Golec, 1996; Porter and Trifts, 1998). This is illustrated by the following formula.

Management Experiment = Past Experience in Year*12 + Monthly Cumulative Experience (5.8)

5.6.2.6 Hedge Fund (HF)

Hedge fund is a proxy of the Islamic equity UTFs' excess liquidity that is invested by the fund managers in illiquid hedge funds' investments (Siddiqui, 1999). However, there was lack of information to identify the exact amount that equity UTFs management companies invest in hedge fund markets. This is due to the fact that they do not disclose their hedge funds investment information in their financial reports due

to confidentiality. This research therefore used the Global Hedge Fund index as a measure for the effect of hedge fund investments on the Islamic equity unit trust industry in Malaysia. The Global Hedge Fund Index provides information on historical performance of all the hedge fund investments all over the world as well as across all aspects of the hedge funds industry (Malkiel and Saha, 2005).

5.6.2.7 Consumer Price Index (CPI)

CPI is the proxy of an inflation rate. It is one of the most used statistics to identify the periods of inflation. CPI was selected because it is a general base measure to calculate average change in prices of goods and services during study period. This measure was applied by Cai, Chou and Li (2009) and Dritsaki and Adamopoulos (2005).

$$\text{Inflation} = ((CPI_{t1} – CPI_{t0}) / CPI_{t0}) * 100 \quad (5.9)$$

Where: CPI_{t1} denotes the price level at time *I*, while CPI_{t0} represents the price level at tim*0*.

5.6.2.8 Industrial Production Index (IPI)

IPI is the proxy for the monthly growth rate in the real sectors in the country. It presents a measure of overall economic activity in the economy and influences the equity UTFs through its effect on expected future cash flows. According to the Department of Statistics Malaysia, the IPI measures the amount of output from the manufacturing, electric, mining and gas industries. The reference year for the index was 2002 and a level of 100, which was obtained from the Bloomberg database.

5.6.2.9 Broad Money Supply (M3)

Bank Negara Malaysia defines and categorizes the money supply into three measures: Ml, M2 and M3 (Ismail et al., 2005). However, M3 was used as a proxy of money supply in this research, which consists of M1, M2 plus, savings deposits from the private sector in finance companies, commercial banks and discount houses, and Bank Islam, fixed deposits of the private sector in finance companies, commercial banks, discount houses and Bank Islam, net issues of negotiable certificates of deposits to the private sector by finance companies, merchant banks, discount houses and Bank Islam and repurchase agreement transactions effected by finance companies, commercial banks, discount houses and Bank Islam (Ismail et al., 2005).

5.6.2.10 Three-Month Treasury Bill Rate (TBR)

TBR is employed as a proxy of the monthly interest rate, gathered from the International Monetary Fund's International Financial Statistics database. A simple dividend-discount valuation model was used in explaining the effect of interest rate on equity UTFs in Malaysia. This is due to the fact that any new information or changes on the interest factor may influence the equity price or return through the impact of discount rate of return (Miller and Modigliani, 1961; Ibrahim, 2002; Zafar et al., 2008).

$$P=D_1/ (k\text{-}g) \qquad (5.10)$$

Where:

P= Equity fund price, D_1=dividend (income distribution),

g= constant growth rate and *k*= required rate of return on the equity fund.

5.6.2.11 Foreign Exchange Rate (FER)

The proxy utilised to capture the impact of unexpected changes in the foreign exchange rates on Islamic equity prices was the rate of change in the Malaysian Ringgit (MYR)/US Dollar (USD) exchange rate. The rational decision behind the use of the USD exchange rate was motivated mainly by the fact that the USD was the most important currency in terms of its relevance with the Malaysian international trade according to Bank Negara's annual financial report (2010).

5.6.2.12 Crude Oil Price (OP)

OP is the measure of the spot price of various barrels of oil which is always quoted by the West Texas Intermediate (WTI). This price is globally used (Jalil et al., 2009). The research used monthly average of the spot price of various barrels of oil in US Dollar to measure its effects on the equity UTFs industry in Malaysia and this measure is globally recognised and used as a benchmark for oil pricing in the world.

5.6.2.13 National Political Election (NPE)

The Malaysian election system comprises the federal and state levels. Federal level elections are those for the membership in the lower house of Parliament, while state level elections are for membership in the various State Legislative Assemblies. Commonly, state elections are held at the same time with the parliamentary elections. However, according to the Constitution of Malaysia, each state has the right to decide when to hold its election.

The general election in Malaysia must be held at least once every five years. For the current research, the general election year between 2006 and 2013 was used to examine the effect of the NPE on the NAV of Islamic equity UTFs. During this

period, two general elections took place. The first was in 2008 followed by the 2013 general election. National Political Election is measured as a dummy variable that takes the value of "1" for the year leading to the national election time and "0" for otherwise. Hence, during the observation period of January 2006 to December 2012 there were two years leading to elections namely 2007 and 2012 which were included in this research.

The justification of selecting the year leading to the national election time as a measure for political election effects on the NAV of Islamic equity UTFs was motivated by the fact that uncertainty of the future political scenario was expected to increase one year prior to the election (Durnev, 2010). This may seriously affect the prospective investment climate and may negatively influence the investment decision-making and future investment environments as a whole that may reflect on the country's stability (Snowberg et al., 2007; Bialkowski et al., 2008).

5.6.2.14 Corruption Index (CI)

Corruption is a variable that cannot be directly measured because it is prevalent in all countries in varying degrees and occurs in different forms such as bribery, embezzlement, fraud, and extortion (Andvig, Fjeldstad, Amundsen, Sissener and Soreide, 2000). However, a number of indices focus on corruption measurement such as the Transparency International's Corruption Perception Index (TI's CPI) and World Bank's Worldwide Governance Indicators (WB's WGI).

This research used the Transparency International's Corruption Perception Index as a measure of corruption in the Malaysian economy. TI's CPI ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians that may affect economic performance resulting in the deterioration of

equity market performance (Catrinescu et al., 2009). The WB's WGI ranks countries based on six aspects of good governance, voice and accountability, government effectiveness, political stability, violence, regulatory quality, rule of law and control of corruption (Thomas, 2010).

The TI's CPI index is scaled from 0 to 10 scores where, "0" indicates the most corrupt country and "10" refers to the least corrupt country. In 2012, the TI's CPI updated its methodology and revised the range of scores in its corrupting index between 0 and 100. Thus, the current research divided the range of scores for 2012 by 10 to be consistent with the pervious range of scores used in the former method that ranges its scores between 0 and 10 for this research analysis.

5.6.2.15 The 2007/2008 Global Financial Crisis (FC)

FC represents the 2007/2008 Global Financial Crisis that can be traced back to the subprime mortgage lending crisis in the United States (Zerban and Elkady and Omar, 2012). In this research, the data of the FC was set as monthly data in the analysis, in which FC is considered a dummy variable starting in August 2007 to December 2009 and represented by "1", while the period without crisis was represented by "0". As the current research observation covers the period from January 2006 to December 2012, this includes three periods: the pre-crisis (January 2006 –July 2007), during-crisis (August 2007-December 2009), and the post-crisis (January 2010-December 2012) (Abduh, Omar and Duasa, 2011; Zerban et al., 2012). However, the current research only examines the effect of the crisis period starting from August 2007 to December 2009 to answer the fourth research question. This was motivated by the fact that during this period most of the financial markets or stock markets witnessed high volatility and unstable circumstances including the Malaysian equity market (Chong,

2011; Angabini and Wasiuzzaman, 2011; Neaime, 2012; Rachdi, 2013). Therefore, in order to achieve some insights on the impact of the financial crisis, the research considers the years from 2007 to 2009 as the crisis period (Abduh et al., 2011).

Table 5.1 Summary of Variables Measurements and Sources

Variable	**Acronym**	**Concept**	**Measurement**	**Source**
Net Asset Value	NAV	As proxy of fund's price per share market value	Monthly Average RM per Fund's unit	Bloomberg *database*
Microeconomic Variables				
Fund Dividends	DIV	Refer to semi-annual and annually returns of a portfolio for each Individual fund that pay-out to unit-holders.	Seminally and annually dividends pay-out	Bloomberg *database*
Fund Risk	S	This indicates how much the price or return of fund's asset fluctuates over a certain period	Monthly Standard Deviation	Bloomberg *database*
Fund Historical performance	HP	Indicates to the past risk-adjust returns that the unit trust undertakes.	Monthly Sharpe-Ratio	Eurekahedge Fund *database*
Fund Size	FZ	As proxy of the fund's Underlying Asset (Total Assets)	Natural Logarithm of Fund's Total Asset	Bloomberg *database*
Fund Management Experience	MEX	As proxy to measure the performance of the experienced funds managers	Natural Logarithm of years tenure for funds manager	Websites of management companies of the funds.
Hedge Fund	HF	As a proxy of the equity fund's excess liquidity that invest in illiquid Hedge funds	Natural Logarithm of monthly aggregate hedge fund index	Bloomberg *database*.
Macroeconomic Variables				

Consumer Price Index	CPI	As a proxy of inflation	Natural Logarithm of Monthly Index	International Monetary Fund's International Financial Statistics
Industrial Price Index	IPI	As a proxy of the real economic activity growth	Natural Logarithm of Monthly Index	International Monetary Fund's International Financial Statistics,
Three-month treasury bill rate	TBR	As a proxy of the interest rate	Natural Logarithm of 3-T-bill rate per month	International Monetary Fund's International Financial Statistics
Broad Money Supply	M3	Which represents the whole money supply in Malaysian economic circulation	Natural logarithm of Monthly Money Supply	Bank Negara Malaysia's website
Foreign Exchange Rate	FER	As a proxy to capture the impact of unexpected changes FORX market on equity fund prices	Natural Logarithm of Monthly Average of MYR per USD	Bank Negara Malaysia's website
Crude Oil Price	OP	As a measure of the monthly average of spot price of various barrels of oil	Natural Logarithm of USD per barrel	The United States Energy Information Administrati on *database*
National Political Elections	NPE	As proxy of local stability	1= For the one year leading to the national election time 0= Otherwise	Dummy variable
Corruption Index	CI	As proxy of local stability	Natural Logarithm of corruption index	Transparency International *database* Website
Global Financial crisis	FC	Represents the 2007/2008 Global Financial Crisis	1= Crisis period (August 2007-December 2009) and 0= Non - crisis period	Dummy variable

5.7 JUSTIFICATION FOR RESEARCH METHODOLOGY SELECTION

After determining the research design, researcher model specification, data collection and its procedure, as well as having defined the variables measurements, it is essential to find a suitable methodology that can help investigate the relationships of the proposed model. In social sciences, there are three major methodologies usually applied to investigate such relationships. These are the quantitative method, qualitative method, and mixed methods (Creswell, 2003). The current research will follow the quantitative research method, defined by Ticehurst and Veal (2000) as the quantification of relationships between variables. Gay and Diehl (1992) documented that quantitative research is the most appropriate method when the model variables can be measured and quantified, where hypotheses can be developed and tested, and when inferences and generalisations can be drawn from samples of a population.

Thus, the current research applied the quantitative methodology because the data of this research is secondary, which means the data of the variables is specific, precise, and quantified. In other words, the data is not subjective (Gay and Diehl 1992). The current research tests the hypotheses stated in chapter 3 and does not seek to generate theory. Further, all the previous researcher on asset pricing modelling or on financial markets have been conducted under quantitative methods using measurable variables as presented in the literature review in chapter 3.

Selecting the appropriate statistical techniques to investigate the relationship in this research was justified based on the results of preliminary tests such as graphical analysis, correlation matrix, and unit root test. All these tests are utilised to examine the characteristics of the data and describe the degree of relationship among the selected variables and determine whether the time series of data used in this research are stationary or non-stationary at their level $I(0)$. In regression analysis, the non-

stationary data may lead to spurious regression or could cause model miss-specifications if the OLS model applied in the analysis (Gujarati, 2011).

As the results of these primary tests showed that the variables are time varying and the time series of data are non-stationary at the level form, this justifies the application of the Autoregressive Distributed Lags (ARDL) model and The Vector Auto-Regression (VAR) Framework as they have the power to analyse a non-stationary and capture the stochastic trend in the model to provide more robust results compared to the Ordinary Least Squares model (Engle and Granger, 1987).

5.8 METHODS OF ANALYSIS

This section presents the econometrics methods utilised to examine the relationship between the selected micro and macroeconomic variables and the NAV of Islamic equity UTFs. The first part of this section provides a brief background on preliminary tests used to check the statistical behaviours of variables and its prior statistical inferences. The second part of this section gives a brief background on the empirical method of Autoregressive Distributed Lags (ARDL) model, which include lag determinants, the Bound-test and long-run, and short-run estimation of the variables coefficients for the model to investigate the microeconomic determinates of NAV of Islamic equity UTFs. The third part provides a brief background on the empirical method of VAR models, including the Johansen-Juselius (1990) test, VECM causality tests, and Granger causality test to investigate the macroeconomic determinates of the NAV of Islamic equity UTFs. The data collected were analysed using Statistical Software of Microfit 4.1 for ARDL model and Eviews 7.0 for VAR model.

5.8.1 Data Preliminary Test

The data of this research have been examined through several preliminary tests such as graphical analysis, descriptive analysis, and pairwise correlation matrix to confirm the suitability of this data's variables for further analysis.

5.8.1.1 Graphical Analysis and Descriptive Statistics of Variables

The objective of graphical analysis in this research is to understand and determine the movement of the investigated variables whether positively or negatively associated during the observation period of the study analysis. It also aims to provide a picture as to whether the time series of data used in this research are stationary or non-stationary at their level $I(0)$. While the descriptive statistics tests are used to describe the basic features of the data used in this research and examine the variables' normality of distribution. These tests include the sample mean, the median, the maximum, the minimum, the standard deviations, the skewness, the Kurtosis, and the Jarque-Bera test.

Furthermore, the fundamental assumption of data normality distribution is referred to the shape of the data distribution for an individual metric variable and its correspondence to the normal distribution. There are several approaches through which the research can define the data set in respect of whether or not its distribution is normal. For example, in the econometrics model analysis the skewness and the Kurtosis represent the most popular approaches for describing the shapes or distribution of data, since they are more related to extreme variations of the variables (Doane and Seward, 2011). In particular, the skewness looks at the distribution balance, whether it is centred (symmetric) or it has shifted to the left or right and

where values falling outside the range of -1 to +1 indicate a substantially skewed distribution (Hair et al., 2006).

In addition, the Kurtosis is a measure of the peakedness or flatness of a distribution when compared to the normal distribution. As per the recommendation of Stock and Watson (2006), it has a range not more than +3.0. In addition, a widely applied test of normality is the Jarque-Bera test, which represents the goodness of fit test of whether the sample data have the skewness and Kurtosis matching a normal distribution (Jarque-Bera, 1980). For the Jarque-Bera test, the study rejects the null hypothesis that data is normally distributed if the P-value is less than the selected significance level (Marno, 2004). Thus, the current research applied the three normality tests stated above since each of these tests has its own method, objective, and range when they examine the variables' normality distribution.

5.8.1.2 Pairwise Correlation Test

This research conducts the Pairwise correlation matrix to identify the variables that may be relatively important to construct the model that can help to predict the future movements of the NAV of the Islamic equity UTFs. Correlation matrix test is considered one of the most common and most useful instruments to describe the degree of relationship among the selected variables. This is because the correlation matrix has two functions. Firstly, to show the coefficients of correlation between all the pairs of variables, and secondly, to identify if there is multicollinearity among the independent variables.

If a perfect relationship exists among the explanatory variables in the model it may indicate perfect multicollinearity or partial multicollinearity (Gujarati, 2003). Multicollinearity in a regression model is a consequence of a strong correlation among

the independent variables and it may lead to wrong signs and magnitudes of the regression coefficient estimates (Asteriou and Hall, 2007). In other words, multicollinearity refers to a circumstance in which two or more explanatory variables in the regression models are highly correlated. The rule of thumb for collinearity is that sample correlation of more than 0.90% between the variables is evidence of a collinearity problem (Asteriou and Hall, 2007). Thus, if the correlation between the exploratory variables is more than 0.90%, the decision will be made to drop one of these variables from the empirical analysis to maintain the coefficient estimates efficiency in further analysis.

5.8.2 Autoregressive Distributed Lags (ARDL) Model

This research employed the autoregressive distributed lag model proposed by Pesaran and Shin (1995/1997) in order to investigate long-run relationship between microeconomic variables and the NAV of Islamic equity UTFs in Malaysia. This is because the time series data of the microeconomic variables used in this research have different stationary levels such as $I(0)$ form and $I(1)$ form, which is mutually cointegrated. More modern studies have shown that the ARDL approach to cointegration is more appropriate than other conventional cointegration approaches such as Engle and Granger (1987), Johansen (1988), Johansen and Juselius (1990), and Gregory and Hansen (1996).

One of the motives for favouring the ARDL approach is that it is applicable irrespective of whether the underlying regressors are purely $I(0)$, purely $I(1)$ or mutually cointegrated, which means the ARDL model avoids problems resulting from non-stationary time series data (Pesaran, Shin and Smith, 1996 and 2001). Another motivation for using the ARDL model is because it is more robust and achieves better

result for small sample sizes than other cointegration techniques (Narayan, 2004), which was more suitable for current research analysis as it has small sample size of 84 months of observation.

There are several advantages for the ARDL approach such as estimating the long-run and short-run components of the model simultaneously and removing the problems associated with omitted variables and autocorrelation by taking sufficient number of lags to capture the data generating process in a general-to-specific modelling framework (Narayan, 2004; Laurenceson and Chai, 2003). ARDL also has information about the structural break in time series data and does not suffer from low power like other cointegration approaches (Narayan, 2004).

In particular, Granger (1987) seeks to solve the problems which arise from non-stationary time series by re-estimating a sufficiently complex dynamic specification which includes lagged dependent and independent variables that are represented in the ARDL model. He suggested that the problems caused by non-stationary variables in time series can be solved if the series are cointegrated. In regression analysis involving time series data, if the model includes one or more lagged values of the dependent variable among its explanatory variables, it is called an autoregressive model and mathematically presented by equation (5.11)

$$Y_t = \alpha + \beta X_t + \psi_1 Y_{t-1} + \cdots + \psi_i Y_{t-i} + \mu_t \tag{5.11}$$

However, if the regression model includes not only the current but also the lagged (past) values of the regressor variables (the *X*'s), it is called a distributed lag model, as the equation below.

$$Y_t = \alpha + \beta X_t + \omega_1 X_{t-1} + \cdots + \omega_i X_{t-i} + \mu_t \tag{5.12}$$

Thus, a complex dynamic specification of Autoregressive Distributed Lag (ARDL) model which includes lagged dependent and independent variables is mathematically re-formulated and presented by the equation 5.13 (Gujarati, 2003).

$$\mathrm{Y}_t = \alpha + \beta X_t + \psi_1 Y_{t-1} + \omega_1 X_{t-1} + \cdots + \psi_i Y_{t-i} + \omega_i X_{t-i} + \mu_t \qquad (5.13)$$

Where, Y_t represents the dependent variable, X represents explanatory variables, α denotes constant term. β, ψ and ω represent the coefficients of the variables in the Autoregressive and Distributed Lag model, while t denotes the time period. The implementation of ARDL approach involves at least three stages, for example, identifying the appropriate lag, testing for cointegration "The Bound Test" and estimating the long and short-run relationship with the associated error correction term. In the case of this research, the estimated unrestricted error correction model (UECM) of the ARDL model of the micro level analysis is formulated as follows:

$$\Delta\mathrm{NAV}_t = \alpha_0 + \alpha_1 t + \sum_{i=1}^{p-1} b_i\ \Delta\mathrm{NAV}_{t-i} + \sum_{i=0}^{p-1} d_i\ \Delta\mathrm{DIV}_{t-i} + \sum_{i=0}^{p-1} e_i\ \Delta\mathrm{HP}_{t-i} + \sum_{i=0}^{p-1} f_i\ \Delta\mathrm{S}_{t-i} + \sum_{i=0}^{p-1} g_i\ \Delta\mathrm{LFZ}_{t-i} + \sum_{i=0}^{p-1} k_i\ \Delta\mathrm{LMEX}_{t-i} + \sum_{i=0}^{p-1} l_i\ \Delta\mathrm{LHF}_{t-i} + \delta_1\mathrm{NAV}_{t-1} + \delta_2\ \mathrm{DIV}_{t-1} + \delta_3\mathrm{HP}_{t-1} + \delta_4\mathrm{S}_{t-1} + \delta_5\mathrm{LFZ}_{t-1} + \delta_6\ \mathrm{LMEX}_{t-1} + \delta_7\ \mathrm{LHF}_{t-1} + \mu_t \qquad (5.14)$$

Where, ΔNAV, ΔDIV, ΔHP, ΔS, ΔLFZ, ΔLMEX, ΔLHF are the first difference of the Net Asset Value (NAV), Fund Dividends (DIV), Fund Historical Performance (HP), Fund Risk (S), Natural Logarithm of Fund Size (LFZ), Natural Logarithm of Fund Management Experience (LMEX) and Natural Logarithm of Hedge Fund (LHF). α_0 represents the constant term, $\alpha_1 t$ the intercept and time trend that may be added, p represents the maximum number of lags order, t- denotes the time, while the $(b_i, d_i, e_i, f_i, g_i, k_i, l_i)$ represent the coefficient of the first difference variables of the

short-run parameters. The second part (terms δ) correspond to coefficient to the long-run relationship and finally the μ_t denotes white noise residual.

The above specification is based on the assumption that the disturbances μ_t is a white-noise disturbance and serially uncorrelated. It is therefore essential that lag order (p) of the underlying model is selected properly and correctly (Pesaran, Shin and Smith, 2001). A decision on the correct lag length also must be made by taking into account the time trend in the estimated model (Equation 5.14) and whether its coefficient should be restricted or not. Thus, the research estimated Equation 5.14 by using Ordinary Least–Squares (OLS), with and without deterministic time trend.

Following Hamilton (1994), as the data of this research contains monthly observations, the regression will start from lag 1 until lag 12. In order to select the optimal lag length, this research applied Schwartz-Bayesian Criteria (SBC) and Akaike's Information Criteria (AIC). SBC is known as the parsimonious model that selects the smallest possible lag length, whereas AIC is known for selecting the maximum relevant lag length (Shrestha, 2003). After identifying the optimal lag length, which is free from serial correlation based on the AIC and SBC criterion values, the research continued to the next step of testing the existence of long-run relationship by using Bound-test.

5.8.2.1 Testing for Cointegration: "The Bound Test"

At this stage, the existence of the long-run relation between the variables under investigation is tested by computing the *F*-statistics for testing the significance of the lagged levels of the variables in the conditional unrestricted error-correction form of the underling ARDL model Equation 5.14. The null and alternative hypotheses are stated as, in the null hypothesis, non-existence of long-run relationship between the

included microeconomic variables, irrespective of whether the regressors are purely *I*(0), purely *I*(1) or mutually cointegrated. The alternative hypothesis is the existence of the long-run relationship between the identified variables. This is statistically represented by:

$$\mathbf{H}_0: \delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = \delta_6 = \delta_7 = 0 \quad (5.15)$$

$$\mathbf{H}1: \delta_1 \neq 0, \delta_2 \neq 0, \delta_3 \neq 0, \delta_4 \neq 0, \delta_5 \neq 0, \delta_6 \neq 0, \delta_7 \neq 0$$

The critical values of Pesaran and Pesaran (1997) are usually applied to calculate the *F*-statistic value but with only less than 30 observations. As the number of observations in the current research is more than 30, the computed *F*-statistic value will be evaluated with the critical values tabulated in Narayan (2004). According to Pesaran et al. (1996; 2001), the lower bound critical values assumed that the explanatory variables X^s are integrated of order zero, *I*(0), while the upper bound critical values assumed that X^s are integrated of order one, *I*(1), and whether the specific model holds an intercept or trend or both. If the value of *F*-statistic lies above the upper bound critical value for a given significance level, the decision is that there exists long-run relationship between the dependent variable and the exploratory variables. If the value of the *F*-statistic falls below the lower bound critical value, the inference is that there is no long-run relationship between exploratory variables and the dependent variable. However, if computed *F*-statistic falls within the lower and upper bound, then the results are inconclusive (Narayan, 2004).

5.8.2.2 Long and Short-run Dynamics

At this stage, if the long-run relationship (cointegration) is established based on the Bound test, then the long-run relationship of microeconomic variables will be estimated using the following ARDL ($m_1, m_2, m_3, m_4, m_5, m_6, m_7$) model:

$$\mathrm{NAV}_t = \alpha_0 + \sum_{i=1}^{m1} \alpha_1\ \mathrm{NAV}_{t-i} + \sum_{i=0}^{m2}\ \alpha_2\,\mathrm{DIV}_{t-i} + \sum_{i=0}^{m3} \alpha_3\,\mathrm{HP}_{t-i} + \sum_{i=0}^{m4}\ \alpha_4 \mathrm{S}_{t-i} +$$

$$\sum_{i=0}^{m5}\ \alpha_5\,\mathrm{LFZ}_{t-i} + \sum_{i=0}^{m6}\ \alpha_6\,\mathrm{LMEX}_{t-i} + \sum_{i=0}^{m7}\ \alpha_7\,\mathrm{LHF}_{t-i} + \omega_t \qquad (5.16)$$

Where α_0 denotes the costants term, $\alpha_1 \ldots \alpha_7$ denotes the coefficient of the long-run relationships of the variables,(*m_1, m_2, m_3, m_4, m_5, m_6 and m_7*) represents the lag orders for each individual variable in the model, ω_t represents the white noise residual, *t*- denotes the time and *i* refers to time of the previous observation value.

Based on the outcome of Equation 5.16, the coefficients of the long-run relationship will be estimated and inferences about their values will be made. The next step is to construct Error Correction Model (ECM) recommended by Pesaran, Shin and Smith (2001). When a long-run relationship between variable exists, an error correction term that adjusts back the system to the long-run equilibrium after a short-run shock disturbance should be exist. The short-run coefficients can be derived by constructing an Error Correction Model of the following formula:

$$\Delta\mathrm{NAV}_t = \beta_0 + \sum_{i=1}^{p-1}\ \beta_1 \Delta\mathrm{NAV}_{t-i} + \sum_{i=0}^{p-1}\ \beta_2 \Delta\mathrm{DIV}_{t-i} + \sum_{i=0}^{p-1}\ \beta_3 \Delta\mathrm{HP}_{t-i} + \sum_{i=0}^{p-1}\ \beta_4 \Delta\mathrm{S}_{t-i} +$$

$$\sum_{i=0}^{p-1}\ \beta_5 \Delta\mathrm{LFZ}_{t-i} + \sum_{i=0}^{p-1}\ \beta_6 \Delta\mathrm{LMEX}_{t-i} + \sum_{i=0}^{p-1}\ \beta_7 \Delta\mathrm{LHF}_{t-i} + \psi\, ECM_{t-1} + \vartheta_t \qquad (5.17)$$

Where, all variables are as previously defined, β_0 represents the constant term, $\beta_1 \ldots \beta_7$ denotes the coefficient of the first difference variables, ψ represents adjustment coefficient of the error term (ECM_{t-1}), which derived from the long-run relationship estimated in model (5.16). *p* represents the maximum number of lags lengths, ϑ_t denotes the white noise residual, *t*- denotes the time and *i* refers to time of the previous observation value.

As discussed earlier, one of the most important issues in applying the ARDL model is the choice of lags to be included. The Microfit will select the lag order of an ARDL model for each variable (m1, m2, m3, m4, m5, m6, m7) by searching the

$(p+1)^{k+1}$ different ARDL models in order to obtain the optimal lag length for each variable, where p represents the maximum number of lags to be used and k represents the number of regressors in the equation. The selection of the lag order is made based on several criteria namely, $\bar{R}^2$ Criterion, Schwarz Bayesian Criterion (SBC), Akaike Information Criterion (AIC) and Hannan-Quinn Criterion (HQC). However, this research only used AIC and SBC criteria as they are commonly used in the literature. Finally, if the long and short-run relationships are established in the ARDL model, then the decision will be made that the change in the dependent variables (NAV) are functions of both levels, the changes in the explanatory variables and the level of disequilibrium in the cointegration relationship (ECM).

5.8.2.3 Diagnostic Tests

In order to establish the validity and stability of the ARDL model, several sensitivity tests must be conducted such as Breusch-Godfrey Serial Correlation Lagrange Multiplier (LM) test, Ramsey test, Jarque-Berra test, Breusch-Pegan-Godfrey test. Specifically, in the context of time series data, serial correlation occurs when the errors associated with a given time period carry over into future time periods (Pindyck and Rubinfeld, 1991). The problem of the serial correlation is that it usually has large impacts on the standard errors and the efficiency of estimation for Ordinary Least-Squares (OLS) estimators (Pindyck and Rubinfeld, 1991). Therefore, it is necessary to conduct the LM test to make sure that there is no presence of serial correlation on the residuals. The null hypothesis of LM test is that there is no serial correlation present on the residuals. The Ramsey test was also conducted to confirm the model is properly specified. In this test, if non-linear combinations of the explanatory variables do not have any influence in explaining the changes of the dependent variable, the model is

correctly specified (Ramsey, 1969). The null hypothesis of the Ramsey test is that the model is linear against an alternative.

The study also conducted the Breusch-Pegan-Godfrey test to check if the residuals are free from heteroscedasticity effect. Heteroscedasticity problem occurs in situation when the error terms do not have constant variance that causes the standard errors to be biased. This may produce biased and misleading estimation efficiency of parameter (Pindyck and Rubinfeld, 1991). The null hypothesis of this test is that the residuals have constant variance. Further, one of the assumptions of the regression model is that the error terms must be normally distributed.

The Jarque-Berra test was applied in this research to test if the residuals or the error terms of the applied model are normally distributed. The null hypothesis of the Jarque-Bera test is that that error terms are normally distributed. The null hypothesis will be rejected if the P-values of all the tests above are less than the selected significance level, which is 5 % level of significant used in this research. Finally, the stability test was conducted by using the Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive residuals (CUSUMsq) to confirm that the model is stable.

5.8.3 Analysis Using VAR Model

The Vector Auto-Regression (VAR) was introduced by Sims in 1980 to determine what dynamic relationships exist among multivariate series data (Dungey and Pagan, 2008). It is more applicable in the case where the chosen variables are non-stationary, however in this case they are cointegrated. It is also widely recognised that the time series data evolve over time such that their mean and variance are not constant (Nelson and Plosser, 1982). Depending on such non-stationary time series data may

direct economists to wrongly conclude that the two variables are associated when in actuality they are not (Asteriou and Hall, 2007).

This phenomenon is well known as spurious regression (Stock and Watson, 2006). Thus, if the variables in the model are not covariance stationary in the level but they are stationary in the first differences, they must be modelled with VAR model that can be transformed to a VECM model to deal with this kind of data. Previous literature which showed that most of the macroeconomic variables share theoretically long-run relationship and have unit roots, where their time series data are usually not stationary in level *I*(0). Therefore, for the macro level analysis the research applied the VAR model since its parameters require that the variables in the model are covariance stationary with their first two moment's finite and time-invariant.

5.8.3.1 The Cointegration Framework

In the literature, most macroeconomic data are trended and therefore, in most cases are non-stationary. The classical method to analyse a non-stationary data is to either de-trend or differentiate the data reliant on the type of trend (Asteriou and Hall, 2006). While these procedures may provide stationary variables for applying simple OLS regression, this process may cause a loss of significant long-run information and provide very high R^2 and *t*-statistic that appear to have significant estimates but the result may have no economic meaning (Maddala, 2001).

To this end, Granger's Representation Theorem (GRT) introduced an operative approach to analyse non-stationary data without losing the long-run information as with the traditional methods of differencing or de-trending. The idea of the GRT cointegration test is that it assumes Y_t and X_t are integrated of order (1), or mathematically $Y_t \sim (1)$ and $X_t \sim I(1)$. Then Y_t and X_t are supposed to be cointegrated if

only error term ($\hat{\mu t}$) obtained from the long-run relationship regression is integrated of order zero ($\hat{\mu_t} = Y_t - \beta' X_t$, is stationary or $\hat{\mu_t} \sim (0)$). Thus, if the cointegration condition is held, then Y_t and X_t move together in the long-run level (Maddala, 2001). In addition, the GRT specified that the short-term disequilibrium relationship between two cointegrated time series can be presented by the error correction term which may be understood as a factor pushing the residual errors back towards the equilibrium (Maddala, 2001).

In recent literature, two typical approaches are available to examine the long-run relationships among variables and both approaches follow the idea of Granger's Representation Theorem. The first approach is the Engle and Granger (1987) cointegration test and the other approach is the Johansen-Juselius (JJ) (1990) cointegration test. The Engle and Granger approach is more appropriate for bivariate analysis, while the Johansen-Juselius approach is suitable to use when there are multiple variables (more than two variables) in the model (Asteriou and Hall, 2006). Since the objective of this research was to examine the long and short-run relationships among more than two variables in the model of macroeconomic determinants of the NAV of Islamic equity UTFs in Malaysia, the research therefore utilised the Johansen-Juselius (1990) cointegration approach.

Johansen-Juselius (1990) Cointegration Approach

The Johansen-Juselius (1990) cointegration test is a statistical approach for examining the existence of cointegration among variables in the model. There are several steps that must be performed in order to examine the existence of cointegration among the variables using Johansen-Juselius (1990) test. First, test the order of the integration of each variable in the model. One essential condition for cointegration approach is that

the series of data need to be integrated of an order more than (0), normally order (1) or at least the series have a deterministic trend (Moolman and Toit, 2005).

According to the current literature, time series data can be presented as stationary or non-stationary at level. A series is supposed to be stationary if the mean, variance and covariance are invariant with respect to time, however, if they are unstable over time, then the series is considered to be non-stationary (Seiler, 2004). The problem with a non-stationary series is that it may lead to spurious regression or could cause model miss-specifications as well as make it impossible to generate the results of the regression of non-stationary series for the purpose of prediction (Gujarati, 2011). Thus, all the time series data need to be examined for unit root before applying any statistical test.

In addition, determining the order of integration for each variable included in the system is necessary to understand the long-run relationships among these variables (Asteriou and Hall, 2007). Hence, in the current research the stationarity of the series for both NAV of Islamic equity UTFs and macroeconomic variables was tested using the Augmented Dickey Fuller (1979) (ADF) and the Phillips-Perron (1988) (PP) unit root test. The ADF and PP unit root test that includes both a drift and linear time trend are mathematically presented in the following:

$$\Delta Y_t = \alpha_0 + \alpha_{1t} + \gamma Y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta Y_{t-i} + \varepsilon_t \qquad (5.18)$$

Where, the Y represents the variables, α_i and γ are constant terms, t is the time period, α_{1t} the intercept and time trend that may be added, Δ represents the first difference operator, ε_t is the white noise residual and p is the number lagged values. While, the Phillips-Perron (PP) (1988) unit root test model can be estimated by the following equation.

$$\Delta Y_t = \alpha_0 + \alpha_{1t} + \gamma Y_{t-1} + \varepsilon_t \quad (5.19)$$

Where, Y is represents the variables, α_i and γ are constant terms, t is the time period, α_{1t} the intercept and time trend that may be added, Δ represents the first difference operator, ε_t represents white noise residual. The null hypothesis for both the ADF and the PP unit root test is that: H_0: γ=0, which denotes that the series has a unit root (the series is not stationary), H_1: $\gamma \neq 0$, which denotes alternative hypothesis, i.e. the series is stationary. The study tested the null hypothesis using the critical values reported in Enders (2010).

Second, identify the appropriate (optimal) lag length for the specified model. In this step the issue of identifying the optimal lag length is very crucial because the model has to have Gaussian error term, which means standard normal error term should not suffer from non-normality, serial correlation and heteroskedasticity (Asteriou and Hall, 2006). The lag length order of the VAR model using the JJ test generally is selected based on a sequential log likelihood ratio (LR) test as in Lütkepohl (2005). However, in the existent literature there are many selection criteria commonly applied to complement LR test, such as the Akaike Information Criterion (AIC), the Schwarz information criterion (SIC), the final prediction error (FPE) and the Hannan-Quinn information criterion (HQC).

Third, choosing the appropriate model regarding the deterministic components in the multivariate system. The JJ approach involves applying the maximum likelihood technique to a VAR model assuming that the errors are white noise (Maddala and Kim, 1998). Then, a decision whether to include a linear time trend or not has to be made. Following the practice in standard econometric literature, a typical VAR (*k*) model can be formulated as:

$$\Delta X_t = \Pi X_{t-1} + \sum_{t=i}^{k} \Gamma_i \, \Delta X_{t-i} + \varepsilon_{kt} \quad (5.20)$$

Where, X_t (X_{1t}, $X_{2t,}$….) denotes an *nx1* vector of *I*(1) NAV of Islamic equity UTFs and the selected macroeconomic variables namely CPI, IPI, TBR, M3, FER, OP, CI, NPE and FC. ΔX_t are first difference of all variables *I*(0), Γ_i represents *n x n* coefficient matrices, Π is a long-run coefficient matrix, *k* is the number of lagged values and ε_{kt} is the error terms. Assume that ΔX_t are all *I* (0), however X_t is *I*(1), thus it is rational for equation (5.20) to be consistent. In addition, the Π_i need not be of full rank, because full rank would indicate that all X_t are *I(0)*, which leads to invalidating the essential of testing for cointegration. However, it is possible in practical life to find that a rank (*r*) of $\Pi_i = 0$, but this would suggest that there are no long-run relationships existing among the variables in the model (Harris, 1995). Commonly, Π_i has a reduced rank, in which, the rank is greater than zero but less than the number of variables, which indicates that long-run relationship exists among the vector process X_t, (Enders, 2004).

Fourth, determine the rank of Π or the number of cointegrating vectors. Johansen (1988) proposed two likelihood ratio (LR) statistics, namely, trace statistic (λ_{trace}) and the maximum eigenvalue (λ_{max}) test for examining the rank of matrix Π_i or the number of cointegration(s) using the following equations:

$$\lambda_{trace} = -T \sum_{i=r+1}^{n} \ln\left(1 - \hat{\lambda}_{r+1}\right) \quad (5.21)$$

$$\lambda_{max} = -T \ln(1 - \hat{\lambda}_{r+1}) \quad (5.22)$$

Where, *r* is the number of separate series to be analysed, *T* is the sample size and $\hat{\lambda}_r$ is the largest eigenvalue of the Π_i matrix obtained from the equation (5.20). The null hypothesis of trace test is that the number of cointegrating vectors is less than or equal to *r* and the alternative hypothesis is that *r* matrix is of the full rank (*r* = n)

cointegrating vectors. However, the null hypothesis in the max-eigenvalue test is, r =1, and the alternative hypothesis is that the rank is more than one (r >1) (Brooks, 2003).

Fifth, once the long-run (cointegrating vectors) are established, it is conceivable to estimate the VECM model in order to estimate the coefficients of long and short-run relationship. However, VECM model requires to identify and explore the variables that are truly endogenous and exogenous in the model. Therefore, to achieve this task this research employed the weak-exogeneity test.

5.8.3.2 The Vector Error Correction Model (VECM)

In the last stage, a VECM is measured for the model. A VEC is a restricted VAR designed for use with non-stationary series that are known to be cointegrated. The VEC has cointegration relations built into its specification so that it restricts the long-run behaviour of the endogenous variables to converge to their cointegrating relations while allowing for short-run adjustments. In summary, in the above discussion the Johansen-Juselius (1990) approach illustrated how to identify the long-run relationship among the variables and conclude whether the variables involved in the model are cointegrated or not. However, studying the NAV of Islamic equity UTFs predication requires considering the relationship among the variables in the short-run. This is due to the fact that correlation among the variables does not have anything to do without measuring "cause-and effect" even the variables are highly correlated (Seiler, 2004). Accordingly, the analysis of this research progressed with the investigation of short-run associations among the variables of interest by performing causality tests.

Causality Test

The causality tests were performed in two different ways. The Pairwise Granger (1969) test was used to analyse the short-run relationship between the exogenous macroeconomic variables (i.e. CI, NPE and FC) and the NAV of Islamic equity UTFs. The Pairwise Granger (1969) test was considered the appropriate technique to investigate the short-run relationship among these variables because no cointegration relationship is expected among them. On the other hand, the error correction technique proposed by Engle and Granger (1987) was applied to the variables that were expected to be cointegrated in the specified model (Enders, 2004) such as CPI, IPI, TBR, M3, FER and OP. The following discussion gives a brief illustration of these two methods.

The Pairwise Granger (1969) Test

Granger (1969) develops the original causality method to measure the causal effect from time series observations. It examines whether predictability exists among the variables of the interested model. Formally, the *X* Granger causes *Y* if the past values of *X* in the model can help to forecast *Y* value rather than using only past information of *Y* (Asteriou and Hall, 2006). The Granger Causality test for the case of two stationary variables Y_t and X_t is estimated as follow:

$$Y_t = \alpha_1 + \sum_{i=1}^{n} \beta_i X_{t-i} + \sum_{i=1}^{m} \gamma_j Y_{t-1} + \varepsilon_{1t} \quad (5.23)$$

$$X_t = \alpha_2 + \sum_{i=1}^{n} \theta_i X_{t-i} + \sum_{i=1}^{m} \delta_j Y_{t-1} + \varepsilon_{2t} \quad (5.24)$$

Where Y_t and X_t represent the variables of the time series under the investigation, α_1 and α_2 are constant terms and ε_{1t} and ε_{2t} are white noise error terms**.** Also, the subscripts t and m represent time periods and the number of lags

respectively for the applied model, while n represents the number of observations. The set of the null and alternative hypotheses is expressed in the following equation:

H_0: $\sum_{i=1}^{n} \beta_i = 0$ (X_t does not cause Y_t)

H_1: $\sum_{i=1}^{n} \beta_i \neq 0$ (X_t does cause Y_t)

In order to determine the direction of the relationship between X and Y, there are four different null hypotheses to be examined based on the OLS coefficient estimations, which are:

i. If $\sum_{i=1}^{m} \gamma_j$ and $\sum_{i=1}^{m} \delta_j = 0$, it can be established that X and Y do not help to predict one another or both variables are independents.

ii. If $\sum_{i=1}^{m} \gamma_j$ and $\sum_{i=1}^{m} \delta_j \neq 0$ we conclude that X_t and Y_t have bi-directional causality.

iii. If $\sum_{i=1}^{m} \gamma_j \neq 0$ and $\sum_{i=1}^{m} \delta_j = 0$, the conclusion will be changes in Y can aid to predict future values of X then again not the other way around.

iv. Finally, if $\sum_{i=1}^{m} \gamma_j = 0$ and $\sum_{i=1}^{m} \delta_j \neq 0$, the decision will be unidirectional Granger causality exist from X to Y. In other words, changes in X help to predict future values of Y but not vis versa.

The four null hypotheses above are examined by using an F-test given by the following formula as reported by Asteriou and Hall (2006):

$$F = \frac{(RSSr - RSSur)/m}{RSSur/(n-k)} \tag{5.25}$$

Where, m represents the number of lagged terms, n is denoted for the number of observations, k indicates the parameters' number estimated in the unrestricted model and $RSSr$ and $RSSur$ stated for residual sum of squares of both the restricted

and unrestricted models respectively. According to the Brandt and Williams (2006), the above four null hypotheses will be rejected if the *F*-statistic is more than the critical value for a selected level of significance.

Engle and Granger (1987) Causality Test

The validation of the Granger (1969) causality test have been examined by Engle and Granger in 1987, where they found that it is only effective when there is no long-run equilibrium relationship existing among the variables under investigation. However, in the case where the variables of interest are cointegrated, the Granger test may lead to miss-specification and create spurious causality among the variables. To overcome this weakness, Engle and Granger (1987) proposed to include an error terms in the model to capture the long-run and short-run relationships among variables that are cointegrated in their levels. More specifically, the Engle and Granger test of cause and effect based on a VAR model where the case of a two variable X and Y are integrated of order one can be expressed by the following equations:

$$\Delta Y_t = \alpha_1 + \sum_{i=1}^{n} \beta_i \Delta X_{t-i} + \sum_{i=1}^{m} \gamma_j \Delta Y_{t-1} + \psi_1 \hat{E}_{1t-1} + \varepsilon_{1t} \quad (5.26)$$

$$\Delta X_t = \alpha_2 + \sum_{i=1}^{n} \theta_i \Delta X_{t-i} + \sum_{i=1}^{m} \delta_j \Delta Y_{t-1} + \psi_2 \hat{E}_{2t-1} + \varepsilon_{2t} \quad (5.27)$$

Where, $\hat{E}_{1\ t-1}$ and $\hat{E}_{2\ t-1}$ denote the error correction terms, while ψ_i stands for the long-run causal relationships existing among the variables of interest in the system and is most likely to have an absolute value less than 1, with an expected negative sign. γ_j measures the short-run effect of change in Y on X and θi measures the short-run effect of changes in X on Y and ε_{it} is the standard error term. t and m denote time periods and the number of lags respectively for the applied model while n indicates the number of observations.

If the ψ_i is not statistically significant, this will be a sign that the variables involved in the system are independent in the perspective of prediction. However, if ψ_1 is found to be statistically significant and ψ_2 is insignificant, then the system recommends there is unidirectional causality from $X\ to\ Y$, meaning that X drives Y toward a long-run equilibrium but not vice versa. However, the contrary implication will be perceived when ψ_2 is statistically significant and ψ_1 is not. Furthermore, in the case where both coefficients of ψ_1 and ψ_2 are statistically significant, the bidirectional Granger causality relationships in the system will be suggested.

5.8.3.3 Diagnostic Tests

It is necessary to perform diagnostic tests on the residual from the estimated VECM model to ensure that residuals are normally distributed and free from serial correlation or heteroscedasticity effect. All these tests have been discussed in section (5.8.2.3) above. Finally, the stability test was conducted by using the Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive residuals (CUSUMsq) to confirm that the model is stable.

5.9 CONCLUSION

This chapter explains the research methodology used to analyse the impact of micro and macro- economic variables on NAV of Islamic equity UTFs and comprises two sections. Section 1 defines the research design, model speciation, data period and data sources, population and the sample size, data processing, variables measurements under the study and explains their selection criteria. Section 2 discusses the preliminary tests that may assists in understanding the characteristics of data used in the research and the methods of analyses utilised. The procedures of the ARDL

model, VAR framework with VECM models, and Granger Causality tests were briefly discussed in this chapter and summarised in the Table 5.2 below as related to each research objective.

Table 5.2 Summary of Statistical Methods Applied in Investigating the Research Objectives

Research Objectives	Statistical Methods Applied
i. To examine the long-run equilibrium relationship between selected microeconomic variables with the NAV of Islamic equity UTFs.	Bounds Test and ARDL Model
ii. To examine the long-run equilibrium relationship between selected macroeconomic variables with the NAV of Islamic equity UTFs.	Johansen-Juselius Cointegration Tests (VAR-Framework) with VECM Model
iii. To investigate the causal relationship between the selected macroeconomic variables and the NAV of the Islamic equity UTFs.	Engle and Granger (1987) and Granger (1969) causality tests for the short-run analysis.
iv. To analyse the impact of the 2007/2008 Global Financial Crisis on the NAV of the Islamic equity UTFs in Malaysia.	Johansen-Juselius Cointegration Tests (VAR-Framework), with VECM Model in the long-run and only Granger (1969) causality test for the short-run analysis.

CHAPTER SIX

EMPIRICAL ANALYSIS AND RESULTS

6.0 INTRODUCTION

This research examines the long-run equilibrium relationship between the selected micro and macroeconomic variables with the NAV of the Islamic equity UTFs. Further, this research investigates the causal relationship between selected macroeconomic variables and the NAV of the Islamic equity UTFs. It also examines the impact of the 2007/2008 Global Financial Crisis on the NAV of the Islamic equity UTFs in Malaysia. This chapter presents the results of empirical analyses of the research.

The first section in this chapter presents the preliminary graphical analysis and summary of the statistics of the variables used in the research. In the second section, the results of the relationship between the selected microeconomic variables and the NAV of the Islamic equity UTFs investigated through the ARDL model are provided. This includes the results of unit root test, bound test, and long and short-run coefficients estimation. In the third section, the relationship between the selected macroeconomic variables and the NAV of the Islamic equity UTFs is analysed through the VAR and VECM models and Granger Causality tests.

6.1 PRELIMINARY ANALYSIS RESULTS

This section presents the results of the preliminary analysis for the date used in this research, which provides a prior understanding of the variables' behaviours and their

basic characteristics. This includes the graphical analysis results, the descriptive statistics, and the correlation matrix results.

6.1.1 Graphical Analysis

The experimental analysis of the data through graphical analysis may assess and provide a prior picture of whether the time series data under study are stationary or non-stationary in their level. Figures 6.1 shows the movement and evolution of these variables during the sample period.

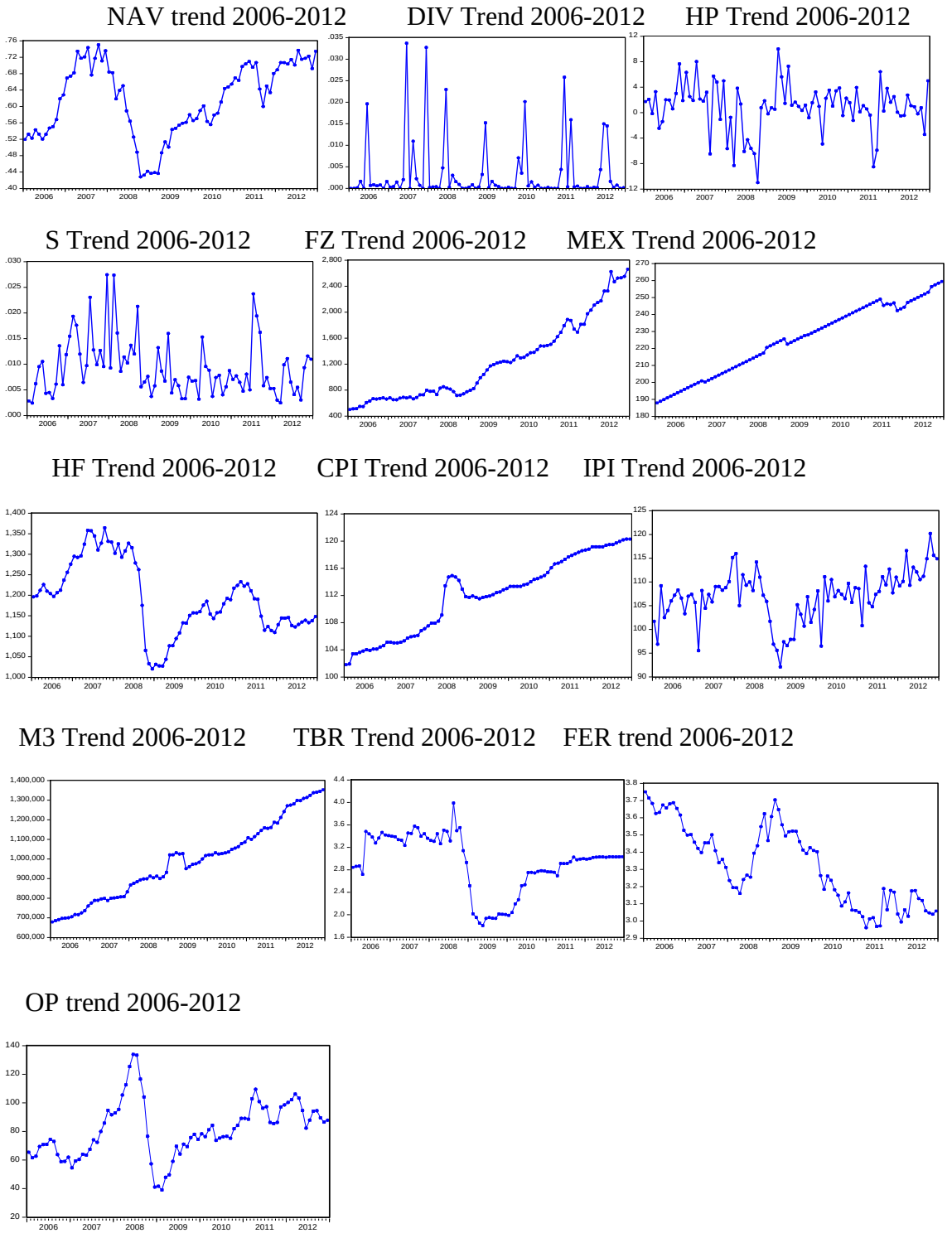


Figure 6.1 Micro and Macroeconomic s Variables' Trend during the Period of Jan 2006 to Dec 2012

Analysis of the above figures indicates that the NAV of Islamic equity UTFs and both selected micro and macroeconomic variables are time varying. This may

suggest that each series is not stationary in level terms. In addition, all series seem to exhibit a positive upwards trend with an intercept except the natural logarithm for the Treasury bill rate (TBR) and foreign exchange rate (FER), which show a negative downwards trend with an intercept. Thus, having knowledge of each series with regard to the unit root test becomes very important because the series can strongly influence the behaviour of a variable. If for example the variables involved in the regression model are non-stationary, then it can be established that the standard assumptions for asymptotic analysis will not be valid.

A more thorough analysis of Figure 6.1 indicates certain common trends in each of the micro and macro-indices. Within the study period (January 2006 to December 2012), each variable displays a different period of volatility. This is particularly noticeable during the financial crisis period (August 2007 to December 2009), where the NAV, DIV, HP, S, FZ, TBR, HF, IPI and OP display a negative trend and volatility. Conversely, the CPI, M3 and FER show an upward trend and volatility.

Moreover, during the period from 2007 to the end of 2011, high volatility is also evident in all of the variables, except for that of the MEX indices and M3. Thus, the existence of these periods of volatility justified the use of dummy variables for national political election and the 2007/2008 Global Financial Crisis. Using dummy variables will help absorb the up-normal volatility of the variables caused by global financial crisis or the general election events and produce un-based coefficient estimation for the rest of macroeconomic variables in the model.

This is due to the fact that when there is a priori information that refer to the un-usual events such as wars, presidential elections, strikes, or a market crash experienced in specific time periods, researchers have to use dynamic variables to

measure the effect of these events. Excluding the un-usual observations from the study model may create episodes of missing data (Wooldridge, 2009). Thus, it is necessary to dummy the period of the events to allow for an intercept shift (or, with interactions, for a slope shift) during the un-usual period (Wooldridge, 2009). Further, the tests for significance of the dummy coefficients permit the researcher to identify the importance of the un-usual period and justify its special handling.

6.1.2 Descriptive Statistics

The descriptive statistics are designed in this research to describe the basic characteristics of the data and provide the historical background for the behaviour of the variables, as well as examine their normality of distribution. Table 6.1 summarises the basic statistical features of each individual variable under consideration including the sample mean, the median, the maximum, the minimum, the standard deviations, the skewness, the Kurtosis and the Jarque-Bera, values, which have been gathered based on the analysis done using the EViews.7 statistical software.

Table 6.1 below shows the mean, median, maximum, minimum, and standard deviation of the variables. The mean and median describe the average value in the series and the maximum and minimum statistics measure the upper and lower bounds of the variables under study. While the standard deviation measures the dispersion or spread of the series during the period of the study. The NAV of the Islamic equity unit trust has a mean of RM0.617 and a standard deviation of 0.089 with a minimum and a maximum value of RM0.428 and RM0.75, respectively.

The descriptive statistics of the microeconomic variables reveal that the DIV has a mean of RM0.003 and a standard deviation of 0.007 with a minimum value of RM0.00 and a maximum value of RM 0.034. The fund HP has a mean of 0.869

Sharpe-ratio and a standard deviation of 3.796 with a minimum and a maximum Sharpe-ratio value of -10.978 and 10.006 respectively. The fund S has a mean of 0.009, and a standard deviation of 0.006 with a minimum and a maximum value of 0.002 and 0.027 respectively. The FZ has a mean of RM1,234.651 million and a standard deviation of 613.11 with a minimum and a maximum value of RM501.406 and RM2,661.067 million respectively. The fund MEX has a mean of 225.152 months and a standard deviation of 20.558 with a minimum and a maximum value of 187.900 and 259.467 months respectively.

Table 6.1 Summary of the Descriptive Statistics of the Variables under Study

	NAV	DIV	HP	S	FZ	MEX	HF	CPI	IPI	TBR	M3	FER	OP	CI
Mean	0.617	0.003	0.868	0.009	1234.651	225.152	1192.231	112.033	106.990	2.919	983.000	3.326	81.135	4.757
Median	0.631	0.000	1.168	0.008	1142.364	226.067	1187.390	112.978	107.550	3.010	956.000	3.325	79.125	4.900
Maximum	0.750	0.034	10.006	0.027	2661.067	259.467	1364.470	120.300	120.200	3.990	1,350.000	3.751	133.880	5.100
Minimum	0.428	0.000	-10.978	0.002	501.406	187.900	1020.520	101.825	92.100	1.808	673.000	2.961	39.090	4.300
Std. Dev.	0.089	0.007	3.796	0.006	613.110	20.558	88.286	5.591	5.421	0.519	197.000	0.230	19.571	0.322
Skewness	-0.399	2.664	-0.673	1.345	0.788	-0.189	0.148	-0.211	-0.474	-0.663	0.257	0.119	0.302	-0.262
Kurtosis	2.116	9.462	4.018	4.619	2.503	1.789	2.303	1.762	3.242	2.570	2.078	1.733	3.153	1.305
Jarque-Bera	4.958	245.538	9.965	34.494	9.565	5.631	2.003	5.985	3.355	6.809	3.903	5.819	1.363	11.025
Probability	0.084	0.000	0.007	0.000	0.008	0.060	0.367	0.050	0.187	0.033	0.142	0.055	0.506	0.004
Observations	84	84	84	84	84	84	84	84	84	84	84	84	84	84

Note: NAV = Net Asset Value, DIV = Dividends, HP= Fund Historical Performance, S = funds Risk, FZ = Fund Size, MEX = Fund Management Experience, HF = Hedge Funds, CPI = Consumer Price Index, IPI = Industrial Production Index, TBR = 3-month Treasury Bill Rate, M3 = Money Supply, FER = Foreign Exchange Rate, OP = Oil Price and CI = Corruption Index.

Table 6.1 shows that the HF index has a mean of USD1,192.231 and a standard deviation of 88.286 with a minimum value of USD1,020.520 and a maximum value of RM1,364.47.

The descriptive statistics of the macroeconomic variables show that the CPI has a mean of RM112.033 and a standard deviation of 5.591 with a minimum value of RM101.825 and a maximum value of RM120.300. The IPI also has a mean of RM106.990 and a standard deviation of 5.421 with a minimum value of RM92.100 and a maximum value of RM120.200. Similarly, the TBR has a mean of 2.919 % and a standard deviation of 0.519 with a minimum and a maximum rate of 1.808 and 3.990 % respectively. The M3 has a mean and a standard deviation of RM983 billion and 197 respectively, as well as the money supply has a minimum value of RM673 billions and a maximum value of RM1,350 billion.

The OP has a mean of USD81.135 and a standard deviation of 19.571 with a minimum value of USD39.390 and a maximum value of 133.880. The FER of (MYR/USD) has a mean of RM3.326 and a standard deviation of 0.230 with a minimum and a maximum value of RM2.961 and RM3.751 respectively. Table 6.1 revealed that the CI has a mean of 4.757 scores and a standard deviation of 0.322 with a minimum and maximum score of 4.300 and 5.100 respectively. This indicates the perceived level of high corruption exists among public officials and politicians in Malaysia that may affect country economic performance and equity market as well.

The descriptive statistics of the mean and median values show that all the variables have positive values including the funds' risk variable. This indicates that the funds' asset prices generally move together with the market's returns, which conform to the financial theory in which the higher the risk, the higher the

compensation in terms of return. This phenomenon is popularly known in the stock market as a pro-cyclical movement of stock returns (Albaity and Ahmad, 2011).

In addition, the standard deviation value of 0.089 for the NAV is about 14.52% of its mean showing that the price is somehow volatile, giving a signal of price instability in the unit trust industry. Further, the descriptive statistics values of the standard deviations indicate that the microeconomic variables are more volatile compared to the macroeconomic variables during the sample time frame. This indicated that data of microeconomic variables were widely spread around their respective means. This is perhaps because the micro level represents the actual performance and structure of the industry or firms in the economy, which makes it more volatile.

Among the microeconomic variables, the standard deviations are the highest for FZ followed by the HF, MEX and HP variables. This gives an indication that the fund size, hedge funds' investments, fund management experience and funds historical performance of the Islamic equity UTFs are the most risky variables among the selected micro factors that must be considered by the potential new investors in making their decision. However, the standard deviation of the macroeconomic variables shows that the M3, CPI and the OP, are more volatile indicators, which reveals that the M3, CPI and OP could be considered to be the most risky variables that may reflect the variability of the unit trust industry.

6.1.3 Normality Test Results.

The assumption of normality is not a condition for the level of each individual variable, but it is a condition for the residuals of an estimated model (Jarque-Bera, 1980). Table 6.1 shows that the skewness values for the measurement items range

from -0.189 to +2.664, with two extreme being outside the -1 to +1 limit, which are the fund's dividend distribution and fund's risk with values of 2.664 and 1.345 respectively. Thus, the skewness values indicate that all the variables are asymmetrical except the DIV and S. This is because some Islamic equity UTFs do not pay a distribution at the end of each month, as their policy for the distribution of dividends is either semi-annual or annual. Further, investors prefer to invest mainly in the equity UTFs with the objective of a long-term investment through the capital gain. Thus, the DIV data does not vary enough to justify the normal distribution. Relatively, when the fund incomes are not normally distributed the fund risk will not be normally distributed as standard deviation measures the variability of distribution of the monthly return of the fund around its mean.

Furthermore, the skewness values that are close to zero indicate that the values are relatively evenly distributed on both sides of the mean, typically, but not necessarily implying a symmetrical distribution. Variables such as the DIV, the S, the FZ, the HF, the M3, the FER, the OP, the NPE and the FC have a positive skewness, which indicates that the variables have long right tailed distribution. The positive skewness indicates a greater probability of a large increase in each variable than a decrease (Albaity and Ahmad, 2011). However, the NAV, the HP, the MEX, the CPI, the IPI, the TBR and the LCI have negative skewness, which indicates the fat tails of these variables are on the left-hand side of the distribution. The negative skewness refers to a greater probability of a large decrease in each variable than an increase in the short-term future (Stock and Watson, 2006). Thus, since the NAV is skewed to the left, from the market point of view, it infers that investors are likely to earn negative returns if the fund price distribution continues to be skewed to the left in the future. Table 6.1 also shows that the overall Kurtosis values of all the variables are normally

distributed in which the range value of the Kurtosis is less than 3 as recommended by Stock and Watson (2006), except the DIV, HP, S, IPI and the OP, which are leptokurtic with higher than normal kurtosis.

In addition, Table 6.1 reported both the value of the Jarque-Bera test statistic and the probability (P-value), which hypothesised that the null hypothesis that data is normally distributed and is rejected if the P-value is less than the selected significance level (Marno, 2004). Therefore, the P-values associated with the Jarque-Bera statistics test show that the sample skewness and kurtosis are significantly different from zero, except for the DIV, the HP, the S, the FZ and the CI are not normally distributed as this research employs 1% significance level. This indicates that the values of these variables were not normally distributed around their mean and variance, which suggest that these variables are very sensitive to periodic changes and speculation. Thus, investors could exercise the available information of these variables to beat the market and earn considerably higher normal rate of return.

However, the Jarque-Bera statistics values of the MEX, the CPI, the IPI, the TBR, the M3, the FER and the OP are normally distributed around their means and variances. In other words, there is randomness in the data for these variables which may suggests that there is no chance for speculation in the Malaysian equity market by applying the information of these variables. Accordingly, the speculators cannot produce a substantially higher ordinary rate of return from the Malaysian equity unit trust industry.

6.1.4 Pairwise Correlation Test Results

This research applied the pairwise correlation matrix test to show the coefficients of correlation between all the pairs of variables and to identify the multicollinearity

problem among the independent variables in the models illustrated in the previous chapter. The results of the pairwise correlation matrix are presented in the flowing sub-sections.

6.1.4.1 Pairwise Correlation Matrix of the Microeconomic Variables

The Pairwise correlation matrix analyses results of selected independent microeconomic variables DIV, HP, S, LFZ, LMEX, LHF are reported in Table 6.2.

Table 6.2 Pairwise Correlation Matrix of the Microeconomic Variables under Study

	DIV	HP	S	LFZ	LMEX	LHF
DIV	1					
HP	-0.097*	1				
S	0.196**	-0.186*	1			
LFZ	-0.001	0.014	-0.204**	1		
LMEX	-0.023	-0.076*	-0.174*	0.958***	1	
LHF	0.175*	0.002	0.391**	-0.428**	-0.502**	1

Note: '***', '**' and '*' denote significance at the 1%, 5% and 10% levels, respectively. NAV = Net Asset Value, DIV = Dividends, HP= Fund Historical Performance, S = funds Risk, LFZ = natural Logarithm of Fund Size, LMEX = natural Logarithm of Fund Management Experience, LHF = natural Logarithm of Hedge Funds

Table 6.2 reveals that there is a strong positive correlation of 0.958% between the LFZ and the LMEX that is statistically significant at the one % significant level. This is perhaps because, as managers gain more experience they obtain more knowledge about the investment in the unit trust industry and gain more confidence in their own abilities, it gives them the priority to manage the large funds in the industry. Thus, managers that have large funds with more experience (reputation) incur less risk and provide high return (Jones and Wermers, 2011). However, the high correlation between these two variables does not mean that they represent each other in the model, as, in statistics, it is called Multicollinearity.

In the case of collinearity, usually, when the decision is made to drop one of the redundant variables the adjusted R-square keeps nearly constant. However, as the current study tries to drop one of these two variables the adjusted R-square drops by more the 70%. This indicates that these variables do not have causality effect between them and that they may only have an association relationship. In other words, these two variables have a complementary relationship whereby both factors (human capital and capital market) must exist in order to run the unit trust business. Therefore, the decision made in this research is to keep both of them in the model for further analysis.

In addition, there is a negative correlation between the S and both the LFZ and the LMEX with statistical significant values of -0.204 and -0.174, at the 5 and 10 % levels of significance respectively. As the fund size becomes large, the opportunity for diversification will increase and, consequently, the risk will decrease. Further, the explanation for the inverse relationship between the risk and fund management experience is that the fund managers can reduce the risk as they gain more experience.

Furthermore, there are statistical negative correlations between the LHF and both the LMEX and the LFZ, with statistical values of -0.502 and -0.428 respectively at 5 % level of significance. The negative correlation between the LMEX and the LHF is perhaps due to the fact that as the fund managers get more experience and understand financial market trading, they will prefer to invest their portfolios' pooled of money in difference securities that are more profitable than to invest in short-term horizons investment such as hedge fund investments. This is due to the fact that investing in different type of securities instead of hedge funds' investments will help the fund managers to achieve higher diversification strategy in their portfolio

investments and able them to eliminate the fund portfolio risk and subsequently generate higher returns.

In addition, the LHF has statistical significant negative correlation with the LFZ at value of -0.428 at 5% level of significance. This relationship could be interpreted as hedge funds' investments provide short-term horizon incomes for the investors and have more flexibility in its investments strategies, which becomes more favourable by both the individuals and the institutional investors. Further, it is considered an alternative investment by many corporates and funds companies such as public pension funds and UTFs. These advantages provided by the newly alternative investments encourage investors to shift their fund investment strategies toward a greater alternative investment of hedge funds, resulting in shrinking for the capital market of equity funds industry and a subsequent decline in the Islamic equity UTFs size portfolio.

Moreover, there is a statistical significant positive correlation between LHF and both the DIV and the S with statistical values of 0.175 and 0.391 at 10 and 5% level of significance respectively. This means that the higher the excess liquidity of Islamic equity UTFs invests in hedge fund investments, the higher the return received and subsequently the higher dividends will be available for distribution to unit-holders. However, the chance of high diversification for fund's portfolio investment will be restricted due to fund managers will not be able to invest their excess liquidity in other type of securities. Thus, hedge fund's investment will increase Islamic equity UTFs' unsystematic risk.

Furthermore, a positive correlation was found between the HP and LFZ but statistically insignificant even at 10% level of significance. This insignificant correlation between these variables can be explained when the fund manager has large

amount of cash in the fund's portfolio investment, the risk will arise in this situation, which may push the fund manager to invest the cash as soon as possible. Some fund managers may buy additional investment instruments that are not optimal for the fund's unit-holders and this may eradicate the fund's performance. Thus, to understand when size begins to hold back fund performance, fund managers need to know the point at which the negative effects of a fund's size cancels out the positive effects of a fund's total return performance. However, it is difficult for fund managers to determine this exact point. Thus, fund managers should regularly compare the fund's size effect with the fund's historical performance to evaluate the fund's size effects.

The correlation results between fund DIV and LFZ is -0.001 and is statistically insignificant, which suggests that the fund value is improved by investing in productive assets and not by distributing income to unit-holders. This result is supported by Miller and Modigliani (1961) who advocated that the dividend policy of the firm does not affect or determine its value. The only thing that could affect the value of firm is the investment policy. Musa (2009) also examined the dividend policy of 53 firms listed on the Nigerian Stock Exchange (NSE) over the 1993 to 2002 period. He found that firm size and industry classification were insignificant determinants in respect of the dividend decision. In addition, this research found a positive correlation between DIV and fund risks (S) of 0.196 that was statistically significant at the 5% level. This is perhaps due to the dividend policies of the firm (funds in this case) and depends on the cash flow risk or earnings risk faced by funds; as the cash flow increases the risk will increase (Lubos and Veronesi, 2003). Furthermore, there is an insignificant negative correlation between DIV and HP in the UTFs investments, which means that dividends pay-out is irrelevant as determinants

of the fund performance. DIV also has an insignificant negative correlation of -0.023 with fund LMEX.

6.1.4.2 Pairwise Correlation Matrix of the Macroeconomic Variables

The estimated correlation matrix of the selected macroeconomic variables LCPI, LIPI, LTBR, LM3, LFER, LCI, NPE and FC, are presented in Table 6.3 below.

Table 6.3 Pairwise Correlation Matrix of the Macroeconomic Variables

	LCPI	LIPI	LTBR	LM3	LFER	LOP	LCI	NPE	FC
LCPI	1								
LIPI	0.34**	1							
LTBR	-0.24**	0.47**	1						
LM3	0.97***	0.37**	-0.25**	1					
LFER	-0.78**	-0.58**	-0.09	-0.82***	1				
LOP	0.47**	0.69**	0.33**	0.44**	-0.70	1			
LCI	-0.54**	0.16*	0.66**	-0.52**	0.39**	-0.02	1		
NPE	-0.01	0.42**	0.43**	0.14*	-0.25**	0.19*	0.57**	1	
FC	-0.11*	-0.27**	-0.22*	-0.19*	0.30**	-0.06	0.19*	-0.07	1

Notes: '***', '**' and '*' are significant at the 1%, 5% and 10% levels, respectively. LCPI = natural Logarithm of Consumer Price Index, LIPI = natural Logarithm of Industrial Production Index, LTBR = natural Logarithm of 3-month Treasery Bill Rate, LM3 = natural Logarithm of Money Supply, LFER = natural Logarithm of Foreign Exchange Rate, LOP = Oil Price, LCI = natural Logarithm of Corruption Index, NPE = National Political Election, FC = the 2007/2008 Global Financial Crisis.

As shown in Section 6.1.1, all the macroeconomic variables display a positive upward trend, except the LFER rate and the LTBR, which show a downward trend. Therefore, the theoretical links amongst some of these variables may represent the possibility that multicollinearity cannot be ruled out. Table 6.3 suggests possible multicollinearity between LCPI and LM3 as they have a high correlation of 0.97 at 1% level of significance, for which the rule of thumb for collinearity is that sample

correlation of more 0.90% is evidence of a collinearity problem (Asteriou and Hall, 2007). In understanding that multicollinearity negatively impacts the efficiency of the estimates, the LCPI was dropped from the empirical analysis to maintain efficiency in further analysis. While the LM3 is reserved for further analysis due to the fact that the inflation, which measured by CPI is caused by the money supply but not the other way around. In addition, the study applied the same technique that applied in section 6.1.4.1. to determine which variables have to be dropped leading to the decision to drop the LCPI from the model.

The higher correlation between the LCPI and the LM3 at 0.97% is due to the existence of the relationship between the inflation rate (as measured by the rate of change in the consumer price index) and the growth rate of the money supply (M3). If the money supply grows more than the real economy, then accelerated inflation can occur due to more money chasing a given quantity of goods and services. This was proven by Ghazali, Amin, Muhammad and Samsu (2008) in the context of Malaysia, who found that there is a long-run association between the money supply and the consumer price index. They recommended that the monetary authorities can manage the money supply to influence and control inflation. Indeed, the well-meant objective of the Bank Negara Malaysia monetary policy is to maintain the price stability in the form of low inflation in order to create a stable environment for sustainable economic growth.

Table 6.3 displays positive statistical significant correlation between the LOP and the LIPI with value of 0.69% at 5% level of significance. A justification for the strong association between the industrial production index and crude oil price can be found in the fact that Malaysia is a resource-reliant country in which a huge portion of the government revenue is sourced from the oil and gas industry. The oil and gas

exports amount to approximately three-quarters of the domestic consumption (Malaysia Report, 2008), as corroborated by Jamesesz (2009) and Bekhet and Yusop (2009).

Additionally, there is a strong negative correlation between the LM3 and LFER with value of -0.82% at 1% level of significance, as the money supply increases the Malaysian ringgit depreciates. This inverse relationship indicates that the Malaysian exchange rate regime is completely flexible in which the exchange rate adjusts dynamically to monetary shocks based on the supply and demand environment in the market. However, the Malaysian monetary authorities can manage and control the market exchange rate through controlling the money supply, which shows a statistically high correlation with the exchange rate. This result is supported by Tsen (2010), who investigated the exchange rate determination in Malaysia. The results showed that in the long-run, an increase in the relative money supply or interest rate differential will lead to a decrease in the exchange rate.

Furthermore, there is statistical significant negative correlation between the LFER and LCPI with value of -0.78 at 5% level of significance. In particular, M3, CPI and FER are associated with each other in economic circulation. An increase in money supply typically causes inflation if it is not sustained by economic growth, resulting in an increase in the CPI, which causes the Malaysian Ringgit to become weaker through exchange rates. This association is supported by Nguyen and Seiichi (2007) who found that a strong negative relationship between inflation and real exchange rates exists in all Asian countries including Malaysia.

In addition, there is a high negative correlation between the LFER and the LOP with statistical significant value of -0.70 at 5% level of significance, as well as a positive relationship between the oil price and CPI with statistical significant value of

0.47 % at 5 % level of significance. The interacting relationship among these variables can be explained inasmuch as whenever oil prices increase, it causes an increase in the cost input, which drives the price level to increase and, as a result, inflation occurs. This means that there is a positive relationship between inflation and oil price. Thus, when the inflation rate increases it causes the Malaysian Ringgit to depreciate, as illustrated above. This result is supported by Arinze (2011). Thus, for policymakers, this result can help clarify the problem of whether the Malaysian government should subsidise or totally depend on the global crude oil prices in ensuring the sustainability and competitiveness of Malaysian firms.

6.2 RELATIONSHIP BETWEEN MICROECONOMIC VARIABLES AND THE NAV OF ISLAMIC EQUITY UTFS

The first research objective aims to investigate the long-run relationship between the selected microeconomic variables funds' income distribution (dividends), fund historical performance, fund risk, fund management experience, fund size, and hedge fund with the NAV of Islamic equity UTFs. This section deals with the discussion of the results of the unit root test and the bounds test. After establishing the long-run relationship, the estimated coefficient of the long-run relationships and their signs directions are discussed and interpreted. The short-run relationships are also discussed in this section.

6.2.1 Unit Root Test Results

As mentioned in the previous chapter, the ARDL model can be applied irrespective of whether the regressors are purely I (1) and purely I (0) or mutually cointegrated. However, the necessity for conducting the stationary test is to confirm that none of the

variables is integrated of order two or I (2) (Sultan, 2010). To this end, two different unit root tests are employed – the Augmented Dickey-Fuller (1979) (ADF) unit root test and the Phillips-Perron (1988) (PP) unit root test. The results of the unit root test are very sensitive to the lag-length selected. Thus, two approaches are commonly applied to determine the optimal number of lags when performing the unit root test. The first approach is by fixing *p* (number of lags) as a function of *T* (t-test), while the second approach is by applying the same information criteria, such as Akaike Information Criterion (AIC), Schwarz Information Criteria (SIC) and Hannan-Quinn Information Criterion (HQIC) (Fukuda, 2007). In the context of this research, the upper limit of the lag-length is determined based on SIC for the Augmented Dickey Fuller (ADF) and using the Bartlett Kernel for the Phillips Perron (PP) tests.

Table 6.4 shows the results of the unit root test for the NAV of the Islamic equity UTFs and the selected microeconomic variables. The findings indicate that DIV, HP and S are stationary at the level form at the 1 % level of significance. However, the NAV of the Islamic equity UTFs, LFZ, LMEX and the LHF are all stationary on first differencing at the 1% level of significance, on the basis of both the ADF and the PP unit root tests.

Table 6.4 Unit Root test for the NAV and Microeconomic Variables

Variables	On Levels		On First Differences	
	Intercept and Trend		Intercept and No Trend	
	ADF	PP	ADF	PP
NAV	-1.480158	-1.480158	-9.447070***	-9.447070***
DIV	-9.258164***	-9.258164***	-7.503787***	-18.75566***
HP	-7.292055***	-7.292055***	-10.93409***	-18.33583***
S	-6.609278***	-6.527859***	-14.73216***	-15.01580***
LFZ	-2.031807	-2.108955	-8.744050***	-8.744050***
LMEX	-1.763219	-1.763219	-8.940502***	-8.940502***
LHF	-2.337667	-2.177309	-5.517594***	-5.517594***

Note: 1)- the critical values for unit root tests at 1% and 5% significance levels are -4.07 and -3.46 (with trend) and 3.51, -2.89 (without trend), respectively, for both the Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests.
2) - *** and ** indicate statistical significance at 1 % and 5 %, respectively. The critical values of Phillips, Schmidt and Shin (KPSS) test at 1% and 5% levels of significance are 0.216 and 0.146 (with trend), respectively.
3) -Lag-length are selected automatically – based on SIC, maxlag = (11) for Augmented Dickey Fuller (ADF) and Bandwidth: 0.889 (Andrews automatic) using Bartlett kernel for Phillips Perron (PP) tests.

The complex mixture of stationary level such as *I* (0) and *I* (1) for the variables suggest that we need to perform the Bounds-Test to investigate the long-run relationship among the selected variables NAV, DIV, HP, S, LFZ, LMEX and LHF in the analysis.

6.2.2 Determinants of the Optimal Lag length Results

One of the essential steps in examining the long-run relationship (cointegration) using the ARDL approach is to estimate Equation 6.14 using OLS methodology through an Unrestricted Error Correction Model (UECM) for both cases, with and without trend. In this regard, at first an attempt is made to identify the appropriate lag-length (p). To do this, the current research carries out the OLS regression from lag 1 until lag 12

since the research involves monthly data. However, due to the limited number of observations in this research, it only allowed the inclusion of a maximum of eight lags in the model. The results are given in Tables 6.5 and 6.6 below:

Table 6.5 Selecting the Lag Order (Restricted intercept and no trend)

P	AIC	SBC	$x_{sc}^2(1)$	$x_{sc}^2(4)$
1	184.172	166.1217	1.0246	15.1991***
2	**187.327**	**160.988**	**0.009634**	**4.2125**
3	186.0156	151.4762	2.2821	4.9617
4	180.7685	138.1184	0.069781	4.0111
5	173.2512	122.5819	2.5622	8.4408*
6	170.0954	111.5003	0.40808	17.5191***
7	166.8645	100.4386	0.40918	26.6114***
8	169.5362	95.3766	29.9658***	56.1293***

Note: '***', '**' and '*' denote significance at 1%, 5% and 10% levels, respectively

Table 6.6 Selecting the Lag Order (Restricted intercept with time trend)

P	AIC	SBC	x_{sc}^2 (1)	x_{sc}^2 (4)
1	183.684	164.4302	1.7257	14.2228***
2	**186.7977**	**159.2615**	**0.039982**	**3.9698**
3	185.0689	149.3385	2.7981*	5.2092
4	179.8532	136.0184	0.11533	4.166
5	172.6514	120.8039	2.9664*	10.0576**
6	169.0957	109.3287	0.4573	17.5549***
7	166.0279	98.4367	0.76409	27.3518***
8	172.1163	96.7979	21.8856***	57.6906***

Note: '***', '**' and '*' denote significance at 1%, 5% and 10% levels, respectively.

In Tables 6.5 and 6.6, 'p' represents the lag order and AIC and SBC represent the Akaike and Schwarz information criterions, respectively. In addition, $x_{sc}^2(1)$ and $x_{sc}^2(4)$ are the Breusch Godfrey error terms Lagrange multiplier serial correlation test. The x_{sc}^2 values indicate whether the null hypothesis of no serial correlation at orders 1

and 4 exists. The overall results suggest that the best model with no serial correlation problem is the one that uses two lag-lengths, as confirmed by the highest value based on AIC, which are 187.327 and 186.7977, for both situations, without and with time trend, respectively. Therefore, this research follows the AIC criterion model due to the lag order selected by the AIC, irrespective of whether or not a deterministic time trend term is included because the AIC is much larger than that selected by the SBC criterion.

6.2.3 Bounds-Test Results

After determining the appropriate lag, the next step is to examine potential cointegration relationship between the NAV of the Islamic equity UTFs and microeconomic variables. This is done by applying the bounds test through comparing the *F*-statistic value with the critical bounds value provided by Narayan (2004) for both cases: a) restricted intercept and not trend (case II), and b) restricted intercept and time trend (case III), as reported in Table 6.7. The calculated *F*-statistic values based on (UECM) are 3.5972 without determining the time trend (Appendix IV) and 3.6678 with the time trend (Appendix V).

Since the *F*-statistic values are outside the critical bounds value, it can be concluded that the null of no cointegration can be rejected at the 5% level of significance in case (II). However, in the case where the time trend is determined, the null hypothesis of no cointegration is rejected only at the 10% level of significance. Thus, this research will continue the analysis using case (II) and conclude that the NAV of equity UTFs and the selected microeconomic variables are found to be integrated in the long-run.

Table 6. 7 Critical Values for the F-test (k=7, n= 59)

Case II (Restricted intercept and not trend)			Case III (Restricted intercept and time trend)	
S.level	**I(0)**	**I(1)**	**I(0)**	**I(1)**
1%	3.129	4.507	3.346	4.895
5%	2.373	3.540	2.513	3.823
10%	2.044	3.104	2.155	3.353

Source: Narayan (2004).

6.2.4 Long-Run Coefficients Estimation

After performing the bounds test and its results support the first research objective, which confirm the existence of a long-run relationship between the NAV of the Islamic equity UTFs and the microeconomic variables, the next step is to estimate the long-run coefficient and the associated error correction model using appropriate 2 maximum lag, as determined earlier. The lag order of an ARDL (m1, m2, m3, m4, m5, m6 and m7) model for the seven variables, namely, NAV_{2t}, DIV_t, HP_{2t}, S_{1t}, LFZ_{2t}, $LMEX_t$, and LHF_{1t} is selected based on searching across the $(3)^7$ = 2187 different ARDL models. This helps in selecting the ideal ARDL (2,0,2,1,2,0,1) specification.

The results of the model are displayed in Table 6.8 below. The goodness of fit of the model indicates that 99.135 % of the NAV of the Islamic equity UTFs can be explained by the model. Moreover, the *F*-statistic value of 663.8581 indicates that the model is statistically significant at the 1% level of significance for explaining the variation of NAV of the Islamic equity UTFs. Thus, the ARDL model indicates that the overall outcome of the goodness of fit is satisfactory.

Table 6.8 Autoregressive Distributed Lag Estimates Selected Based on (AIC) (2,0,2,1,2,0,1) Dependent Variable is NAV

Regressor	Coefficient	*t*-Ratio[Prob]
NAV(-1)	.62947	6.0552[.000]
NAV(-2)	.28935	2.8048[.007]
DIV	-.56556	-3.9018[.000]
HP	.0063779	15.1961[.000]
HP(-1)	.0021380	2.9389[.005]
HP(-2)	-.5344E-3	-1.8537[.068]
S	.25745	1.2364[.221]
S(-1)	-.51233	-2.4496[.017]
LFZ	.098612	2.9905[.004]
LFZ(-1)	-.13774	-3.2344[.002]
LFZ(-2)	.069851	2.1868[.032]
LMEX	-.076357	-1.6966[.094]
LHF	-.084062	-1.0501[.297]
LHF(-1)	.17841	2.0738[.042]
INPT	-.41943	-1.3570[.179]

Goodness of fit indices		
R-Squared	.99284	
Adjusted R¯Squared	.99135	
S.E. R.	.0082695	
F(14, 67)	663.8581	0.000
DW-statistic	2.2169	

Table 6.9 shows the long-run test statistics results, which indicate that all the microeconomic variables have statistical significant relationship with the NAV of the Islamic equity UTFs except the funds' risk and the fund management experiences.

Table 6.9 Estimated Long-Run Coefficients using the ARDL Approach, ARDL (2, 0, 2, 1, 2, 0, 1) Selected Based on AIC Criterion, Dependent Variable is NAV

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
DIV	-6.9668	3.3651	-2.0703**
HP	.098320	.040057	2.4545**
S	-3.1397	4.1911	-.74913
LFZ	.37850	.11226	3.3716***
LMEX	-.94060	.56166	-1.6747
LHF	1.1623	.23124	5.0263***
Constant	-5.1668	3.1345	-1.6484

Note: '***', '**' '*'and denote significance at 1%, 5%, 10% respectively.

The DIV has a negative long-run statistical relationship with the NAV of the Islamic equity UTFs at the 5% level of significance. Thus, the hypothesis that the dividends pay-out has a positive long-run relationship with the NAV of equity UTFs is not supported. This negative effect is because the income earned by the UTFs during the financial year is accrued in its unit's price of funds until the end of the distribution period. Upon declaration of an income distribution, dividends are paid out to unit-holders. The NAV of the Islamic funds will tend to drop by approximately the same amount as the income distributed, which indicates an immediate negative relationship between the two variables.

This finding is supported by Wermers, Wu and Zechner (2005) who investigated the rationality of closed-end fund discounts. They advocated that on the ex-dividend day, the fund's stock price and NAV mechanically drop by the same amount of cash distribution (capital gains and dividends), but that the resulting change in the discount is purely mechanical and has no effect on the return to shareholders. This is further supported by the empirical study of Day, Li and Xu (2011). They found that as distributions of both ordinary dividends and previously unrealised capital gains force shareholders to pay taxes, closed-end discounts should decline following distribution since the share price should fall by the after tax amount of the distribution while the fund's NAV declines by the full amount.

However, the distribution of the dividend is a positive signal to the prospective investors, which might then increase the demand for the said fund and pushes the NAV of the Islamic equity unit fund upward over a period of time before the next distribution time. Therefore, the dividends pay-out seems to have an indirect positive effect on the NAV but the effect is not immediate. Thus, fund managers should maintain a stable dividends pay-out to attract small investors to the capital market. In

addition, new investors are advised to buy the fund units immediately after the dividend pay-out and then hold the units during the financial year to obtain capital gain and make a decision to sell their units before any announcement of income distribution.

Table 6.9 indicates that there is a statistically significant positive long-run relationship between the HP and the NAV of the Islamic equity UTFs. This result is consistent with the hypothesis that HP has a positive long-run relationship with the NAV of the Islamic equity UTFs in Malaysia. This result reflects the existence of performance persisting over time. The rational justification behind this positive relationship is that the ranking of the equity UTFs in the market is based on previous performance records, which are carefully analysed by both market practitioners and investors. Accordingly, investors habitually believe that funds that had a satisfactory performance record in the past will continue to do so in the future. Thus, funds that record positive persistence in the past will have a higher chance of attracting huge net inflows, which, in turn, lead to increase the fund unit price.

This finding is in line with the results of the study by Hendricks, Patel and Zeckhauser (1993) who found stronger evidence that funds that do well in the past do well in the short-term future. Further, this is supported by Goetzmann and Ibbotson (1994) who suggested that past mutual fund returns could predict future returns. Another study by Allen and Tan (1999) examined the persistence of performance in a sample of 131 UK funds over the 1989 to 1995 period using weekly returns. Specifically, they analysed the relative performance of the funds and determined whether a good past-performance is indicative to any degree of the portfolio's subsequent performance. Their results indicate that both raw and risk-adjusted returns exhibit evidence of persistence in the long-run but not in the very short-run. Thus, the

past performance must be considered by potential investors to determine whether past performance (good or bad) can help in the prediction of future performance. If the results indicate that there is a statistical association as in the current study, then such information can benefit investors in making better predictions and investment choices.

As hypothesised, LFZ has a positive significant long-run relationship with the NAV of the Islamic equity UTFs. This indicates that the large size portfolio provides the fund's manager with a high opportunity of diversification that may benefit through spreading the risks over a wider variety of securities in different stock sectors, which in turn leads to enhance the fund performance and fund NAV (Benishy, 1961). In other words, larger funds take advantage of economies of scale through spreading higher transaction costs over a larger asset base, which, in turn, leads to improved and better NAV.

Conversely, small funds may be more subject to survivorship bias, in which they experience higher transaction costs and cannot obtain the advantage of certain economies of scale, which, in turn, negatively affect the actual funds NAV (Grinblatt and Titman, 1989). Thus, a better understanding of this matter would naturally be beneficial in making decisions for potential investors in the unit trust industry. Grinblatt and Titman (1989) and Otten and Bams (2001) provide evidence that a large fund size positively influences the funds return. Similarly, Ferreira and Matos (2006) studied the performance of international mutual funds for 19 countries over the period 1999 to 2005; their results show that good and high return occurs among large funds.

However, other researchers such as Perold and Jr (1991) and Lowenstein (1997) believe that a large asset base erodes the fund return due to the costs of trading associated with liquidity or price impact. They argued that a small fund could easily put all of its money in its best ideas and thereby produce better performance.

However, a lack of liquidity may force a large fund to make investment in its not-very good ideas and take larger positions per stock than that which is optimal, thereby eroding performance.

The findings of Chen et al. (2004), using cross-sectional analysis of funds' performance showed that fund size is negatively associated with fund NAV. They argued that management no longer cares about maximising returns after funds reach a certain size. Thus, fund managers should monitor their fund size regularly, since the fund size tends to fluctuate over the years, inasmuch as there is a maximum fund size after which performance declines as the fund size increases (Detzel, 2006 and Xiong et al., 2009).

Table 6.9 indicates that the LHF has a statistically significant positive long-run relationship with the NAV of the Islamic equity UTFs in the Malaysian unit trust industry. This is because the characteristics and investment strategy of hedge funds allow for a short-term investment horizon of usually a year or less. Hence, fund managers of Islamic equity UTFs take this opportunity to invest their excess liquidity for short-term investment in order to reduce portfolio volatility risk and enhance their portfolio returns. Thus, when the hedge funds' investments yield a positive return, the Islamic equity UTFs will receive their income, resulting in an increase in the value of the funds' units.

In addition, in recent years, hedge funds not only hedge the risk against potential losses from investment because of uncertainty in the market, but have become a successful investment vehicle that operates through alternative investment styles that are in line with *Sharī`ah* rules. For example, trade in derivatives, deal in futures and commodities, buy and sell options and leverage their portfolios through certain Islamic contracts (Siddiqui, 1999). Thus, the advantages offered by hedge fund

investments, enable the fund managers of Islamic equity UTFs to run the funds' transactions according to the *Sharī`ah* principles while making short-term returns. Thus, it is suggested that investors have to consider the movement of the hedge fund index when they make a decision to buy or sell and even hold the unit in their portfolios since the fund managers invest their money in hedge fund investments.

Table 6.9 also shows a statistically insignificant negative relationship between S and the NAV of the Islamic equity UTFs, which indicates that Islamic equity UTFs in Malaysia are relatively well diversified. This result is inconsistent with the research hypothesis that S has a positive long-run relationship with the NAV of the Islamic equity UTFs in Malaysia. This result means that the funds gain high return with low risk, since the power of diversification is to reduce unsystematic risks and improve investment performance. This finding is possible, as the fund's portfolio can spread the risk through investing in a large number of securities since it combines the financial resources of a large pool of investors.

This result concurs with the findings from Tse and Chia (1997) in the Singapore context, who examined the performance of 36 equity unit trusts over the period 1990 to 1999. The selected funds concentrated their investment in stocks traded in Singapore and the Asian region. The authors found that the UTFs were well diversified and performed fairly well in terms of risk-adjusted returns, especially when compared to the risk-free rate. The result is also supported by Koh, Mitchell and Fong (2010), who examined whether the unit trusts are sufficiently diversified in Singapore. Their findings indicated that unit trusts are well diversified and that the systematic risk is eliminated and reduced to some degree. The results of the research therefore suggest that Islamic equity unit trusts do help investors diversify their portfolio risk, which is particularly helpful for small investors.

In Table 6.9, the estimated coefficient of the LMEX shows a statistically insignificant negative effect on the NAV of the Islamic equity UTFs even at 10 % level of significance. This result is contradictory with the hypothesis that LMEX has a positive long-run relationship with the NAV of the Islamic equity UTFs in Malaysia. This insignificant relationship may be explained in two ways, a) the lack of timing skills and stock selecting ability of the fund managers, or b) the poor money management performance, as it is measured by the risk-adjusted returns. A further explanation for this result is that skilled analysts get bid away once they build a track record (Silli, 2006). This means that once a fund manager's reputation is established managers sit back and the increased reward of good managers put away any additional effort or value created by their skill or experience.

The funds NAV can be driven by the fund management skills and experience as well as the fund characteristics. The results of this study coincide with most of the studies that focus on market timing, the security selection abilities of the fund managers and the performance of the funds in Malaysia. For instance, Shamsher and Annuar (1995), Leong and Aw (1997), Nassir, Mohamed and Ngu (1997), Low and Ghazali (2005), Taib and Isa (2007), and Low (2007), whose studies evaluated the overall fund performance, divided the fund performance into selectivity and market timing modules. The breakdown of the performance actually helped them to examine the performance of the funds based on manager's expertise. The overall results revealed that managers show poor selectivity performance and that managers' market timing activities do not add value to the funds' return. In addition, they found that the overall fund performance of UTFs in Malaysia is below the market portfolio and risk-free returns.

Further evidence of these phenomena is provided by Tse and Chia (1997) for the Singapore context, for funds that concentrated their investment in Singapore and the Asian region. Their results indicated that fund managers performed poorly in security analysis and market timing. Similarly, Chia, Chua and Tsui (2007) measured the performance of unit trusts over the period 1992 to 2006 for 87 equity UTFs. They found no evidence of market timing skills and they confirmed that the performance of fund managers was not stable over time.

6.2.5 Short-Run Estimation

After accepting the long-run coefficients of the NAV equation, the next step is to find an error correction term of the ARDL model that adjusts the system to the long-run equilibrium after a short-run shock disturbance. Table 6.10 shows the results of the short-run coefficient estimates with error correction term obtained from the ARDL model. The coefficient estimates in Table 6.10 provide further evidence concerning the short-run dynamic that is seen to exist between the microeconomic variables and the NAV of the Islamic equity UTFs.

Table 6.10 Error Correction Representation for the Selected ARDL Model, (2,0,2,1,2,0,1) Selected Based on (AIC) Criterion

Regressor	Coefficient	Standard Error	T-Ratio
ΔNAV1	-0.28935	0.10316	-2.8048***
ΔDIV	-0.56556	0.14495	-3.9018***
ΔHP	0.0063779	0.000042	15.1961***
ΔHP1	0.000534	0.0000288	1.8537
ΔS	0.25745	0.20823	1.2364
ΔLFZ	0.098612	0.032975	2.9905***
ΔLFZ1	-0.069851	0.031943	-2.1868**
ΔLMEX	-0.076357	0.045006	-1.6966
ΔLHF	-0.084062	0.080048	-1.0501
ΔINPT	-0.41943	0.30908	-1.3570
ECM(-1)	-0.081179	0.032211	-2.5202**

Note: '***', '**' and '*'denote significance at 1%, 5% and 10% respectively.

Goodness of fit indices

R-Squared	0.9298
R-Bar-Squared	0.91513
S.E. R	0.0082695
F(10, 71) 88.7397	[.000]
DW-statistic	2.2169

An interesting error correction term is to measure the speed of adjustment that brings back the equilibrium in the dynamic model. Specifically, the ECM coefficient shows how quickly/slowly the relationship among the variables returns to its equilibrium path in the long-run, which should have a negative sign with a statistically significant coefficient. A highly significant ECM is additional proof of the existence of a stable long-term relationship (Bannerjee, Dolado and Mestre, 1998). In Table 6.10 above, the ECM_{t-1} coefficient is found to be negative and statistically significant at the 5 % level of significance. This further confirms the existence of a stable long-run relationship between the NAV and the microeconomic variables. The coefficient of ECM_{t-1} is estimated as -0.081179, which suggests a relatively slow adjustment

process. In other words, it is only about 8 % of the disequilibria among the variables of the previous month's shock adjust back to the long-run equilibrium in the current month.

6.2.6 Diagnostic Tests Results

In order to determine the suitability of the ARDL model for examining the relationship between the NAV of the Islamic equity UTFs and the microeconomic variables, the research applied a number of diagnostic tests to the ARDL model. These included the serial correlation test, functional form test, normality test and heteroscedasticity test. The results of the diagnostic test are reported in Table 6.11 below.

Table 6.11 Diagnostic Tests

Test Statistics	LM Version
A: Serial Correlation	$x^2(12)$= 16.8824[.154]
B: Functional Form	$x^2(1)$= 2.0902[.148]
C: Heteroscedasticity	$x^2(1)$= .15873[.690]
D: Normality	$x^2(2)$= 2.5355[.281]

Notes: The figures in the squared brackets […] represent p-values of the statistical level of significance.
A: Lagrange multiplier test of residual serial correlation.
B: Ramsey's RESET test using the square of the fitted values.
C: Based on the regression of squared residuals on squared fitted values.
D: Based on a test of Skewness and Kurtosis of residuals.

Table 6.11 indicates that the outcomes of the ECM model passes all the short-run diagnostic tests with no serial correlation, no specification in functional form, no heteroscedasticity or conditional autoregressive serial correlation and the error term is normally distributed because all x^2 values are not significant. Furthermore, Figures 6.2 and 6.3 of the cumulative sum (CUSUM) and cumulative sum of squares

(CUSUMsq), which plots from the recursive estimation of the ARDL model, show the stability of the long-run coefficients during the time frame of the study. The graphs for CUSUM and CUSUMsq do not go beyond the critical boundaries at the 5% level of significance.

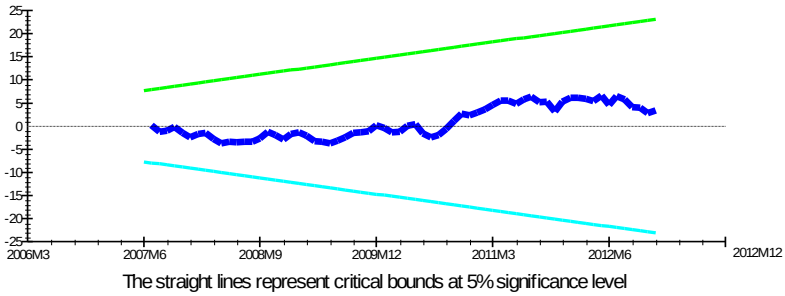


Figure 6.2 Plot of Cumulative Sum of Recursive Residuals

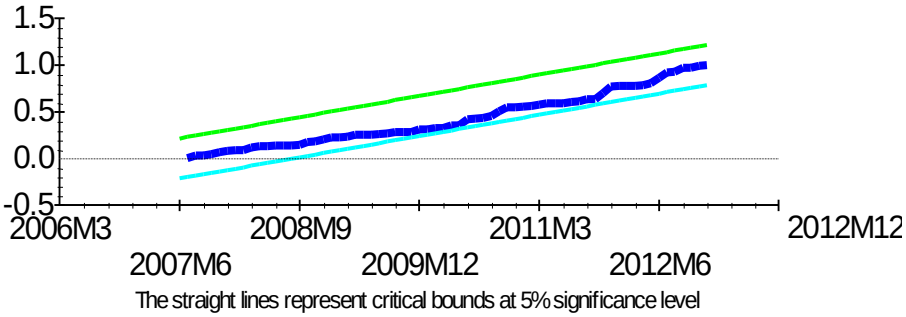


Figure 6.3 Plot of Cumulative Sum of Squares of Recursive Residuals

6.3 RELATIONSHIP BETWEEN MACROECONOMIC VARIABLES AND THE NAV OF ISLAMIC EQUITY UTFS

This section focuses on the results of macroeconomic variables that could potentially affect the NAV of the Islamic equity UTFs in Malaysia. The first part of this section deals with the discussion of the results for long-run relationship between the selected macroeconomic variables and the NAV of Islamic equity UTFs, including the unit root test results, the Johansen-Juselius cointegration test results, and the weak exogeneity tests results. After establishing the long-run relationship, the estimated coefficient of the long-run relationships and their signs directions are discussed and interpreted. The second part of this section deals with short-run analysis to investigate the third objective of causal relationships between the selected macroeconomic variables with the NAV of the Islamic equity UTFs. This includes the Engle and Granger (1987) test results and Granger (1969) causality tests results.

6.3.1 Unit Root Test Results

The research employs the unit root test to examine the stationarity of the series for both the NAV of the Islamic equity UTFs and the chosen macroeconomic variables by using the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests. Table 6.12 shows the results of the unit root test, which indicates that the null hypothesis of unit root cannot be rejected at the level form because the variables are not statistically significant at the 1% and 5% levels of significance, as their values are more than the critical values. Overall, the results indicate that the variables are not stationary at level $I(0)$, but that the series becomes stationary at first difference $I(1)$.

Furthermore, as there were contradictory results from both tests for the LIPI and LOP variable in which the ADF test shows that the LIPI variable is non-stationary

at the level form while the PP test result displays a stationary result. Conversely, in the case of the LOP variable, the ADF test indicates it is stationary at level, while the PP test shows it is non-stationary. To this end, the research applied the KPSS test to confirm the result that we have to follow for further analysis.

The KPSS test contrasts with the ADF and PP tests, in that it examines the null hypothesis of the series being stationary, against the alternative hypothesis of the series being non-stationary (KwiatkowskI, Phillips, Schmid and Shin, 1992). The KPSS findings show that both variables LIPI and LOP are non-stationary at level, *I*(0) at the 1% and 5% levels of significance. Hence, the evidence across the tests shows that the given macroeconomic variables are stationary in the first difference, namely *I* (1). This suggests that the unit trust industry in Malaysia is not a weak form of efficient market. It recommends that the series of all variables does not follow the random walk model and the NAV of the Islamic equity UTFs displays predictable behaviour.

Table 6.12 Unit Root test for the NAV and Macroeconomic Variables

Variables	On Levels			On First Differences	
	Intercept and Trend			Intercept and No Trend	
	ADF	PP	KPSS	ADF	PP
NAV	-1.480158	-1.480158	-------	-9.44707***	-9.447070***
LIPI	-2.750377	-5.065686***	0.145254	-17.24583***	-18.00045***
LTBR	-2.395920	-1.367352	-------	-4.522738***	-8.742479***
LM3	-2.239421	-2.508239	-------	-8.001418***	-8.001418***
LFER	-2.384834	-2.384834	-------	-9.835818***	-9.835818***
LOP	-3.885165**	-2.750221	0.120141	-6.017594***	-5.923456***

Note: 1)- the critical values for unit root tests at 1%, and 5% levels of significance are -4.07 and -3.46 (with trend) and 3.51, -2.89 (without trend), respectively, for both the Augmented Dickey Fuller (ADF) and Phillips Perron (PP) tests.
2) - *** and ** indicate statistical significance at 1 % and 5 %, respectively. The critical values of Phillips, Schmidt and Shin (KPSS) test at 1% and 5% levels of significance are 0.216 and 0.146 (with trend), respectively.
3) -Lag-length are selected automatic - based on SIC, maxlag = (11) for Augmented Dickey Fuller (ADF) and Bandwidth: 0.889 (Andrews automatic) using Bartlett kernel for Phillips Perron (PP) tests.

In the meantime, the time series of the selected variables is found to be cointegrated of the same order, *I*(1), then the long-run combination amongst the non-stationary variables can be established as recommended by Johansen's (1990) methodology under a vector autoregressive (VAR) mode.

6.3.2 Vector Autoregressive (VAR) Analysis

In order to perform the VAR analysis, several steps must be taken – selecting the optimal lag-length, performing the Johansen-Juselius cointegration test to determine the number of cointegration vectors and testing for weak exogeneity to identify the variables that are truly endogenous and exogenous for the estimated VECM equation. The empirical results of these steps are presented in the following sub-sections.

6.3.2.1 Selecting the Optimal Lag-Lengths Results

Before proceeding with the Johansen-Juselius (JJ) (1990) test for cointegration, it is essential to perform the lag-length selection exercise for the VAR system. This is due to misspecification of the lag-length for the VAR model, which often causes autocorrelated errors (Lütkepohl, 2005). To obtain the optimal lag-length for the VAR system, five different criteria are applied: the sequential modified likelihood ratio (LR) test statistic, the final prediction error criteria (FPE), the Akaike information criterion (AIC), the Schwarz information criterion (SIC) and the Hannan-Quinn information criterion (HQ). These criteria are commonly used in the literature (Lütkepohl, 2005; Enders, 2010).

Table 6.13 reports the outcomes of each criterion with a maximum of eight lags because of the small sample of the study (84 observations). In econometric practice, the loss of power when including too many regressors may be preferred over biased estimates if the lag structure is too short (Heilmann, 2010). The study therefore proceeds with the analysis using the Johansen procedure using eight lags, as suggested by the AIC criterion test.

Table 6.13 Optimal Lag-lengths of the VAR

Lag	LogL	LR	FPE	AIC	SC	HQ
0	605.7437	n.a	9.05e-15	-15.30905	-14.57302	-15.01490
1	1015.814	712.2274	4.85e-19*	-25.15300	-23.31295*	-24.41763*
2	1041.421	40.43235	6.56e-19	-24.87951	-21.93542	-23.70291
3	1077.126	50.73780	7.05e-19	-24.87173	-20.82361	-23.25390
4	1120.714	55.05855*	6.48e-19	-25.07141	-19.91926	-23.01236
5	1155.963	38.95953	7.99e-19	-25.05165	-18.79547	-22.55138
6	1204.505	45.98723	7.73e-19	-25.38170	-18.02149	-22.44021
7	1257.950	42.19342	7.65e-19	-25.84078	-17.37654	-22.45806
8	1322.015	40.46224	7.21e-19	-26.57934*	-17.01107	-22.75540

* indicates lag order selected by the criterion

6.3.2.2 Johansen Cointegration Tests Results

In this step, the Johansen-Juselius cointegration test is used to determine the number of cointegration vectors. Johansen (1995) found that the cointegration test is very sensitive to the existence of deterministic trends and proposed five primary cases for the deterministic trends to be considered in the analysis. These are: i) no deterministic trends in the VAR and the Cointegrating Equation (CE) has no intercept and no trend); ii) no deterministic trends in the VAR and the CE relationship has an intercept and no trend. However, in the case that allows for a linear deterministic trend in the VAR model they adopt, iii) the CE relationship, which only has an intercept; iv) the CE relationship only has a deterministic trend; and, finally, they assume, v) a quadratic trend in the VAR and the cointegrating relationship has a linear deterministic trend.

Following the recommendation of Seiler (2004), the analysis continues to examine the long-run and short-run relationships between the NAV of the Islamic equity UTFs and the selected macroeconomic variables in the system assuming no deterministic trends in the VAR and the cointegrating relationship has no intercept and

no trend. The justification for choosing this assumption is that since the index values were specified as natural logs, when the first difference in the index is taken, the result will only represent the return series, hence no trend can be expected.

Furthermore, it is also assumed that there is no constant in either the cointegrating relationship or VAR because the study included two dummy variables in the model, which are NPE and FC. Therefore, either of these dummy variables can play the role of the constant in the equation. Table 6.14 below displays the results of the cointegration tests for both the trace test and the max-eigenvalue test at the 5% level of significance.

Table 6.14 Johansen-Juselius Cointegration Tests Assuming the System Has no Trend And the Cointegration Has no Intercept and no Trend

Hypothesized No. of CE(s)	Trace			Max-Eigen		
	Statistic	Critical-V at 5%	P-Value**	Statistic	Critical-V at 5%	P-Value**
r = 0	300.0297	83.93712*	0.00000	115.4133	36.63019*	0.00000
r ≤ 1	184.6164	60.06141*	0.00000	87.6624	30.43961*	0.00000
r ≤ 2	96.95399	40.17493*	0.00000	54.07738	24.15921*	0.00000
r ≤ 3	42.87662	24.27596*	0.00010	30.25352	17.7973*	0.00040
r ≤ 4	12.6231	12.3209*	0.04450	10.29939	11.2248	0.07240
r ≤ 5	2.323707	4.129906	0.15040	2.323707	4.129906	0.15040

Note*: *****denotes rejection of the hypothesis at the *5% significance level.* ***r*** *indicates the number of cointegration(s) relationship.* ******MacKinnon-Haug-Michelis (1999) p-values.

Table 6.14 shows that the trace tests support five cointegrating vectors, while the max-eigenvalue tests suggest four cointegrating vectors at the 5% level of significance. The research analysis allows for four cointegrating vectors at the 5% level of significance based on the results of the maximum eigenvalue statistic test following the reference of both Banerjee, Dolado, Galbraith and Hendry (1993) and

Enders (2004) who recommended and favoured the max-eigenvalue test. Two main implications and conclusions can be derived from these two tests. Firstly, the NAV of the Islamic equity UTFs and macroeconomic variables in the system share a long-run relationship. Therefore, each variable in the system has a tendency to adjust regularly to remove short-run deviations from the long-run equilibrium. Secondly, as expected by the Granger representation theorem, there is at least one direction of causality among the specified variables in the system (Engle and Granger, 1987).

6.3.2.3 Weak Exogeneity Test Results

Having identified the cointegrating vectors, the Vector Error Correction Model (VECM) must be estimated. However, estimation of the VECMs requires normalising the truly endogenous variables in the model. To this end, the weak exogeneity tests were performed for the model and the results are stated in Table 6.15. Given that the objective of the research is to determine whether the chosen macroeconomic variables can explain the NAV of the Islamic equity UTFs in the long-run, the main concern is whether the NAV of the Islamic equity UTFs is truly an endogenous variable.

Table 6.15 indicates that the NAV of the Islamic equity UTFs was found to be truly endogenous at the 1% level of significance. In contrast, all the macroeconomic variables were weakly exogenous at the 1% level of significance, except the LOP, which can also play another truly endogenous variable in the model. However, it is not of interest in this research. Thus, the NAV of the Islamic equity UTFs is likely to be affected by changes in the macroeconomic variables as expected according to the theoretical literature and empirical results of the previous studies that were discussed in chapters 3 and 4. In contrast, changes in the macroeconomic variables are not a consequence of a change in the NAV of Islamic funds.

Table 6. 15 Weak Exogeneity Test Results

Model		NAV	LIPI	LTBR	LM3	LFER	LOP
	χ^2						
NAV		14.05769	6.449340	6.566189	3.331845	0.142023	12.61250
	P- Value	[0.000177]	[0.011099]	[0.010393]	[0.067951]	[0.706278]	[0.000383]

Notes: ***, **, *denote significance at the 1%, 5% and 10% level respectively.

6.3.3 Vector Error Correction Model (VECM) Analysis

This section estimates the VECM model. The model results comprise information on both the long-run and short-run estimation of the relationship between variables. Since the VECM model is a more general case of the standard VAR model, the analysis proceeds to determine the lag-length, p, for the dynamic terms, such as the lagged variables in the first difference form and structural cointegrating vector of the VECM and the number of cointegrating vectors. The determinants of the optimal lag results are presented in Table 6.16 and show conflicting results in which the recommended lag-length based on Likelihood Ratio (LR) is (4) and Final Prediction Error (FPE), Hannan Quinn (HQ) and Schwartz Criterion (SC) are (2). In addition, the Akaike Information Criterion (AIC) is (8). To overcome this issue, the research elected for another method based on the residual of the VECM model (Rahman et al., 2009). This alternative method was applied to confirm which criterion lag is free from serial correlation problem. Various lag-lengths were imposed on the VECM specification until all the residuals of the correllograms were uncorrelated. Based on this technique, the optimal lag-length is found to be (P = 8).

Table 6. 16 Optimal Lag-Lengths of the VECM

Lag	LogL	LR	FPE	AIC	SC	HQ
0	605.7437	n.a	9.05e-15	-15.30905	-14.57302	-15.01490
1	1015.814	712.2274	4.85e-19*	-25.15300	-23.31295*	-24.41763*
2	1041.421	40.43235	6.56e-19	-24.87951	-21.93542	-23.70291
3	1077.126	50.73780	7.05e-19	-24.87173	-20.82361	-23.25390
4	1120.714	55.05855*	6.48e-19	-25.07141	-19.91926	-23.01236
5	1155.963	38.95953	7.99e-19	-25.05165	-18.79547	-22.55138
6	1204.505	45.98723	7.73e-19	-25.38170	-18.02149	-22.44021
7	1257.950	42.19342	7.65e-19	-25.84078	-17.37654	-22.45806
8	1322.015	40.46224	7.21e-19	-26.57934*	-17.01107	-22.75540

* indicates lag order selected by the criterion

The p-values associated with the Lagrange multiplier (LM) tests in Table 6.17 strongly indicate the absence of serial correlation in the estimated residuals generated from the VECM (8) models up to p=12.

Table 6. 17 Residual Serial Correlation LM Tests for the VECM

Lags	LM-Stat	Prob
1	36.61378	0.4402
2	36.23275	0.4578
3	38.72067	0.3479
4	33.33764	0.5959
5	21.22279	0.9761
6	46.89846	0.1055
7	38.30986	0.3651
8	33.83060	0.5722
9	34.60519	0.5349
10	38.77167	0.3458
11	27.87283	0.8317
12	44.52453	0.1558

Probs from chi-square with 36 df.

Moreover, the estimated residuals of the VECM (8) models are behaving like "white noise" as displayed in Figure 6.4 below. This offers visual proof to support the

adequacy of the VECM (8) model to explore the long and short-run relationship among the NAV of the Islamic equity UTFs and macroeconomic variables.

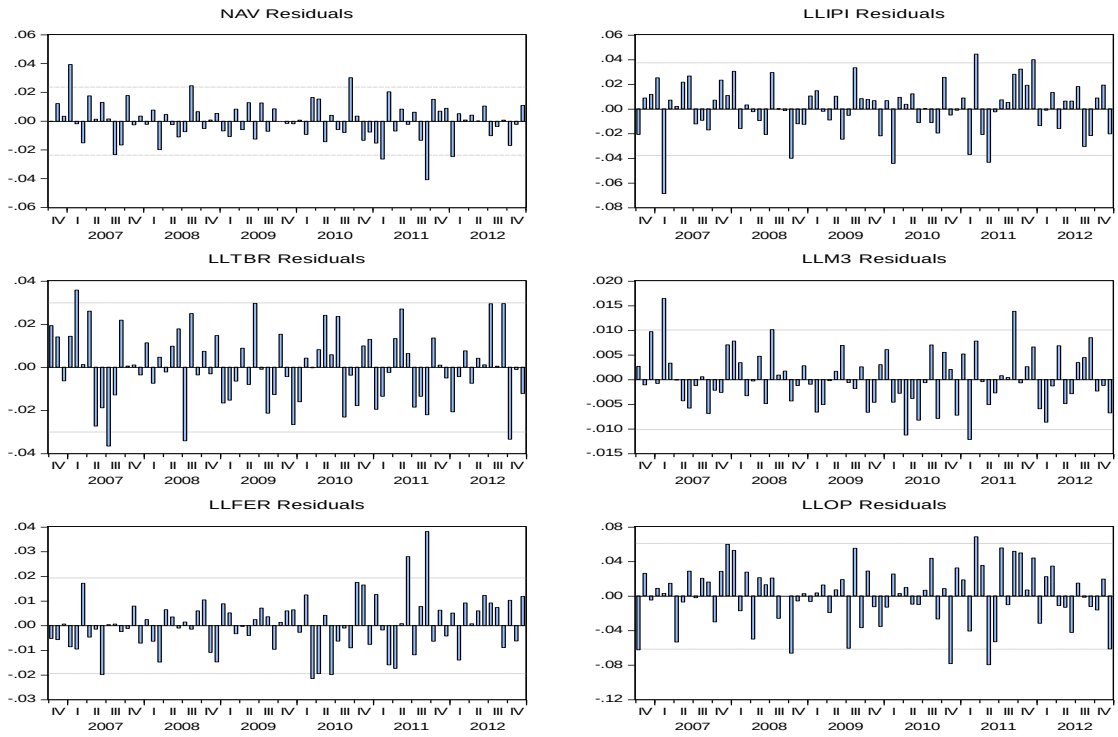


Figure 6.4 The Estimated Residuals of the VECM (8) models

6.3.3.1 Long-Run Estimation

Having found at least one statistically significant cointegrating vector at the 5% level of significance, while the other three cointegration vectors were not statistically significant (Appendix VI), the study proceeded to estimate the VECM with eight lags and with only one cointegrating vector that is normalised on the NAV of the Islamic equity unit trust fund equation. Table 6.18 below displays the results of the coefficient of β matrices in terms of normalising the cointegrating coefficient of the first equation. These results present the long-run relationship, which support the second research objective and indicates that most of macroeconomic variables significantly

contributed to the long-run relationships with the NAV of the Islamic equity UTFs in the system with only three exceptions, which are LTBR, NPE and FC.

Table 6.18 Normalised Cointegrating Coefficients: 1 Cointegrating Equation, Dependent Variable is NAV

Variables	β-Coefficients	Standard-Errors	T- Statistic
LIPI	3.301991	0.60595	[5.44930] ***
LTBR	0.002177	0.08501	[0.02561]
LM3	-0.359396	0.08443	[- 4.25659] ***
LFER	-1.295037	0.31574	[- 4.10154] ***
LOP	-0.45717	0.12215	[-3.74284] ***
LCI	-0.376117	0.12828	[-2.93210] ***
NPE	0.016757	0.01685	[0.99456]
FC	0.020421	0.01721	[1.18644]

Note: '***', '**' and '*' are significant at the 1%, 5% and 10% levels, respectively.

As postulated, Table 6.18 displays a statistically significant positive long-run relationship between LIPI and the NAV of the Islamic equity UTFs in Malaysia. In the presence of cointegration in the long-run, a 1% increase in LIPI will enhance the NAV of the Islamic funds by approximately 3.30%. This finding is consistent with a large body of empirical studies concerning the effect of the IPI on the Malaysian equity market. For example, Mohammed, Shukor, Affandi and Mahmood (2013) studied the effect of macroeconomic variables on unit trust investment in Malaysia. They found a positive impact of GDP on unit trust investment returns at the 5% level of significance. Similar evidence is provided by Hussin et al. (2012), who found that Islamic stock price is cointegrated with IPI in the long-run and has a positive relationship. Another study by Rahman et al. (2009) displayed positive relations between the Malaysian stock market and the industrial production index in the long

term. These results indicate that the Malaysian equity market is very sensitive to changes in the industrial production index. Therefore, both fund managers and investors have to consider the variability of the IPI index when they hold shares or units in their investment portfolios.

Table 6.18 also indicates a statistically significantly negative long-run relationship between the LM3 and the NAV of the Islamic equity UTFs. This finding is consistent with the research hypothesis that M3 has a negative long relationship with the NAV of the Islamic equity UTFs in Malaysia. This result is perhaps due to an increase in money supply that causes inflation in the long-run, resulting in an increase in the nominal interest rates, which represents the discount rate in an equity valuation-model leading to lower equity prices as future cash flows are discounted at a higher cost of capital. This result is in line with Fama (1981), Ibrahim and Yusoff (2001), and Alatiqi and Fazel (2008) who found a negative association between inflation and equity prices.

This result is also consistent with the previous empirical study of Hussin et al. (2012) who investigated the relationship between the Malaysian Islamic stock market price and macroeconomic variables including money supply (M3). Their results show that, in the long-run, the money supply (M3) has a significant negative relationship with the KLSI. Similar results were found by Ibrahim (1999; 2003) who investigated the dynamic interactions between the KLSE Composite Index and the macroeconomic variables comprising money supply (M1 and M2). The results provide evidence that money supply documents immediate positive liquidity effects in the short term; however, in the long-run, money supply documents negative effects on the stock prices.

Table 6.18 presents a statistically significant long-run negative relationship between the NAV of the Islamic equity UTFs and the Ringgit exchange rate in Malaysia. This finding is inconsistent with the research hypothesis that the FER has a positive impact on the NAV of the Islamic equity UTFs in Malaysia. The rational justification of this negative relationship is that, in Malaysia, the exchange rate recorded a negative movement during the period of the study, as shown in Figure 6.5, where the exchange rate appreciated from MYR3.8 per US dollar in January 2006 to MYR3.06 at December 2012 and recorded an extreme high of MYR2.96 in April 2011.

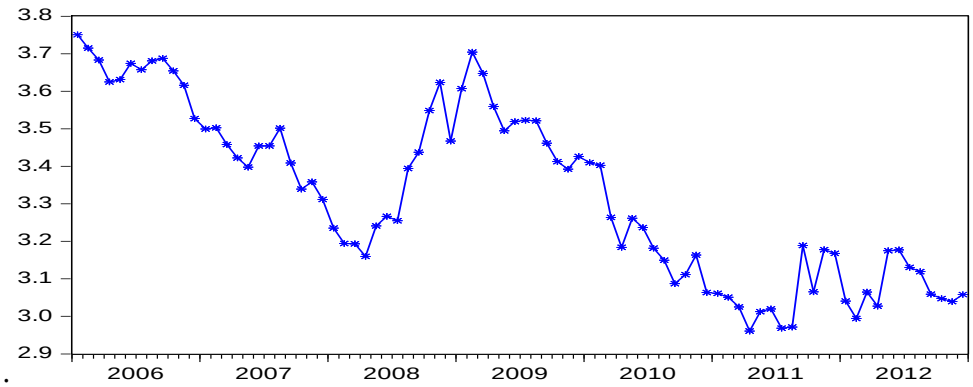


Figure 6.5 FER Trend for (MYR/USD) 2006-2012

As advocated by Thang (2009), Malaysian incomes and resources are highly dependent on international trade since Malaysia is considered to be an export-oriented country. Thus, appreciation of the Malaysian Ringgit has a negative impact on the Malaysian economy. An appreciation of the Malaysian Ringgit will lead to a decrease in demand for Malaysia's export products as they become costly among the competing exporter countries. Rational importers will import their needs for goods and services from other countries which have weak currency, such as Japan or China. Ultimately, this leads to a decline in the cash flows into the country's

economy, which causes a decrease in the profit of the companies and, consequently, a decline in the average level of equity prices, resulting in a reduction of the equity fund's unit price.

As Malaysia is a country that is heavily reliant on international trade, any changes in the exchange rates will certainly affect its exports and imports. The research suggests that exchange rates should be given more attention by the relevant authorities and that it is advisable to depreciate the Malaysian Ringgit through an increase in the money supply and, over time, the effect on inflation will be adjusted. This finding is in line with the studies of Ibrahim and Aziz (2003), Hussin et al. (2012), and Vejzagic and Zarafat (2013) who argued that a decrease in the value of the local currency will cause a surge in the volume of exports as the local products become cheaper. Consequently, the companies' cash flows and profits will also upsurge eventually leading to a higher local stock price.

Table 6.18 suggests a negative significant long-run relationship between the LOP and the NAV of the Islamic equity UTFs. This finding is inconsistent with research hypothesis that LOP has a positive impact on the NAV of the Islamic equity UTFs in Malaysia. The rise in global oil prices may affect the country's economy through different pathways, but mostly through the rise in the inflation rate through an increase in the production cost of goods and services. In turn, this may affect consumer confidence (reduction in the consumers' potential spending) as well as the equity market. From the industrial market point of view, an increase in the oil price means an increase in the production costs of input, resulting in a reduction in the companies' earnings or future cash flows, which can have a serious negative effect on the equity market prices and returns (Adjasi, 2009; Jalil et al., 2009; Hosseini et al., 2011). The global oil prices and inflation are usually seen as being

associated in a cause and effect relationship in Malaysia (Shaari, Hussain and Abdullah, 2012) as is also confirmed by the correlation matrix results in Table 6.3. When oil prices move up or down, inflation follows in the same direction. Hence, the increase in global oil price negatively impacts on the NAV of the Islamic equity UTFs in the long-run.

In relation to this issue, past empirical literature shows mixed findings concerning the impact of crude oil price shocks on equity prices. For example, the earlier studies of Sadorsky (1999), Papapetrou (2001), Nandha and Hammoudeh (2007), O'Neil et al. (2008), Park and Ratti (2008), Nandha and Faff (2008), Arouri and Julien (2009), and Miller and Ratti (2009) found that global crude oil prices have a statistically significant negative effect on equity prices. Further evidence is provided by Le and Chang (2011) who investigated the impact of oil price fluctuations on the stock markets in Japan, Singapore, Korea and Malaysia using monthly data over the January 1986 to February 2011 period. They found that stock markets react significantly to oil price shocks across the markets. They found that the stock market responds negatively in Malaysia but positively in Japan, while the signal in Singapore and South Korea was unclear.

On the other hand, Le and Chang (2010) and Sadorsky (2001) found that global oil prices have a positive relationship with equity return. In the context of the Malaysian equity market, Hussin, Muhammad, Hussi, and Razak (2012) examined the impact of oil price shocks on the Islamic financial market. The results indicate that Islamic stock prices are cointegrated with oil prices and have a positive relationship. This contradictory result between the current research and that of Hussin et al. (2012) is because they include both money supply and consumer price index in their model without considering the problem of collinearity between these

two variables, which may result in an incorrect estimation of the coefficients in their model. A similar result can be expected by the current research if we involve the consumer price index in our analysis.

Hence, the results of the long-run negative relationship between oil prices and the NAV in this research will provide fund managers and investors a better picture of the exposure of global oil price risks when investing in Malaysian firms. Thus, the fund managers and investors need to consider the global oil prices fluctuations that may impact on their Islamic equity UTFs return before making investment decisions.

Table 6.18 shows a significant long-run negative relationship between LCI and the NAV of Islamic equity UTFs in Malaysia. However, the negative sign of the coefficient means positive effect since the corruption index is scaled from 0 to 10, in which 0 indicates the most corrupt country and 10 refers to least corrupt country. This finding is inconsistent with the research hypothesis that CI has a negative impact on the NAV of the Islamic equity UTFs in Malaysia. This finding means the higher the corruption, the higher the NAV. It is interesting to note that higher level of corruption has a positive relationship with NAV of the Islamic equity UTFs.

The result suggests that when the capital market participants perceive that there is rampant or higher levels of corrupt practices, they will invest more in the Islamic equity UTFs, thus driving the NAV up. This is perhaps due to the fact that Islamic equity UTFs follow the *Sharī`ah* rules and principles, which have the beneficial effect of steering the Islamic funds away from any corrupt practices. Thus, investors seem to have greater confidence on the Islamic equity UTFs to protect them from possible investment losses or a drop in investment value in a highly corrupt environment. In addition, this result implies that as investors perceive there is higher

level of corruption they will shift their investment from the conventional UTFs to the Islamic equity UTFs that strictly forbid corruptions practises and consequentially push the NAV up.

Corruption can positively affect the equity prices by taking a number of different methods in the equity market. For example, corporations may reduce their costs through transfer the costs that imposed on their activities to the government's resource activities. This includes paying bribes to reduce their tax liabilities or sometimes to reduce the custom fees, in which the marginal bribe rate is usually below the official marginal tax rate, custom rate or any another forms of government resources activities rates. This argument agrees with Svensson (2003) who studied bribe-paying behaviour in Uganda. He found that there is a positive relationship between bribes paid and corporate profits. In addition, such corruption can take a number of different forms in equity markets such as inside information, fraud, false statements, and trading abuses (naked short selling).

Accordingly, if these corruption forms exist in the market there will be a positive effect on the equity price and the NAV of Islamic equity UTFs for a period of time. However, over time it may have a negative effect on the local stability and the country's economy as a whole. Foreign investors and even local investors will lose their confidence in dealing with information from local stock markets resulting in capital out-flow from the country and a reduction in stock market performance.

Table 6.18 indicates an insignificant statistical positive relationship between the LTBR and the NAV of the Islamic equity UTFs in Malaysia. This finding is inconsistent with the research hypothesis that the TBR has a negative impact on the NAV of the Islamic equity UTFs in the long-run relationship. This finding is not surprising, since the Islamic investment is based on the prohibition of interest for

which the existing theoretical and empirical studies display no consensus regarding the relationship between the interest rate and Islamic stock market including the Islamic unit trust industry (Zaher and Hasan, 2001; Hakim and Rashidian, 2005; Yusof and Majid, 2006; 2007). Furthermore, in Table 6.18 the estimated coefficient of NPE shows a positive but insignificant effect on the NAV of the Islamic equity UTFs. This result does not support the hypothesis that the uncertainty of a political election has a negative effect on the NAV of the Islamic equity UTFs.

As expected, the estimated coefficient of the FC shows a positive effect on the NAV of Islamic equity UTFs but it is statistically insignificant. This is perhaps because the Islamic equity UTFs are running their businesses according to *Sharī`ah* rules that have a strong linkage to the real economic activities. In other words, Islamic equity unit trust fund is based on *Sharī`ah* rules that prohibited elements of *riba* (interest rate), *maysir* (speculation or gambling) or *gharar* (uncertainty). Such prohibitions possibly shield the Islamic UTFs from harmful effects of financial crisis.

Thus, the Islamic funds could be used as a hedging instrument by both Muslim and non-Muslim investors during an economic slowdown or financial crisis. This result is consistent with the study of Mansor and Bhatti (2011) who found that Islamic mutual funds slightly outperformed the conventional mutual funds during the Asian financial crisis period in Malaysia.

6.3.3.2 Short-Run Estimation

Having established that the selected macroeconomic variables in the system were cointegrated with the NAV of Islamic equity UTFs for the long-run relationship, but with three exceptional variables LTBR, NPE and FC. However, the fundamental question is what is the nature of the dynamic relationship exists among these variables

in the short-run. This enquiry can be answered through applying causality tests to achieve the third objective of investigated the causal relationship between selected macroeconomic variables and the NAV of the Islamic equity UTFs. The results of these tests are presented in the following two sub-sections.

Causality Tests Results

As mentioned in the previous chapter, the estimation model includes endogenous and exogenous variables. The endogenous variables comprise variables that are commonly and regularly perceived in the Malaysian economic system such as LIPI, LTBR, LM3, LFER and LOP. While the exogenous variables represent the variables that are out of the Malaysian economic system such as LCI, NPE and FC. The research applied the VECM causality test for the endogenous variables (macroeconomic variables) that were found to be cointegrated, as established by Engle and Granger (1987). Granger (1988) also documented that using a VECM model rather than a VAR in differences will not result in any loss in long-run information. However, the Granger (1969) causality test is applied to test the short-run dynamic relationship between LCI, NPE, FC and NAV of the Islamic equity UTFs, since these variables are out of the system. The results of both the VECM causality and Granger (1969) causality tests are illustrated in the following sub-sections.

VECM Causality Tests (Engle and Granger (1987)) Results

In this stage, a VECM is estimated to investigate the short and long-run dynamic adjustment of a system of cointegrated variables. The VECM causality test maintained the same structure of the cointegrating vector of the Johansen-Juselius cointegration test in terms of determination of the structure of the linear trend and optimal lag

length. The short and long-run causality tests for the VECM results are presented in Table 6.19.

Table 6.19 Multivariate Causality Tests and Coefficients of Error Correction Terms

	Independent Variables						
Dependent Variable	χ^2 -statistics of lagged 1st differenced term [p-value]						ECTt-1 coefficient (t-ratio)
	Δ NAV	Δ LIPI	Δ LTBR	Δ LM3	Δ LFER	Δ LOP	
Δ NAV	**1**	**24.01455*** **	**6.117054**	**6.655653**	**9.690978**	**19.74859** **	**-0.418885 ** **
		[0.0023]	[0.6341]	[0.5742]	[0.2874]	[0.0113]	(-2.91111)
Δ LIPI	**10.05823**	1	2.304429	6.061342	3.659351	3.879220	0.403117
	[0.261]		[0.9702]	[0.6404]	[0.8865]	[0.8679]	(+1.76748)
Δ LTBR	**24.71122*** **	25.45857***	1	8.273894	28.88944***	8.117676	0.344969
	[0.0017]	[0.0013]		[0.4072]	[0.0003]	[0.4221]	(+1.89151)
Δ LM3	**18.58043** **	9.397463	8.406413	1	8.143003	7.144189	-0.072552
	[0.0173]	[0.3099]	[0.3948]		[0.4196]	[0.5212]	(-1.17913)
Δ LFER	**5.051812**	6.038934	10.97358	9.979661	1	4.545894	-0.026483
	[0.7520]	[0.6429]	[0.2032]	[0.2665]		[0.8048]	(-0.22444)
Δ LOP	**17.31704** **	33.20599***	23.38432***	15.81097**	15.32714*	1	-1.206407 **
	[0.027]	[0.0001]	[0.0029]	[0.0452]	[0.0531]		(-3.23289)

Note: ***,** and * denotes significant at 1%, 5% and 10% significance level, respectively. The figure in the squared brackets […] represent as p-value and the figure in the parenthesis (…) denote t-statistic. The ECT is the short-run adjustment coefficient of the VECM.

The first row in Table 6.19 shows the short and long-run causal relationships between the NAV of the Islamic equity UTFs and the LIPI, LTBR, LM3, LFER and LOP. The VECM results display a significant long-run causal effect, based on the *t*-statistics of -2.91111 with the coefficient of the lagged error-correction term having the expected negative sign. This result supports the former results achieved from the

Johansen-Juselius cointegration test that there is a long-run relationship between the NAV of Islamic equity UTFs and macroeconomic variables.

The first column in Table 6.19 displays the short-run contribution of NAV of the Islamic equity UTFs as an independent variable to the other models in the system. Different results were found for the short causality tests. The p-values reported in the first row indicate significant unidirectional short-run causal effects of industrial LIPI and bidirectional with LOP on the NAV of the Islamic equity UTFs in Malaysia. This result is supported and achieved the third research objective, which indicated that the LIPI and LOP have causal effects on the NAV of the Islamic equity UTFs and they have ability to predict the behaviours of funds NAV in the short-run.

One possible conclusion that can be drawn from this finding is that the equity UTFs industry in Malaysia is an inefficient market with respect to the LIPI and the LOP. This is because the unit price of Islamic equity UTFs can be predicted using the available information about these two variables in the short-run during the time frame of the study. Robust evidence is provided by Ibrahim (1999) and (2003) who examined the dynamic interactions between the KLSE Composite Index and macroeconomic variables in Malaysia. The findings of his studies indicate that the Malaysian stock market is informationally inefficient.

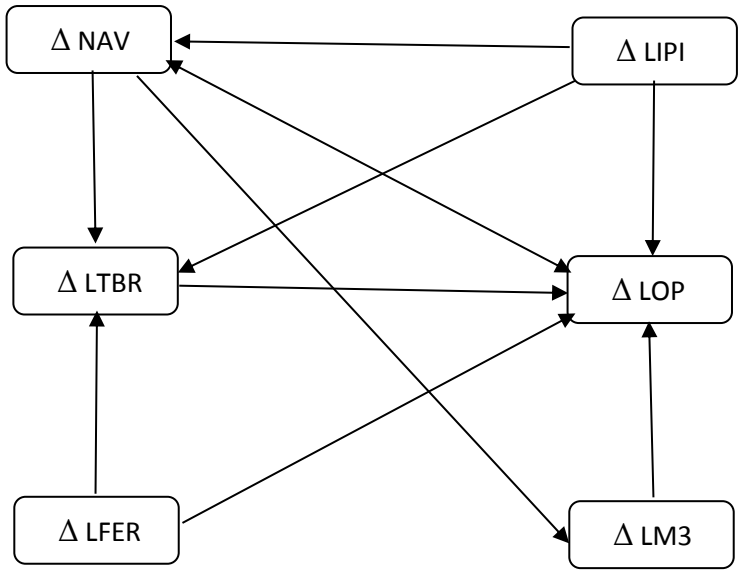
Moreover, the bi-directional relationship and the correlation of the NAV of the Islamic equity UTFs with the future oil price perhaps reflects the statement that Malaysia is a net oil exporting country. This is consistent with Jalil et al. (2009) and Bekhet and Yusop (2009) who suggested that the Malaysian oil market contributes significantly to changes in the global oil market. Further, Hussin et al. (2012) who examined the relationship between oil prices and the Islamic stock market in Malaysia, found that there is a bi-directional causal relationship between the growth of

crude oil prices and the Islamic stock returns in Malaysia. They concluded that, in Malaysia, oil price shocks affect the Islamic stock return in the short and long-run.

However, the LTBR, LM3 and LFER do not have a significant relationship with the NAV of Islamic equity UTFs in the short-run. In other words, this finding indicates that LTBR, LM3 and LFER do not Granger-cause change in the NAV of the Islamic equity UTFs. This result implies that LTBR, LM3 and LFER might not be appropriate indicators to forecast the change of the NAV of the Islamic equity UTFs in Malaysian unit trust industry. This also indicates that investors in the equity UTFs industry did not intensively use the available information of changes in these variables in their investment decisions during the period under observation.

In Table 6.19, the p-values reported in the first column show that the NAV of the Islamic equity UTFs is a predictor for the LTBR and LM3 in Malaysia. However, the NAV of the Islamic equity UTFs is not a significant predictor for the LIPI and LFER. This result is contradictory to previous studies that found that the Malaysian stock market is affecting the country's economic growth. For example, Mun et al. (2008) investigated the relationship between the stock market and economic growth (measured by real GDP) in Malaysia, using the Granger causality test over the 1977 to 2006 period. Their findings indicate that stock market Granger-caused economic activity in Malaysia. This contradictory result could be due to the small size of the unit trust industry, as by including the equity unit trust investments it still only represents 20% of the Malaysian capital market (SC report, 2012). Thus, real economic activity does not react serially to changes in the unit trust industry, however, in the future, it will be when the unit trust industry becomes a potential substitute for the stock market.

Next, Table 6.19 shows that the NAV of Islamic equity UTFs are independent of the changes in the foreign exchange rate since there is no causal effect between funds NAV and LFER in the short-run. This means that speculators cannot exercise the information of NAV and LFER in the short-term to predict each other for creating abnormal profit or speculate any extra profit in Malaysian equity market. Hussin et al. (2012) found a similar result in that the Islamic stock market in Malaysia does not have a causal effect on the exchange rate of (MYR/USD) in the short-run. The design of the short-run VECM causal relationships between NAV of the Islamic equity UTFs and the LIPI, LM3, LTBR, LFER and LOP are summarised in Figure 6.6 below.



Indicator: → uni-directional causality ↔ bi-directional causality

Figure 6.6 Granger Causal Association in Macroeconomic System

Pairwise Granger Causality Tests Results

Table 6.20 presents the results of the Pairwise Granger causality test for natural logarithm of corruption index (LCI), national political election (NPE) and the 2007/2008 Global Financial Crisis (FC) with the NAV of the Islamic equity UTFs.

Table 6.20 Pairwise Granger Causality Tests

Null Hypothesis:	obs	F-Statistic	Prob.
LCI does not Granger cause NAV	72	0.49004	0.9104
NAV does not Granger cause LCI		1.60021	0.1243
NPE does not Granger cause NAV	72	1.74326	0.0874*
NAV does not Granger cause NPE		1.20805	0.3059
FC does not Granger cause NAV	72	2.22484	0.0256**
NAV does not Granger cause FC		0.77814	0.6694

Note: ***,** and * denotes significant at 1%, 5% and 10 % significance level, respectively.

The results indicate that the LCI and the NAV of the Islamic equity UTFs does not Granger cause one another in the short-run during the study time frame. This mean NAV of Islamic equity UTFs and LCI are independent in the perspective of prediction in Malaysia. The absence of a relationship between the LCI and the NAV of Islamic equity UTFs in the short-run is perhaps due to Islamic equity UTFs operate their business based on the *Sharī`ah* principles that banned Islamic funds from involvement in corruption performances or engage in any illegal business.

In addition, the government's anti-corruption policies practiced in the Malaysian capital market may contribute to the absence of a significant relationship between the LCI and the NAV of Islamic equity UTFs. These anti-corruption policies can take a number of different practices such as capital market regulation and supervision, prevent insider trading activities and market manipulation. In Malaysia,

the Companies Act 1965, the Capital Markets and Services Act 2007 (CMSA 2007), Securities Commission Act 1990, and the Securities Commission Act 1993 (SCA), as well as the significant amendments to the Securities Commission Act 1993 (SCA) and the Capital Markets and Services Act 2007 (CMSA) that came into force on 3 October 2011 are the main statutes that regulate all forbidden conducts in the Malaysian securities and derivatives markets (Yeon, 2013).

These acts assist the equity market in Malaysia to control and note all the forbidden conducts that might be practised by corrupted people in the securities markets. For example, insider trading, use of manipulative and deceptive devices, market manipulations, market rigging, false and misleading statements, fraudulent inducing persons to deal in securities, dissemination of information about illegal transactions, and stock false trading (section 175 to section 198, CMSA 2007). Thus, the current anti-corruption policies and Islamic equity UTFs investment could help to establish a good trust and confidence for the investment environment that will support in developing country local stability and economic growth.

Table 6.20 shows that there is a unidirectional relationship between the NPE and the NAV of the Islamic equity UTFs. This means that the NPE has predictive power to forecast the future movement of the NAV of the Islamic equity UTFs at the 10% marginally significance level in the short term. The explanation of Granger casual relation between NPE and NAV of Islamic equity UTFs is perhaps due to the role of the Malaysian Government-Linked Companies (GLCs) in supporting the equity market during the period leading to general election, in which the GLCs account for 36% of the market capitalisation of the Malaysian stock market (Mokhtar, 2005). The support can take different forms such as investing large funds in some stock sectors before elections time to manipulate the stock market price, or may offer

new jobs or increase the labour in the industry before the election time, which may influence the perception about the country's economic performance. All these indices build trust among the stock market participants to continue investing their funds in the local stock market. As a result, market shares prices will increase and then the NAV of Islamic equity UTFs as they invest in stock market.

This result is in line with several studies that investigate whether security returns are impacted by political elections. For example, Booth and Booth (2003) documented that the stock market in the US tends to perform better in the second half of the presidential election term. They assumed that this phenomenon could be a reflection of the political business cycle. However, it may be also explained behaviourally. A similar result was found by Junkans and Estes (2007) who examined the relationship between elections and the market return. They found that the average market return in the fourth year of a presidential term is double that of the return in the first year of a president's term. Chang, Su and Chang (2006) also proved this phenomenon in their investigation of the effect of presidential elections on Taiwan's stock market. Their results showed that in order to win re-election, the ruling party invests large government funds in some stock sectors before presidential elections to manipulate the stock market price. For that reason, it has been found that in the three months before elections the stock market creates significant and positive returns.

Table 6.20 indicates that there is a unidirectional relationship between the 2007/2008 Global Financial Crisis and the NAV of the Islamic equity UTFs. This means that 2007/2008 Global Financial Crisis has ability in predicting the future behaviours and changes of the NAV of the Islamic equity UTFs in Malaysia for the short-run. Thus, it is interesting to see that the 2007/2008 Global Financial Crisis is positively and significantly affecting the NAV of the Islamic equity UTFs in the short-

run. This is perhaps due to the fact that Islamic equity UTFs' transactions are in line with the *Sharī`ah* rules that are interest-free and risk-sharing based along with the availability of a credit primarily for the purchase of real goods and services and restrictions on the sales of debts, short sales, excessive uncertainty (*gharar*) and gambling (*qimar*) that cause the financial crisis (Chapra, 2008). The restrictions of which the Islamic funds stand for, can help inject a highly controlled discipline into the system, thereby, substantially reducing the financial instability and create stable prices for Islamic funds. This finding suggests that Islamic equity UTFs exhibit a hedging function against the global financial crisis.

It may also provide new evidence of differences between Islamic and conventional UTFs that were negatively affected by the 2007/2008 global crisis as shown by the empirical financial literature of Ferdian and Dewi (2009) and Mansor and Bhatti (2011). Further, this finding might prove the competitiveness and strong ability of the Islamic equity UTFs to withstand the harshness of the global economic instability during the crisis period and help in avoiding or could partially eliminate the harmful financial effects of such a crisis through disallowing the causes of crisis that are practised by conventional funds. Thus, investors can learn from this finding that Islamic equity unit funds can be used as hedging investment instruments during economic slowdown. This result is consistent with the result of Kamil (2010) in that the Islamic UTFs performed better during the Global Financial Crisis than the sub-period of non-crisis. Further evidence is provided by Abdullah et al. (2007) and Dewi and Ferdian (2008) who found that the Islamic UTFs outperformed the market during the global financial crisis.

6.3.3.3 Diagnostic Tests Results

As a final point, the research performs a diagnostic test to ensure the residuals from the estimated VECM model are white noise. This means that the error term is free from serial correlation, heteroscedasticity or conditional autoregressive serial correlation, and the error term is normally distributed. The results of the diagnostic tests are presented in Table 6.21 below.

Table 6.21 Diagnostic Tests

Test Statistics		F-statistic [P-value]
A: Serial Correlation	Breusch-Godfrey	F- (12,11) =1.991371 [0.1320]
B: Heteroscedasticity	Breusch-Pagan-Godfrey	F- (57,17) = 1.339237[0.2575]
C: Heteroscedasticity	ARCH	F- (1,72) = 0.072598 [0.7884]

The results show that VECM model passes all the diagnostic tests since all the *F*-statistics are insignificant at the 5% level of significance. In particular, the Breusch-Godfrey Lagrange Multiplier results indicate that the null hypothesis is not rejected and that the residuals of the VECM model up to order 12 are free from serial correlation. The ARCH test for autoregressive conditional heteroscedasticity was applied, in which neglecting the ARCH effects may result in incorrect estimations of the coefficient of efficiency. The null hypothesis is not rejected and there is no autoregressive conditional heteroscedasticity in the error variance, or, in other words, homoscedasticity is presented in the model. In addition, the histogram presented in Figure 6.7 below indicates that the residual error term is normally distributed. The normality of the residuals is confirmed by the Jarque-Bera test statistics of 3.095046

[p-value = 0.212774] that is more than the critical value at the 5% level of significance.

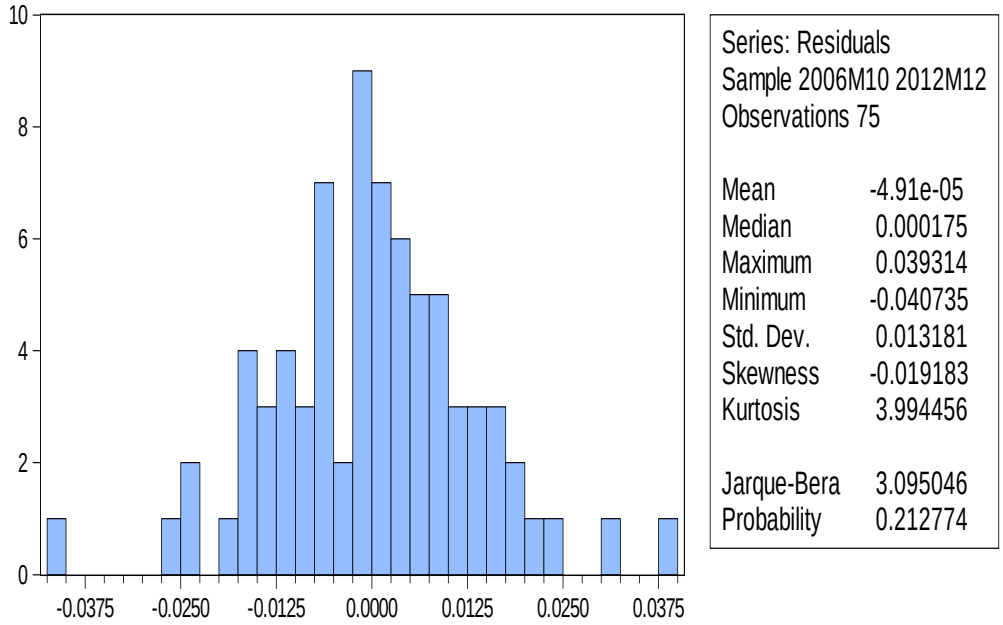


Figure 6.7 Histogram of Residuals and Jarque-Bera Test

Finally, the cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) tests are applied to check the structural stability of the VECM model. The CUSUM and CUSUMQ plots displayed in Figures 6.8 and 6.9 from a recursive estimation of the model imply structural stability in the coefficients over the sample period, since the graphs of CUSUM and CUSUMQ do not lay outside the critical boundaries of the 5 % level of significance.

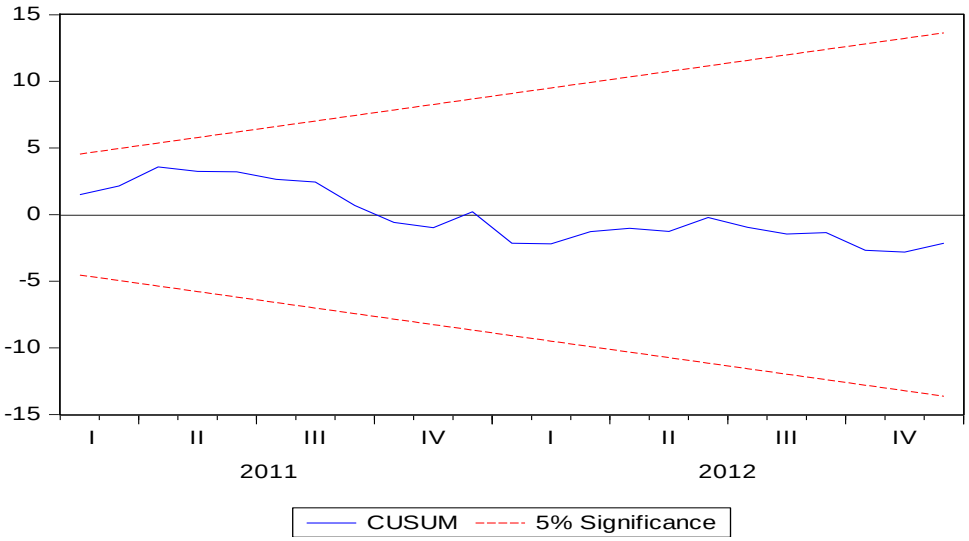


Figure 6.8 Plot of CUSUM for coefficients stability for the VECM model

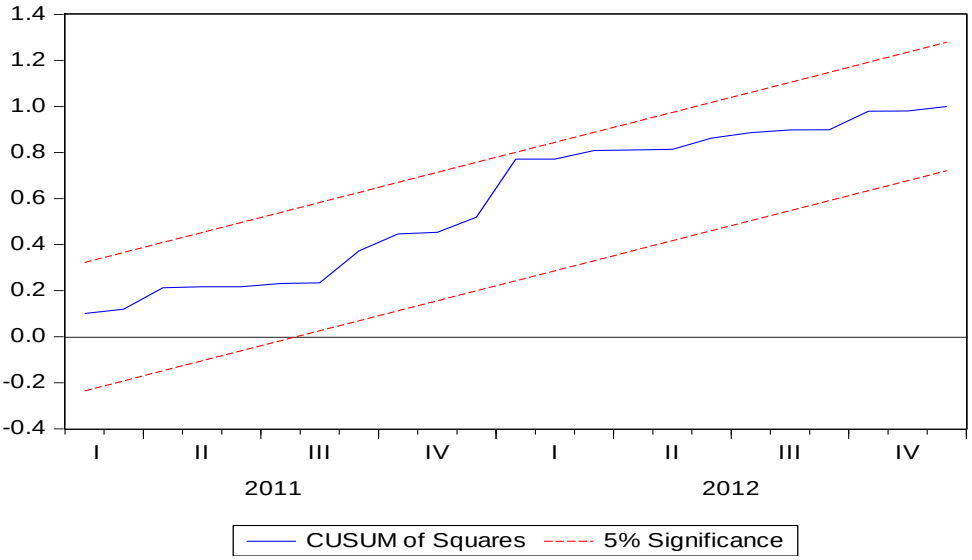


Figure 6.9 Plot of CUSUMQ for coefficients stability for the VECM model

6.4 CONCLUSION

This chapter presented and discussed the results on the relationship between the micro, macroeconomic variables, and the NAV of the Islamic equity UTFs in Malaysia. The first part of this chapter focused on the preliminary tests of the data used in this research analysis such as graphical analysis, descriptive analysis, and

correlation matrix, which displayed that most of the time series data under the research were trended and non-stationary in the level, *I*(0). The second part of this chapter examined the long-run relationship between the selected microeconomic variables and the NAV of Islamic equity UTFs using the bound test and the ARDL model. Overall results showed that microeconomic variables, which are DIV, HP, LFZ and LHF, have significant long-run relationship with the NAV of the Islamic equity UTFs in Malaysia.

The third part of this chapter investigated the long and short-run relationships between the selected macroeconomic variables and the NAV of Islamic equity UTFs in Malaysia using the VAR model, VECM model, and Granger Causality tests. The cointegration findings provided evidence that a long-run relationship was established between the LIPI, LM3, LFER, LOP, LCI and the NAV of the Islamic equity UTFs in Malaysia. Further, the VECM and Granager causality tests results confirmed that the LIPI, LOP, NPE and FC do influence the NAV of the Islamic equity UTFs in Malaysian capital market for short-run. Overall, the results of the tests have been meticulously analysed and support that the micro and macroeconomic variables have the ability to illustrate the behaviour of the NAV of the Islamic equity UTFs on the Malaysian capital market. The main findings of the long and short-run relationships between NAV of Islamic equity UTFs and micro and macroeconomic variables are summarised in Table 6.22.

Table 6.22 A summary of the Long-Run and Short-Run Relationship between the Micro and Macroeconomic and Variables NAV of Islamic equity UTFs

Microeconomic Variables	Long-Run Relationship	Directions of the Relationship	Sig-Level
Dividends	Cointegrated	Negative	5%
Fund Historical Performance	Cointegrated	Positive	5%
Fund Size	Cointegrated	Positive	5%
Hedge Fund	Cointegrated	Positive	5%
Macroeconomic Variables	**Long-Run Relationship**	**Direction of the Relationship**	
Industrial Price Index	Cointegrated	Positive	5%
Money Supply	Cointegrated	Negative	5%
Foreign Exchange Rate	Cointegrated	Negative	5%
Crude Oil Price	Cointegrated	Negative	5%
Corruption Index	Cointegrated	Positive	5%
Macroeconomic Variables	**Short-Run Relationship**	**Direction of the Relationship**	
Industrial Price Index	Unidirectional causal effect	IPI Granger-causes NAV	1%
Three-month treasury bill rate	Unidirectional causal effect	NAV Granger-causes TBR	1%
Money Supply	Unidirectional causal effect	NAV Granger-causes M3	5%
Crude Oil Price	Bidirectional causal effect	OP Granger-causes NAV NAV Granger-causes OP	5%
National Political Elections	Unidirectional causal effect	NPE Granger-causes NAV	10%
The 2007/2008 Global Financial Crisis	Unidirectional causal effect	FC Granger-causes NAV	5%

CHAPTER SEVEN

DISCUSSION AND CONCLUSION

7.0 INTRODUCTION

The research was conducted with the primary aim of determining various variables from both the micro and macroeconomic variables influencing the NAV of the Islamic equity UTFs in the Malaysian capital market. This chapter, therefore, summarises and discusses the major findings of the research to highlight the major implications of funds NAV modelling, particularly to investors, fund's managers, and policy-makers in the UTFs industry. Subsequently, it offers the relevant policy suggestions to be adopted or adapted in an effort to help develop the future viability of the Islamic unit trust industry in Malaysia. Finally, the limitations of the research and the recommendations for further research in this field are deliberated.

7.1 DISCUSSION OF THE MAJOR FINDINGS AND CONCLUSION

The Islamic unit trust industry in Malaysia has experienced rapid growth in the past few decades and currently continues to grow at a fast pace. This rapid growth refers to the uniqueness of the Islamic unit trust investment which provides several advantages as well as the ability of diversification of asset investments. The increasing importance of the Islamic unit trust industry requires a more detailed and efficient analysis on the various aspects of the industry in a more comprehensive mode. The purpose of this research, therefore, was to investigate the dominant determinants of the NAV of the Islamic UTFs in the Malaysian capital market. In particular, this research investigated the role of the micro and the macroeconomic

variables as well as the 2007-2008 Global Financial Crises in influencing the NAV of the Islamic equity UTFs in the Malaysian capital market. The research analysis covers the period from January 2006 to December 2012 using monthly closing prices of the 30 Islamic equity trust funds listed in Bursa Malaysia.

In micro level analysis, the research identified the variables that captured the impact of the capital market, human capital (management experiences), and the variables that guided the investors' decisions to invest in the unit trust industry based on their risk and returns preference parameters. The selected microeconomic variable DIV, HP, S, LFZ, LMEX and LHF were fully scrutinised using the Autoregressive Distributed Lags (ARDL) model and relevant tests such as unit root tests.

The Augmented Dicky-Fuller (ADF) and Philip Peron (PP) of unit root tests confirmed that the variables employed in the micro model were not integrated of order two, namely $I(2)$ as required in the ARDL model framework. The underlying regressors of the unit root tests showed the variables DIV, S and HP were integrated in level, $I(0)$, while variables, namely, LFZ, LMEX and LHF were integrated in order one, $I(1)$. This mutually cointegrated process also adopted the ARDL model in the analysis as it was applicable irrespective of whether the underlying regressors were purely $I(0)$, purely $I(1)$ or mutually cointegrated.

The ARDL procedure involved lag determination, bound tests, and the estimation of the long relationship as well as the associated error correction of the model. The optimal lag length found with free serial correlation was under lag order two (p=2). The bound test findings indicated that the NAV of the Islamic equity UTFs and the selected microeconomic variables are cointegrated in the long run in the Malaysian capital market. In particular, DIV, HP, LFZ and LHF all share significant long-run relationship with the NAV of Islamic equity UTFs, but the S and LMEX do

not. This result was in line with the relevant theories that are discussed in chapter 4, specifically to the MPT, APT and DDM as the selected microeconomic variables have the ability to explain the behaviours of NAV of Islamic equity UTFs.

The estimation on coefficients of the long-run relationship was performed in which the DIV had a statistical negative effect on the NAV of the Islamic equity UTFs. The HP showed a positive statistically significant effect on the NAV of the Islamic equity UTFs in the long run. This result was evidence of the existence of the funds' persistent performance in the Malaysian capital market, which can be useful in predicting the future performance of the funds. Thus, informative data on the funds' past performance should be taken into account by the potential investors when making their decisions to invest in the unit trust industry.

This finding agrees with the argument advocated by Berk and Green (2004) that the investors closely followed past performances in the top performing funds until adverse performances eroded their returns, which then forced them to seek better performing funds available. Likewise, investors would quickly sell their poor performing funds, thus, causing UTFs to shrink in size, which incidentally could improve their performance because smaller funds performed better in the presence of decreasing returns to scale. As a result, the reaction returned to past favourable performance which eliminated the persistence in both the favourable and poor performances. Therefore, HP is one of the most important factors capable of influencing the investors' choice among different funds. Past performance, whether good or bad can be a strategic guide to forecast a reasonable trend of market direction if one cares to compare and compute the characteristic indicative market cues.

Moreover, LFZ was found to positively influence the NAV of the Islamic equity UTFs. This funding emphasised the importance of capital resources in

improving the market returns. The large size portfolio provides the fund's manager with a high opportunity of diversification that may benefit through spreading the risks over a wider variety of securities in different stock sectors, which in turn leads to enhance the fund performance and its NAV (Benishy, 1961). In addition, the LHF was found to be positively associated with funds' unit prices of Islamic equity UTFs in Malaysia. Thus, if strategically employed by the fund managers, it can produce a favourable statistical effect on the NAV of the Islamic equity UTFs since it has a strong positive effect.

Finally, the S and the LMEX were found to have a negative but statistically insignificant effect on the NAV of the Islamic equity UTFs. This was an indication that the unsystematic risks or unique risks that were related to the funds were eliminated through the appropriate diversification process. The negative effect of the LMEX was also an indication that fund managers performed poorly in security analyses and their skills did not add value to the funds' NAV. However, they performed fairly well in risk-adjusted returns and typically maintained well-diversified portfolios. The summary of the long-run relationships between the selected microeconomic variables and the NAV of Islamic equity UTFs are summarised in Table 7.1.

Table 7.1 Summary of the Long-run Relationship between NAV and Selected Microeconomic Variables

Research Question Number	Hypothesis	Model	Empirical Test Results
i. Do the chosen microeconomic variables share significant long-run equilibrium relationships with the NAV of Islamic equity UTFs in Malaysia?	H_a: Selected microeconomic variables share significant long-run equilibrium relationship with the NAV of the Islamic UTFs in Malaysia.	Bounds Test and ARDL Model	Supported: i. Fund Dividends ii. Fund Historical Performance iii. Fund Size iv. Hedge Funds Not Supported: i. Funds Management Experiences ii. Funds Risk

Variables	Prior-assumption	Empirical Test Results
Fund Dividends	+	- (Significant)
Fund Historical Performance	+	+ (Significant)
Fund Risk	+	- (Non-significant)
Fund Size	+	+ (Significant)
Fund Management Experience	+	- (Non-Significant)
Hedge Funds	+	+ (Significant)

In the macro level analysis, the research intended to investigate the effects of the macroeconomic variables LCPI, LIPI, LTBR, LM3, LFER, LOP, NPE and LCI, as well as the 2007/2008 Global Financial Crisis on the NAV of the Islamic equity UTFs in the Malaysian capital market during the same period of January 2006 to December 2012. In particular, the research examined the long-run equilibrium relationship between the selected macroeconomic variables and the NAV of Islamic equity UTFs through the application of Vectors Autoregression (VAR) framework (Johanden-Juselius (JJ) cointegration tests), and the Vector Error Correction Model (VECM) model.

The overall results of Johanden-Juselius cointegration tests suggested that all the selected macroeconomic variables were found to have a long-run equilibrium

relationship with the NAV of the Islamic equity UTFs in Malaysia with only three exceptions, which were the LTBR, NPE and FC. These results supported the theories adopted in developing this research relationship framework such as CAPM, APT, and DDM. Therefore, this result may provide investors with desirable information about the effect of different economies indices and their trend relationship with the Islamic equity UTFs' NAV, which would enhance their long-term investment decisions in the future.

Specifically, in the long-run analyses, the empirical results depicted that the LIPI had a positive impact on the NAV of the Islamic equity UTFs. Higher economic growth would result in higher expected cash flow and dividends which would also result in increasing the present value of a stock and consequentially the fund's NAV. According to this finding, investors should pay more attention to take advantage of the opportunities for higher returns in the country if the LIPI record higher movements.

In contrast, the LM3, the LFER, and the LOP had negative statistical influences on the NAV of the Islamic funds in the long-run. Thus, an increase in the money supply in the long-run may cause inflationary pressures which may negatively affect the NAV of the Islamic funds. This finding suggests that the Malaysian equity UTFs is not an effective hedge instrument against inflation in the long term. Hence, investors would probably shift their investment from a risky equity market to non-productive investment once the inflation rate starts to grow up. This research therefore recommends that in order to enhance the performance of the unit trust industry, the central bank could avoid the effect of inflation by controlling the money supply.

Moreover, the appreciation of the LFER during the sample period of the study negatively affected the NAV of the equity funds. This is perhaps due to the Malaysian economy which is considered an export dominant country. Hence, the appreciation of the local currency negatively affects the firms' profits by lowering their sales and cash flow. This result agrees with the findings by Ibrahim and Yusoff (2001) who suggested that governments of emerging markets need to be cautious in applying their exchange rate policies since exchange rates in these markets had contrary impacts on the domestic equity markets.

In addition, the LOP was also found to negatively impact the NAV of the Islamic equity UTFs in the long-run relationship. This implies that an increase in the global oil prices result in higher transportation, production, and heating costs which have an adverse effect on companies' earnings. Rising oil prices also increase concerns on economic inflation and shrink the consumers' discretionary spending. As a consequence, the financial risk of investments escalates when there are wide fluctuations in global crude oil prices. These uncertainties can readily influence investors to suspend or delay their investments in the equity market till the oil prices become stable again.

The LTBR was not statistically significant to influence the NAV of the Islamic equity UTFs in the long run. This result was not actually surprising because the Islamic funds' portfolio investment is based on the prohibition of dealings in interest rates. As from the Islamic point of view, dealing in interest is considered *riba*. Hence, this result provides a very strong evidence and confidence for the fund managers to use their portfolios to hold shares in the *Shari'ah* compliant companies that are listed in Bursa Malaysia, which are not significantly influenced by the change of the interest rates in the market. It also indicates that the Islamic equity

UTFs portfolios are not using too much debt as financial instruments such as bonds, T-bills, promissory notes and banker's acceptance that rely on the interest basis to run their business activities. The findings, therefore, provide real evidence that the Muslim investors' investments in the Malaysian equity market are *Sharī`ah*-compliant.

In addition, in the long-run analyses, the empirical findings showed that the LCI had a positive impact on the NAV of the Islamic funds. This is perhaps due to the fact that in a corrupt environment, investment risks are usually increased and the chance of loss can be happened any time. However, investors perceive that the exposure to the negative effect of corruption on the value of the Islamic UTFs might be lower due to the *Sharī`ah* compliance status of the Islamic equity UTFs. In particular, Islamic equity UTFs operate their business according to the *Sharī`ah* principles that prohibit corruption and this help Islamic funds to establish a stable and reliable environment with less riskier investments. According to this finding, investors should pay more attention to take advantage of the positive relationship between LCI and funds' NAV and invest in the Islamic equity UTFs when the environment of corruption level increased in the equity market to protect their portfolios investment and its potential return from any corrupt act.

Moreover, the existence of co-integration or a long-run positive relationship between NAV of the Islamic equity UTFs and corruption index suggests that Islamic equity fund is more stable in a highly corrupt environment and investors could consider it an alternative or a substitute for directly investing in the conventional court-party since the Islamic funds strictly prohibit corruption based on their *Shari'ah* guidelines.

To sum up, the research assumption of the relationship and the empirical results of the long-run relationship between chosen macroeconomic variables and NAV of Islamic equity UTFs are summarised in Table 7.2.

Table 7.2 Summary of the Long-run Relationship between NAV and Selected Macroeconomic Variables

Research Question	Hypothesis	Model	Empirical Test Results
ii. Do the chosen macroeconomic variables share long-run equilibrium relationships with the NAV of Islamic equity UTFs in Malaysia?	H_b: Selected macroeconomic variables share significant long-run equilibrium relationship with the NAV of the Islamic UTFs in Malaysia.	Johansen-Juselius Cointegration Tests (VAR-framework)	Supported: i. Industrial production index ii. Money supply iii. Foreign exchange rate iv. Crude oil price v. Corruption index Not- Supported: vi. Three-month treasury bill rate vii. National political election viii. 2007/2008 Global Financial crisis

Variables	Prior- assumption	Empirical Test Results
Industrial Production Index	+	+ (Significant)
Three-months Treasury Bill Rate	_	+ (Non-Significant)
Money Supply (M3)	_	_ (Significant)
Foreign exchange rate	+	_ (Significant)
Crude Oil Price	+	_ (Significant)
Corruption index	_	+ (Significant)
National political election	_	+ (Non-Significant)
Financial crisis	+	+ (Non-Significant)

In the short-run analyses, the research investigated the causal relationship between the selected macroeconomic variables with NAV of Islamic equity UTFs by using VECM causality test and Granger causality (1969) test. The VECM causality approach was used to detect causal relationships among the cointegrated

variables, which are LIPI, LTBR, LM3, LFER, LOP and NAV, while the Granger causality (1969) test was used to detect causal relationships between the LCI, NPE, FC and the NAV, since these three variables were out of the system.

The VECM findings showed a significant long-run causal effect between the macroeconomic variables and the NAV of Islamic equity UTFs. This was represented by the VEC term, where the NAV of the Islamic funds converged to its equilibrium by quickly adjusting to about 42% each month. In particular, the results of the causality tests were mixed. The VECM causality indicated significant unidirectional short-run causal effects related with the LIPI and the bidirectional relationship with the LOP to the NAV of the Islamic equity UTFs. However, the rest of the macroeconomic variables LTBR, LM3, LFER did not seem to have significant causal effects on the NAV of the Islamic equity UTFs in the short-run.

These causal effects suggest that the Islamic equity UTFs in Malaysia violated the EMH with respect to the LIPI and the LOP. Hence, the NAV of Islamic equity UTFs could be predicted by using the available information on these two variables in the short run. On the other hand, the Islamic equity UTFs industry exposed the evidence on the EMH with the other macroeconomic variables LTBR, the LM3, and the LFER. In other words, investors cannot exercise the available information of these variables to predict the changes of the NAV of the Islamic equity UTFs in Malaysian capital market for short-term investments.

Furthermore, the VECM causality test findings showed that the foreign exchange rate is not caused by changes of the NAV of Islamic equity UTFs or any macroeconomic variable in the economic system. This means that speculators cannot speculate any extra profit by using macroeconomic information to predict the exchange rate fluctuation in the short-term. Therefore, the Malaysian government

must cautiously maintain their implementation of the current exchange rate policies because such policies may offer a chance for the speculators to attack the market and impact the performance of equity and financial sectors in the short-run.

In addition, Pairwise Granger causality findings showed that there was no causal relationship between the NAV of the Islamic equity UTFs and changes in the corruption index in the Malaysian capital market in short-run. This result is an indication that *Shari'ah* rules affect the Islamic equity UTFs and protect them from corruption. It is also an indication that the *Shari'ah* principles practiced by Islamic equity UTFs support the anti-corruption policies of the Malaysian government for eradicating the highly adverse corruption destructive influences in the equity market in the short-run. This could be because that fund managers in Islamic UTFC carefully follow the *Shari'ah* principles that do not permit them for practicing insider trading, use of manipulative and deceptive devices, market manipulations, market rigging, false and misleading statements, fraudulent inducing persons to deal in securities, dissemination of information about illegal transactions, and stock false trading.

Furthermore, the Granger causality test showed that in the short-run the NPE has positively impacted the NAV of the Islamic equity UTFs. This indicates that the Malaysian Islamic equity market is more highly correlated with political uncertainty in the short-run. This is perhaps because during the election period political uncertainty increases, which means market risks increase accordingly (sign of a political risk premium). Consequently, the market equity's price will be more volatile and subsequently more lucrative. The GLCS plays a significant role in supporting the equity market during by invests large funds in some stock sectors

before elections to manipulate the stock market price, which may positively influence the NAV of Islamic equity UTFs.

Thus, based on the findings of the local stability factor (as measured by the CI and NPE), which show positive effect on the NAV of the Islamic equity UTFs in Malaysian unit trust industry in both the short and long-run investment, this implies that local stability factor play significant role and contributed well in establishing the trust and creating a reliable investment environment to develop the Malaysian equity unit trust industry. This results could be a positive signal to either local investors or foreigner investors to invest their funds in Malaysian equity market, which expressions more stability compare to other equity markets in the Asian region or even in other equity markets in different countries that score high corruption levels according to TI's CPI index or the countries that experience high political risk conflicts.

Finally, the Granger causality test found that the 2007/2008 Global Financial Crisis positively influenced the NAV of the Islamic equity which suggests that the Islamic equity UTFs could be used as hedging instruments during an economic slowdown or any economic crisis period. The research questions and prior-assumption of the short-run relationships and their empirical results are briefly summarised in Table 7.3 below.

Table 7. 3 Summary of the Short-Run Relationship between NAV and Selected Macroeconomic variables

Research Question	Hypothesis	Model	Empirical Test Results
iii. Do the chosen macroeconomic variables have causal relationships with NAV of Islamic equity UTFs during the chosen observation period?	H_c: Selected macroeconomic variables have significant causal effect on the NAV of the Islamic UTFs in Malaysia in the short-run investment.	VECM Model Engle and Granger (1987) and Granger (1969) causality test	Supported: i. Industrial production index ii. Crude oil price iii. National political election Not- Supported: iv. Three-month treasury bill rate v. Money supply vi. Foreign exchange rate vii. Corruption index
iv. Does the 2007/2008 Global Financial Crisis have significant impact on the NAV of the Islamic equity UTFs in Malaysia?	H_d: The 2007/2008 Global Financial Crisis has significant causal effect on the NAV of the Islamic UTFs in Malaysia in the short-run investment.	Granger (1969) causality test	Supported: viii. 2007/2008 Global Financial crisis

7.2 IMPLICATION OF THE RESEARCH AND POLICY SUGGESTIONS

The major findings of this research show that the NAV of the Islamic equity unit trust funds are influenced by the micro and macroeconomic variables in the Malaysian capital market. Therefore, the findings of this research facilitates investors, funds' managers, and policy-makers to make effective investment decisions through proactively estimating the variability of the NAV of the Islamic equity UTFs based on changes in the micro and macroeconomic variables.

7.2.1 Investors

On the basis of the findings presented in the previous chapter, the following implications for the investors can be suggested to either enhance their portfolio return or to mitigate their portfolio risks when they make decisions to invest in the Malaysian unit trust industry.

First, as the findings of the research indicated an inverse relationship between the NAV and DIV, one possible implication that could be drawn from the result was that the dividend pay-out was the one main source that could favourably contribute profits from the funds invested to the unit-holders. When a fund manager chooses to distribute his portfolio profits as dividends to his unit-holders, the NAV will then be automatically reduced by the amount of the per unit dividend on the ex-dividend date. This indicates that the dividends pay-out policy has immediate negative effect on the funds NAV, but, the dividend pay-out policy seems to have a positive effect on the fund NAV in the future, since it will be a positive signal to the potential investors, which might then establish the trust and confidence for them to continue investing in the fund that provides suitable dividends.

In addition, in a perfect market, a dividends pay-out does not materially affect the unit-holders' value of investment. However, from the perspective of new investors, the dividend announcement can be inferred as a favourable indicator of future profitability of the funds because investors prefer the present dividend instead of the future capital gains as the future situation is still uncertain even if it is in a perfect capital market.

Therefore, dividend policy should be developed taking into account the aspiration of the unit-holders, which usually prefers a stable dividend pay-out or in other words a certain percentage of dividends to be paid regularly to them, in order to

convince them to continue invest in the specific fund side for long term investment. Thus, based on the findings, it is rationally suggested that new investors are advised to buy the funds units immediately after the dividends pay-out and to hold the units during the financial year to obtain the capital gain and then make decisions to sell their units before any announcement of the income distribution.

Second, from the research analyses it was found that there is a statistically significant positive relationship between the NAV of the Islamic equity UTFs in corresponding with their HP. These findings have aroused much interest not only in the academic literature but also among market participants, since it is in direct conflict with the standard of EMH, which stipulates that future market performances cannot be predicted by using past market performances. However, the research favourably finds that it may be rationally suggested that past UTFs prices could predict future market price movements. Hence, investors are advised to prudently analyse the relative past performance of their funds and to prognostically determine whether a good past performance is a reliable indication of the portfolio's subsequent performance. In addition, the experience and knowledge of past fund performances will help investors immensely in appropriately assessing a likely high performance funds or at least in avoiding a probable below-average performer.

Third, it has also been found that a positive relationship exists between the NAV of the Islamic equity UTFs and the LFZ. In retrospection, these findings point out that as the fund portfolio has a larger size, it may offer the capability of spreading the risks over a wider variety of securities in different stock sectors which can positively lead to improve the funds' performance and its returns. A better comprehension of this principle would naturally be very favourably conducive for potential investors in the unit trust industry to make a market decision whether to buy,

sell or hold their portfolios. Thus, considering the asset size characteristics of the funds, the investors should opt to invest in the equity funds.

Fourth, the findings of strong positive long-run relationship between LHF and NAV of Islamic equity UTFs confirm that in the UTFs investments fund managers can opt to invest their excess liquidity in short term investments in hedge fund industry. Thus, any change in direction in the hedge funds industry's performance will influence the investor's portfolio investments returns. A possible implication can be made from this finding, which is that investors have to consider the movement of the hedge funds index when they decide to buy, sell or even to hold the funds units in their portfolios in order to make rational estimations of their investment returns.

Fifth, the major findings in the macroeconomic variables analysis indicated that NAV of Islamic equity UTFs is cointegrated with macroeconomic variables LIPI, LM3, LFER, LOP and LCI. This suggested direct long-run equilibrium associations with those variables. Thus, local and international investors would be able to enhance their long-term investment decisions since the finding provides them the necessary information on the trends and prospects of different economies indices and their sign effect on the fund's NAV. For example, the findings that refer such global or domestic macroeconomic indicators have significance varying impacts on the NAV of Islamic equity UTFs in a market may prove itself as useful for portfolio diversification strategies as well as for achieving better risk-return trade-offs.

Sixth, Granger causality test showed that 2007/2008 Global Financial Crisis had a positive effect on the NAV of the Islamic equity UTFs. This is due to the fact that the Islamic principles of finance emphasise more on the equity and it is globally acknowledged that lack of adequate equity investment is one of the main causes of the 2007/2008 Global Financial Crisis (Chapra, 2008). Lack of equity investment

invariably leads to excessive lending of high leverage and ultimately the crisis (Chapra, 2008). The availability of the equity investment platforms provide ample opportunities for investors to invest their excess funds whilst at the same time solving the various problems of funds under-utilisation. Greater efforts need to be mobilised to minimise, or at the very least to mitigate, the market inherent constraints associated with tradability, size, and reliability in order to be less reliant on the money market and the trade finance portfolios.

The Islamic unit trust, as far as is financially practicable, should be capitalised on the current growth that the industry is currently experiencing by offering a sustainable long-term risk adjusted investment opportunities to the prospective investors. Based on this finding, the research suggests that the Islamic equity unit trust in an investment portfolio should unreservedly warn the unwary investors to hedge their portfolios or wealth during the economic downturn, specifically, during the economic crisis period.

7.2.2 Fund Managers

As the findings of this research found the NAV of Islamic equity UTFs is significantly influenced by the micro and macroeconomic variables in both the long and short-run analysis, therefore, the results of the research may guide the fund managers to get a better understanding on the funds NAV behaviour and develop strategies to enhance the NAV of Islamic equity UTFs. The following propositions can be suggested for the funds managers' optional strategies in their transactional participation in the Malaysian UTFs industry.

First, in any preliminary corporate finance, dividend policy has put emphasis on the choice of selection between either the payments of earnings to the shareholders

as cash dividends or retaining the profit in the firm for re-investment or as financial buffer against lean financial periods. However, many empirical studies showed that the volatility of the share prices can be significantly mitigated through altering firms' dividend policy by the firms' managers. Similar evidence are established throughout the findings of the research wherein significant relationships between the dividend pay-out and the NAV of the Islamic equity UTFs were found. Hence, the funds unit price volatility can be rationally controlled through the use of a dividends pay-out which has been successfully used to address more issues in the financial market.

For example, through a dividend policy, the funds can attract investors in different tax brackets whilst at the same time the funds can also increase their market value of their unit repurchase prices against the merit of cash dividends. Moreover, this principle of dividends (pay-out) strategy can also be effective to attract the investors who seek short-term return in the form dividend. In other words, attract low income investors who are more dependent on their portfolios' return to finance their current consumption and trading activities. Thus, it is prudent for the fund managers to specifically design and maintain a stable dividend pay-out that can convincingly attract financiers to the capital market, especially, the majority of low income people.

Second, from the empirical results of previous literatures and the current findings of this research, we can see mixed results of the effects of the portfolio size on the funds' performances, which reflected on the funds units' prices. It can be argued that larger funds take advantage of economies of scale through the spreading of higher transactional costs over a larger asset base which in turn can improve and produce better performance. On the other hand, it can also be argued that a large asset base erodes the performance of the funds in terms of costs of trading associated with liquidity or price impact. Some researchers argue that small fund can easily put all its

money in its best strategic market trend plan to produce a better market performance. However, lack of liquidity may force fund to make investment in its less strategic market plan and may take larger positions per stock than is optimal, thereby eroding the stable funds' performance and their unit' prices. Thus, a better option could be made from this finding in that funds managers should monitor their funds size on a regular basis, since there is a maximum funds size after which the fund performance may decline as the funds size increases.

Third, as the findings of the research indicated that fund NAV respond significantly to the movement of the selected macroeconomic variables in short and long run investments, this will invigorate the fund managers to be ready for any expected variability of the NAV of the unit trust due to changes in the macroeconomic policies. In other words, this will help them avoid undesirable effects of such economic policies on the funds' unit prices behaviours by making proactive estimations of such available information of the macroeconomic variables on the fund NAV. It may also help them to strategise accordingly by being able to predict the behaviour of the NAV of the unit trust industry in the near future.

Fourth, the major findings of Granger causality test showed that the 2007/2008 Global Financial Crisis had positive effects on the NAV of the Islamic equity UTFs. Therefore, the ongoing Global Financial Crisis has offered great opportunities for the fund managers to demonstrate some of the inherent principles of the Islamic UTFs that make it less risky instruments and more viable and more robust financially as compared to its conventional counterpart during economic crisis period. In addition, based on the finding fund managers and investors could strategise and diversify their portfolio accordingly during different economic/market conditions. However, investors that seek *Shari'ah* compliant UTFs only may not be able to realise the

benefits of such diversification. Nevertheless, they can mitigate or avoid the impact of adverse economic conditions on their investment.

7.2.3 Policy Makers

This research provides several useful suggestions to the Malaysian financial market policy-makers. First, it is worth noting that the NAV of the Islamic equity UTFs seems to vigorously respond to changes in domestic macroeconomic variables, mainly in monetary policy. In particular, the money supply and NAV were negatively associated in the long-run. The findings also indicate adverse relationships between money supply and foreign exchange rate, as well as there were negative effects from the appreciation of Malaysian Ringgit rate on the fund unit prices. This situation has caused the monetary policy to produce the tendency to be inflationary in the long-run. From a policy point of view, this method of monetary transmission mechanism needs prudent caution and wisdom from the monetary authorities in Malaysia when designing and implementing the monetary policies, especially if they are used to affect movements in the equity UTFs prices. Hence, the monetary authorities should be wary and cautious in implementing exchange rate and monetary policies as these may have serious repercussions on the Malaysian unit trust industry and the financial market as a whole.

Second, the results of the VECM causality test showed a short-run relationship between NAV of Islamic equity UTFs and set of the macroeconomic variables. This implies that the Islamic equity UTFs in Malaysia has somewhat violated the EMH, where the fund unit price variability could be predicated to some degree in the short-term. Therefore, the research suggests that the macroeconomic variables that have been found to have cause and effect relationships with the NAV of the Islamic unit

trusts in the short-run should be given more attention by the relevant authorities, specificall, the SC of Malaysia, the Federation of Investment Managers Malaysia (FMUTM), and the banking sectors to protect the unit trust industry from an opportunity for speculative investment.

Third, the findings of this research showed that both the micro and macroeconomic variables had a strong relationship with NAV of Islamic equity UTFs. Hence, the SC of Malaysia and the FMUTM in Malaysia can gain enormous advantages to further improve the UTFs industry in Malaysia. These advantages can be transformed into efforts and methods to accelerate the industrial growth of the Malaysian unit trust industry to be in line with the experience of the developed market in terms of market price efficiency and robust regulatory framework of portfolios' diversification strategies.

7.3 LIMITATIONS OF THE RESEARCH

The objective of this research was to establish the micro and macro determinants of the NAV of the Islamic UTFs, nevertheless it is subject to a number of limitations and various insurmountable associated constraints.

Firstly, one of the major limitations of this research is data constraints as the Islamic unit trust industry in Malaysia is considered young compared to the conventional unit trust industry, which was introduced about 55 years ago. The sample size of 30 Islamic equity UTFs was relatively small due to the limited number of Islamic equity UTFs existing throughout the 7-year observation period. The limitation in the number of operating Islamic equity unit trust is because most of them are newly lunched. In addition, some of the funds have insufficient information in their data sources. Perhaps this limitation can be avoided in the future by including more funds

in the analysis with longer historical data which may lead to more sophisticated and conclusive results.

Another limitation that should not be ignored is that the research focuses only on the locally established Malaysian unit trust industry. The results and information provided in this research will be useful only for investors, fund managers, and policy makers in the Malaysia unit trust industry, in which case, the results of this research cannot be generalised for other Muslim countries worldwide. Hence, expanding the scope of this research to include the operations of the Islamic UTFs around the world will provide a tangible and more convincing basis for purposes of comparison and generalization with other countries throughout the trading world.

Thirdly, based on the fact that this research is focused only on the Malaysian equity UTFs, it is still not enough to generalise the results of this research on the Malaysian unit trust industry as a whole. However, its expansion to include other types of the listed Islamic unit trusts in Malaysia such as balance funds, bond funds, and money market funds will go a long way to facilitate generalisation for determining the funds unit prices and the performance of the Islamic unit trusts in Malaysia.

7.4 RECOMMENDATION FOR FUTURE RESEARCH

Looking at the outcomes and the limitation of this research, a number of extensions could be recommended for future research.

Firstly, from the micro point of view, to get a better consensus on the findings within the context of the Islamic Malaysian equity funds, more studies need to be done to find what funds characteristics other than already covered by this research, can have any effect on the portfolio performance and the subsequent funds unit prices.

Future research could be extended to variables such as funds managers' characteristics (i.e. qualification level, age, etc.), management fees and expenses, liquidity and trading costs, as well as the investment strategies of the fund's portfolio structure such as asset allocation.

Secondly, this research found during the data collection period that more relevant information on the UTFs was not publicly available. For example, the fund investments styles, the information on the fund investments styles, nor information on the comprehensive league tables were available to allow for comparison purposes of the UTFs in the market. As factually discovered, it is still considered quite vague and can be surreptitiously manipulated because there seems to be no clear indications as to how or on what rational basis these investors make their decisions to invest in such funds. Also, it is not clear whether these decisions are smart in the sense of providing greater returns in the subsequent periods in the unit trust industry. Thus, further research can be devoted to examine the behaviour of unit trust investors in making their forecasted decisions to choose their favourite funds.

Thirdly, even though it is beyond the scope of this research, investors in the emerging markets such as the Malaysian equity market, may have to look beyond the domestic economic environmental horizon to determine their full risk exposures. Therefore, possible impacts from external factors on the Malaysian equity market remain to be a subject of further research. For example, the effects from world events, bilateral trade, and cross country factors reveal how explosive world events can create economic shocks which are transmitted from countries of large economies to other emerging countries. In addition, future research should, in all fairness, include international equity funds for purposes of comparing between the results of the domestic and the international funds so as to facilitate investors to make effective

investment decision on choosing whether to invest in the Malaysian capital market or other more favourable and stable financial markets elsewhere.

Fourthly, another possible extension of the macro level analysis is to consider the impact of other information from the public sectors such as the government spending and tax policy as well as the GDP instead of IPI which, unfortunately, are not included in the analysis because the data for these variables are not currently available on a monthly basis. However, by using some econometric techniques (transformation of wave from simple frequency conversion), it is possible to obtain useful data from these variables based on the monthly basis. The inclusion of these variables would be a significant addition to account for the impact from the effect of the public sector and the real activity on the unit trust industry.

Finally, it is also significant to state that the future success of the Islamic UTFs industry in Malaysia not only depends on the determinants of the NAV of UTFs characteristics but also on other several related considerations which should be seriously taken into account for further research in this field such as funds performances under a given situation, market risks under a given economic stress, funds marketing strategic, funds distribution channels, funds transactional transparency, funds management skills (timing and selectivity), and funds management costs. All these areas require additional research in order to develop the Islamic unit trust industry to become a potential successful instrument for portfolio investment.

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APPENDIX I: LIST OF MALAYSIAN APPROVED ISLAMIC EQUITY UTFS (AS AT 31 DECEMBER 2012)

No	Management Company	Fund Name	Launch Date	Approved Fund Size (million)
1	Affin Fund Management Bhd	Affin Islamic Equity Fund	1/8/2007	600
2	Alliance Investment Management Bhd	Alliance Dana Adib	25/03/2004	400
3	Amanah Mutual Bhd	AMB Dana Yakin	24/11/2000	1,200
4	Amanah Saham Kedah Bhd	Amanah Saham Kedah	27/02/1995	200
5	Amanahraya Investment Management Sdn Bhd	AmanahRaya Islamic Equity Fund	1/3/2007	400
6	AmInvestment Services Bhd	AmIslamic Growth	10/9/2004	1,000
		Am-Mateen Asia-Pacific Equity	5/5/2011	200
		AmIslamic Greater China	1/11/2010	100
		AmIttikal	12/1/1993	1,000
		Am-Namaa' Asia-Pacific Equity Growth	11/8/2008	200
		AmDividend Growth	25/04/2012	100
		AmASEAN Equity	1/6/2011	200
7	Apex Investment Services Bhd	Apex Dana Al-Sofi-I	28/08/2003	675
8	ASM Investment Services Bhd	Dana Bestari	17/07/1975	250
		ASM Dana Mutiara	2/2/1970	100
		Dana Al Aiman	9/4/1968	350
		ASM Syariah Aggressive Fund	5/5/1972	20
		ASM Syariah Dividend Fund	21/07/2008	500
9	BIMB Investment Management Bhd	ASBI Dana Al-Falah	27/12/2001	400
		BIMB i Dividend Fund	18/03/2011	1,000
		BIMB i Growth	30/06/1994	302
10	CIMB-Principal Asset Management Bhd	CIMB Islamic DALI Equity Growth Fund	7/5/1998	2,100
		CIMB Islamic Equity Fund	8/10/2004	700
		CIMB Islamic Kausar Lifecycle 2022	12/7/2007	200
		CIMB Islamic Kausar Lifecycle 2027	12/7/2007	200
		CIMB Islamic DALI Equity Theme Fund	19/02/2008	2,200
		CIMB Islamic Greater China Equity Fund	2/6/2009	600
		CIMB Islamic Equity Aggresive Fund	15/06/1995	300
		CIMB Islamic Global Equity Fund	8/1/2008	300
		CIMB Islamic Asia Pacific Equity	2/6/2006	400

		Fund		
		CIMB Islamic Small Cap Fund	30/04/2003	500
		CIMB Islamic Kausar Lifecycle 2017	12/7/2007	200
		CIMB Islamic DALI Equity Fund	30/04/2003	500
		CIMB Islamic Global Emerging Markets Equity Fund	2/7/2008	300
		CIMB Islamic Global Commodities Equity Fund	6/1/2010	600
11	Hong Leong Asset Management Bhd	Hong Leong Dana Makmur	19/11/2001	500
12	HwangDBS Investment Management Bhd	Hwang Aiiman Growth Fund	8/10/2002	300
13	ING Funds Bhd	ING Ekuiti Islam	23/04/2004	300
		ING *Sharī`ah* Growth Opportunities	23/04/2004	300
14	Inter-Pacific Asset Management Sdn Bhd	InterPac Dana Safi	25/07/2007	400
15	Kenanga Investors Bhd	Kenanga Islamic Fund	15/08/2002	500
		Kenanga Syariah Growth Fund	29/01/2002	200
16	Libra Invest Bhd	Libra Amanah Saham Wanita	5/5/1998	450
		Libra SyariahExtra Fund	12/3/1996	250
17	MAAKL Mutual Bhd	MAAKL *Sharī`ah* Asia-Pacific Fund	16/01/2008	600
		MAAKL-HDBS *Sharī`ah* Progress	20/04/2011	600
		MAAKL Al-Faid	8/7/2003	300
		MAAKL Al-Fauzan	6/9/2005	1,000
		MAAKL Syariah Index Fund	23/01/2002	300
18	MIDF Amanah Asset Management Bhd	MIDF Amanah Islamic Fund	14/05/1971	500
		MIDF Amanah Asia Pacific Islamic Equity Fund	28/06/2011	200
19	OSK-UOB Islamic Fund Management Bhd	OSK-UOB Global Food Islamic Equity Fund	11/8/2011	400
20	OSK-UOB Unit Trust Management Bhd	OSK-UOB Dana Islam	26/10/2001	100
21	Pacific Mutual Fund Bhd	Pacific Dana Dividen	26/07/2007	300
		Pacific ELIT Dana Dividen	5/2/2010	200
22	Permodalan BSN Bhd	BSN Dana Al-Jadid	18/06/2008	800
23	Pheim Unit Trusts Bhd	Pheim Asia Ex-Japan Islamic Fund	1/11/2006	200
24	Prudential Fund Management Bhd	Eastspring Investments Dinasti Equity Fund	26/10/2009	100
		Eastspring Investments Asia Pacific *Sharī`ah* Equity Fund	22/11/2007	1,200
		Eastspring Investments Dana Al-Ilham	14/08/2002	200
		Eastspring Investments Dana Dinamik	25/02/2004	700

		Eastspring Investments *Sharī`ah* Oppurtunities Asia Pacific Equity Fund	20/12/2010	100
25	PTB Unit Trust Bhd	Amanah Saham Darul Iman	31/10/1994	500
26	Public Mutual Bhd	PB Islamic Asia Equity Fund	8/1/2007	2,000
		Public Ittikal Fund	10/4/1997	5,000
		PB Islamic Asia Strategic Sector Fund	6/9/2007	1,500
		Public China Ittikal Fund	20/11/2007	7,500
		Public Islamic Select Treasures Fund	26/02/2008	5,000
		Public Islamic Savings Fund	15/12/2011	1,500
		Public Islamic Equity Fund	28/05/2003	6,000
		Public Islamic Asia Dividend Fund	3/4/2007	6,500
		Public Islamic Select Enterprises Fund	14/08/2008	3,375
		Public Islamic Asia Leaders Equity Fund	19/01/2010	1,500
		Public Islamic Alpha-40 Growth Fund	16/11/2010	1,500
		Public Islamic Treasures Growth Fund	19/07/2011	1,500
		Public Islamic Opportunities Fund	28/06/2005	1,500
		Public Ittikal Sequel Fund	11/10/2011	1,500
		Public Asia Ittikal Fund	22/08/2006	5,000
		PB Islamic Equity Fund	5/9/2005	2,000
		Public Islamic Dividend Fund	14/02/2006	9,000
		Public Islamic Sector Select Fund	13/11/2007	4,375
		Public Islamic Optimal Growth Fund	8/4/2008	5,000
27	RHB Investment Management Sdn Bhd	RHB Islamic Growth Fund	26/01/2004	500
		RHB Asia Pacific Maqasid Fund	23/02/2010	200
28	TA Investment Management Bhd	TA BRIC and Emerging Markets Fund	25/02/2010	400
		TA Dana Fokus	17/06/2008	150
		TA Islamic Fund	24/04/2001	600

APPENDIX II: SAMPLE SIZE OF ISLAMIC EQUITY UTFS INDUSTRY LISTED IN BURSA MALAYSIA

No	Management Company	Fund Name	Launch Date	Approved Fund Size (million)
1	Amanah Mutual Bhd	AMB Dana Yakin	24/11/2000	1,200
2	Alliance Investment Management Bhd	Alliance Dana Adib	25/03/2004	400
3	AmInvestment Services Bhd	AmIttikal	12/1/1993	1,000
4	AmInvestment Services Bhd	AmIslamic Growth	10/9/2004	1,000
5	Apex Investment Services Bhd	Apex Dana Al-Sofi-I	28/08/2003	675
6	BIMB Investment Management Bhd	ASBI Dana Al-Falah	27/12/2001	400
		BIMB i Growth	30/06/1994	302
7	CIMB-Principal Asset Management Bhd	CIMB Islamic DALI Equity Growth Fund	7/5/1998	2,100
		CIMB Islamic Equity Aggresive Fund	15/06/1995	300
		CIMB Islamic Small Cap Fund	30/04/2003	500
		CIMB Islamic DALI Equity Fund	30/04/2003	500
		CIMB Islamic Equity Fund	8/10/2004	700
8	HwangDBS Investment Management Bhd	Hwang Aiiman Growth Fund	8/10/2002	300
9	Kenanga Investors Bhd	Kenanga Islamic Fund	15/08/2002	500
		Kenanga Syariah Growth Fund	29/01/2002	200
10	Libra Invest Bhd	Libra Amanah Saham Wanita	5/5/1998	450
		Libra SyariahExtra Fund	12/3/1996	250
11	MAAKL Mutual Bhd	MAAKL Al-Faid	8/7/2003	300
		MAAKL Syariah Index Fund	23/01/2002	300
		MAAKL Al-Fauzan	6/9/2005	1,000
12	OSK-UOB Unit Trust Management Bhd	OSK-UOB Dana Islam	26/10/2001	100
13	Prudential Fund Management Bhd	Eastspring Investments Dana Al-Ilham	14/08/2002	200
		Eastspring Investments Dana Dinamik	25/02/2004	700
14	Public Mutual	Public Ittikal Fund	10/4/1997	5,000

	Bhd	Public Islamic Equity Fund	28/05/2003	6,000
		Public Islamic Opportunities Fund	28/06/2005	1,500
		PB Islamic Equity Fund	5/9/2005	2,000
		Public Islamic Dividend Fund	14/02/2006	9,000
15	RHB Investment Management Sdn Bhd	RHB Islamic Growth Fund	26/1/2004	500
16	TA Investment Management Bhd	TA Islamic Fund	24/04/2001	600

APPENDIX III: SUMMARY STATISTICS OF UNIT TRUST INDUSTRY DURING THE PERIOD OF DEC-2006 TO DEC-2012

	No. of Management Companies	No. of Approved Funds*			No. of Launched Funds			Units in Circulation (billion units			No. of Accounts			Total Net Asset Value (NAV) of Funds (RM billion)			% of NAV to Bursa Malaysia Market Capitalization
		Total	Conventional	Islamic-based	Total	Conventional	Islamic-based	Total	Conventional	Islamic-based	Total	Conventional	Islamic-based	Total	Conventional	Islamic-based	
Dec 06	38	411	314	97	387	295	92	153.719	135.245	18.474	11,163,833	10,398,395	765,438	121.410	112.309	9.101	14.31
Dec 07	39	506	378	128	484	360	124	206.835	170.563	36.272	12,274,573	11,024,209	1,250,364	168.029	151.244	16.785	15.19
Dec 08	39	550	409	141	532	392	140	236.392	187.535	48.857	13,046,973	11,411,337	1,635,636	130.436	114.318	16.118	19.65
Dec 09	39	565	415	150	541	397	144	273.879	217.031	56.848	14,104,713	12,327,880	1,776,833	191.706	169.626	22.080	19.18
Dec 10	39	584	429	155	564	412	152	289.366	233.158	56.208	14,625,057	12,820,679	1,804,378	226.812	202.768	24.044	17.79
Dec 11	40	604	437	167	587	423	164	316.411	255.199	61.212	15,433,356	13,455,437	1,977,919	249.459	221.599	27.860	19.42
Dec 12	40	607	434	173	589	420	169	351.578	281.713	69.865	16,109,555	13,997,415	2,112,140	294.851	259.490	35.361	20.12

* Includes fund approved but not yet launched

Not including unit-holders account at IUTA that operates nominee account system

Sources: Securities Commission Malaysia

APPENDIX IV: BOUNDS TEST FOR CASE II): RESTRICTED INTERCEPT AND NOT TREND (*F*-STATISTIC VALUE)

```
                     Variable Addition Test (OLS case)
*****************************************************************************
 Dependent variable is DNAV
 List of the variables added to the regression:
 NAV(-1)          DIV(-1)          HP(-1)           S(-1)            FZ(-1)
 MEX(-1)          HF(-1)
 81 observations used for estimation from 2006M4  to 2012M12
*****************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob]
 INPT                       .21026            .11742             1.7907[.078]
 DNAV(-1)                  -1.0804            .31615            -3.4174[.001]
 DNAV(-2)                  -.16887            .33634            -.50207[.617]
 DDIV(-1)                   1.5156            .59841             2.5327[.014]
 DDIV(-2)                   .66784            .37570             1.7776[.081]
 DHP(-1)                 -.0040434          .0026550            -1.5229[.133]
 DHP(-2)                 -.0021095          .8888E-3            -2.3733[.021]
 DS(-1)                    -.85790            .83743            -1.0244[.310]
 DS(-2)                   -.035433            .59402           -.059649[.953]
 DLFZ(-1)                 -.071574           .089312            -.80139[.426]
 DLFZ(-2)                  -.18157           .096903            -1.8737[.066]
 DLMEX(-1)                 -1.9972            .63468            -3.1468[.003]
 DLMEX(-2)                -.074981            .65893            -.11379[.910]
 DLHF(-1)                  .073880            .24400             .30279[.763]
 DLHF(-2)                  -.28615            .24846            -1.1517[.254]
 NAV(-1)                  -.012420            .12918           -.096143[.924]
 DIV(-1)                   -2.0843            .82071            -2.5396[.014]
 HP(-1)                    .011189          .0039113             2.8607[.006]
 S(-1)                     -1.6401            1.0349            -1.5848[.118]
 FZ(-1)                   .1837E-4          .2195E-4             .83703[.406]
 MEX(-1)                 -.6343E-3          .3550E-3            -1.7867[.079]
 HF(-1)                  -.4216E-4          .1203E-3            -.35046[.727]
*****************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables:
 Lagrange Multiplier Statistic     CHSQ(7)=  24.2291[.001]
 Likelihood Ratio Statistic        CHSQ(7)=  28.7894[.000]
 F Statistic                   F( 7,  59)=   3.5972[.003]
*****************************************************************************
```

APPENDIX V: BOUNDS TEST FOR CASE III): RESTRICTED INTERCEPT AND TIME TREND (*F*-STATISTIC VALUE)

```
                    Variable Addition Test (OLS case)
*****************************************************************************
 Dependent variable is DNAV
 List of the variables added to the regression:
 NAV(-1)          DIV(-1)          HP(-1)           S(-1)            FZ(-1)
 MEX(-1)          HF(-1)
 81 observations used for estimation from 2006M4  to 2012M12
*****************************************************************************
 Regressor              Coefficient       Standard Error         T-Ratio[Prob]
 INPT                     .0012084            .27986           .0043179[.997]
 DNAV(-1)                 -1.1104             .31910            -3.4797[.001]
 DNAV(-2)                 -.17876             .33748            -.52971[.598]
 DDIV(-1)                  1.5559             .60204             2.5843[.012]
 DDIV(-2)                  .69705             .37839             1.8421[.071]
 DHP(-1)                -.0038358          .0026742            -1.4344[.157]
 DHP(-2)                -.0020099          .8994E-3            -2.2346[.029]
 DS(-1)                   -.96960            .85061            -1.1399[.259]
 DS(-2)                   -.17693            .61994            -.28539[.776]
 DLFZ(-1)                -.078151            .089912           -.86919[.388]
 DLFZ(-2)                 -.18489            .097252           -1.9012[.062]
 DLMEX(-1)                -2.1831            .67528            -3.2329[.002]
 DLMEX(-2)                -.28642            .70888            -.40405[.688]
 DLHF(-1)                 .089733            .24543             .36562[.716]
 DLHF(-2)                 -.24659            .25373            -.97185[.335]
 NAV(-1)                  .018639            .13491             .13816[.891]
 DIV(-1)                  -2.1469            .82646            -2.5977[.012]
 HP(-1)                   .010911           .0039365            2.7718[.007]
 S(-1)                    -1.5635             1.0419           -1.5005[.139]
 FZ(-1)                  .3020E-4           .2628E-4            1.1491[.255]
 MEX(-1)                 .6032E-3           .0015444            .39056[.698]
 HF(-1)                 -.7532E-4           .1272E-3            -.59220[.556]
 T                      -.0014272           .0017333            -.82341[.414]
*****************************************************************************
 Joint test of zero restrictions on the coefficients of additional variables:
 Lagrange Multiplier Statistic     CHSQ( 7)=  24.8537[.001]
 Likelihood Ratio Statistic        CHSQ( 7)=  29.6856[.000]
 F Statistic                    F(  7,  58)=   3.6678[.002]
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APPENDIX VI: NUMBER OF CO-INTEGRATION IN THE VAR SYSTEM FOR THE MACROECONOMIC MODELS

Error Correction:	D(NAV)	D(LLIPI)	D(LLTBR)	D(LLM3)	D(LLFER)	D(LLOP)
CointEq1	-0.970539	0.862275	0.192854	-0.022512	-0.088949	0.841778
	(0.27062)	(0.43521)	(0.32183)	(0.11237)	(0.21364)	(0.59928)
	[-3.58631]	[1.98129]	[0.59924]	[-0.20034]	[-0.41634]	[1.40466]
CointEq2	1.181490	-2.251599	-0.223690	0.301939	-1.091909	6.216049
	(0.73592)	(1.18348)	(0.87516)	(0.30557)	(0.58097)	(1.62963)
	[1.60547]	[-1.90252]	[-0.25560]	[0.98813]	[-1.87945]	[3.81439]
CointEq3	0.125293	-0.006930	-0.006979	0.018450	0.202605	-0.711551
	(0.11233)	(0.18064)	(0.13358)	(0.04664)	(0.08868)	(0.24874)
	[1.11541]	[-0.03836]	[-0.05225]	[0.39558]	[2.28471]	[-2.86058]
CointEq4	-0.107686	0.301937	-0.064393	-0.058157	0.148511	-0.782787
	(0.10180)	(0.16372)	(0.12106)	(0.04227)	(0.08037)	(0.22543)
	[-1.05780]	[1.84428]	[-0.53189]	[-1.37583]	[1.84789]	[-3.47237]

APPENDIX VII: PREVIOUS WORKS FOCUSED ON MICRO AND MACROECONOMIC DETERMINANTS OF THE EQUITY PRICE

Effect of Microeconomic Variables on Equity Price

Authors	Study Period	Country	Methods of Analysis	DV	IVs	Results
Irfan And Nishat (2002)	1981 to 2000 using annual balance sheet data.	Pakistan	Cross-sectional least squares regression	Share prices	The dividend yield, pay-out ratio, size of the firm, leverage, earning volatility and asset growth	Factors such as the pay-out ratio, size of the firm, leverage and dividend yields were significantly explained variation in share prices at KSE. While, other factors such as growth in asset and earning volatility found insignificantly influence the share price volatility.
Shubiri (2010)	2005 to 2008	Jordan	Multiple regression analysis	Stock market price	Net asset value per share, dividends, earning per share, lending interest rate, inflation, and GDP	There was positive significant relationship between stock market price and net asset value per share, dividends percentage and GDP. There was negative association with inflation and lending interest rate.
Khan et al. (2011)	Covering the period of 2001 to 2010	Karachi Stock Exchange	The study used panel data by taking the sample of 55 companies listed at KSE market using random effect models of regression.	Stock prices	Dividend Yield and Retention Ratio, earnings per share, profit after tax and return on equity	The results show that dividend yield was positively related to the stock price, while the retention ratio was negatively related. Further, the earnings per share and profit after tax were positively related to stock prices.
Irmala et al. (2011)	2000 to 2009	India	Fully Modified Ordinary Least Squares (FMOLS)	Share price	Dividend, profitability, price-earnings ratio and leverage	Dividend, price-earnings ratio and leverage were significant determinants of the share prices for all the sectors under the study. While, profitability influenced the share prices in the case of auto sector

						only.
Ali (2011)	Using monthly data from July 2002 to December 2009	Bangladesh	Multivariate regression analysis	Stock prices	Market price/earnings and monthly percent average growth of market capitalization	All chosen microeconomic variables have positive relationship with stock price
Özlen and Ergun (2012)	Using quarterly data over the second quarter of 2001 to the last quarter of 2011	Turkey	Ordinary Least Squares Estimation	Stock prices	Total assets turnover ratio, current ratio, debt ratio, price to earnings ratio, net profit margin and book value	Book value was the most significant internal determinant of the stock price in all sectors. While for the other financial ratios, the degree of impact was different in different sectors.
Low (2007)	Using monthly return of 40 Malaysian UTFs for 5-year period, January 1996 to December 2000	Malaysia	Jensen's model to estimate the overall fund performance and Henriksson and Merton's model to estimate the fund manager's investment performance (selectivity and market-timing).			The empirical results found that the fund management companies having foreign parent origins performed better than those having local parent origins. In addition, the results revealed that the Islamic UTFs managed by the non-Muslim managers have better performance than those managed by the Muslim managers.
Swinkels, L., & Rzezniczak, P. (2009).	Investigate the manager's selectivity and market timing skills over the period of 2000-2007 and uses monthly mutual fund returns in Malaysia	Malaysia	The study applied Sharpe Ratio, Treynor and Mazuy (1966) model, and Henriksson and Merton (1981) model.			The analysis included three types of mutual funds namely equity funds, balanced funds, and bond mutual funds. The empirical results revealed that positive performance but insignificant selectivity skills of the mutual fund managers in Malaysian mutual fund industry.
See and Jusoh (2012)	January 2005 to December 2009	Malaysia	Multiple regression models	Fund Returns	Risk, fund size, management experience ratio, turnover ratio, and fund age	The results showed that fund's risk and age are significantly affect the fund's return. However, Fund size and turnover ratio have no impact while management expenses may affect fund performance but not significantly.
Shah et al. (2012)		Pakistan	The study used the Sharpe Ratio, Treynor Ratio, Jenson Alpha, Modigliani and Modigliani, Treynor-Mazuy Timing Model and Fama's Decomposition Measures	Fund performance	risk and return, risk adjusted performance, diversification, and timing	The results indicated that Islamic mutual fund performed better with Sharpe ratio and diversified rate than the conventional funds. Furthermore, the result notes that the Islamic mutual funds have lower risk rate and at the same time giving higher average return than the conventional funds in the market.

Effect of Macroeconomic Factors on Equity Price						
Studies from Developed Market						
Goswami and Jung (1997)	January 1980 to June 1996	Korea	VAR and VECM Model	Stock price	Short-term interest rate, long-term interest rate, money supply, inflation, industrial production, oil price, balance of trade from current account, and foreign exchange rates	The findings of the study revealed that the Korean stock market is Cointergrated with the all macroeconomic variables involve in the model. The study's results also revealed that the forecasting ability of VECM is better than VAR estimating technique.
Dadgostar and Moazzami (2002)	Monthly data from January 1974 to July 2002.	Canada	(VAR) Model and Error Correction Model (ECM)	Toronto Stock Exchange price	Exchange rate, the consumer price index, the industrial production index, the long-term government bond rate, The three month Treasury bill rate and the money supply.	In general, the results showed that major macroeconomic variables and stock price index are related in Canada.
Chaudhuri and Smiles (2004)	Using quarterly data from 1960 to 1998	Australia	Johansen's (1990) methodology, impulse response function (IRFs) analysis and Forecast Error Variance Decomposition (FEVD) analysis	stock price index	the money supply (M3), the gross domestic products (GDP), the global oil price index and the private personal consumption expenditures	The study result provides an evidence of a long-run relationship exists among the variables in the system. Also, the error correction term indicated that price movements in general are related to changes in real macroeconomic indicators along with deviations from the observed long-run relationships. However, the results of IRF and VDC analyses showed weak evidence for the relationship between the Australian real stock price index and all selected macroeconomic variables in the analysis.
Günsel and Çukur (2007)	1980 to1993 using monthly observation	London	Linear regression model of the Arbitrage Price Theory by using the OLS technique	Stock Returns	Inflation, money supply, the exchange rate, the risk premium and industry specific variables such as dividend yield and industrial production	The overall results showed that macroeconomic variables have a significant influence in the UK stock exchange market
Humpe and Macmillan (2007)	January 1965 to June 2005 using monthly data	United States and Japan.	Adopts a co-integration analysis in order to model the long term relationship	Stock prices	Industrial production, the consumer price index, money supply, long term interest rates	The overall results showed that there is significant relationship between stock market macroeconomic variables in both countries

					and	
Patwardhan (2009)	Over the period 1999 to 2008 using monthly data	Australia	ARCH and GARCH models	Stock market price	Consumer price index, GDP, unemployment and retail trade on the	The Australian equity markets respond significantly to information spillovers from the US stock markets. However, the Australian equity market does not respond significantly into the changes in the selected macroeconomic variables news.
Lahrech (2009)	January 1959 to October 2001	Canada & USA	A multivariate cointegration method and vector error correction model (VECM)	Canadian stock prices	Canadian and US macroeconomic fundamentals, namely industrial production, aggregate price level CPI, and real money supply M1	Along run association between Canadian stock price, US stock price and economic fundamentals of both countries
Altın and Sahin (2011)	Using daily data covering the period from 2005 to 2010	(United States, Japan, United Kingdom, Germany and France), (Brazil, Russia, India, China, and Turkey) (Spain, Portugal, and Greece).	Generalized Least Squares (GLS)	Stock market prices indices	Gold, Brent Oil, LIBOR and Euro/Dollar parity	The overall outcome of the study shows wider range of coefficients and signs of macroeconomic variables over stock exchanges in these countries. However, the coefficients and signs of macroeconomic factors are different and dependent on special cases for each country.
Hsing (2011)	First quarter of 2000 to the second quarter of 2010	Hungary	The study applied the GARCH model in empirical work of the analysis.	Hungary's stock market index	Output (GDP), the government debt, the money supply, the real interest rate, the nominal effective exchange rate (NEER), the expected inflation rate, the foreign stock market index, and the foreign interest rate.	The results showed that Hungary's stock market index has a positive relationship with real GDP, the ratio of the government debt to GDP, the nominal effective exchange rate and the German stock market index. However, the Hungary's stock market index has a negative relationship with the expected inflation rate, the real interest rate, and the government bond yield in the euro area, and a quadratic relationship with real M2 money supply.
Sirucek (2012)	1999 to 2012	USA	Standard regressive multidimensional model with the Ordinary Least Squares (OLS)	Stock indices namely S&P 500 and industrial Dow Jones Industrial Average (DJIA)	Inflation, interest rates, money supply, producer price index, industrial production index, oil price and unemployment	The results showed the impact of selected macroeconomic variables on DJIA and S&P 500 appears to be statistically significant.

Study from Developing /Emerging Market						
Maysami et al. (2004)	Used monthly time series data over the period started from January 1989 to December 2001	Singapore	The Engle and Granger's (1987) error correction model	Stock Market Index (STI),	Consumer price index, industrial production, long and short-run interest rates, money supply (M2), and exchange rates.	The overall findings indicated that there was co-integration relationship between the Singapore's stock market, the property index and the changes in the all selected macroeconomic variables.
Dash and Kumar (2008)	Using weekly data over the period October 2006 to June 2008.	India	Modified linear Granger causality test	NAV return/variance of the mutual fund	The exchange rate (USD/INR and EURO/INR), the interest rate, the inflation rate and the global crude oil price	Findings of the study indicates that the return and volatility of the mutual fund was significantly influenced by the macroeconomic variables
Acikalin et al. (2008)	Using quarterly data from last quarter of 1991 to the last quarter of 2006.	Turkish	Cointegration tests, a Vector Error Correction Model (VECM) and causality tests	ISE price	Gross domestic products, exchange rate, interest rate, and current account balance	Stock price index was Cointegrated with the chosen of macroeconomic variables.
Mahmood and Dinniah (2009)	Covering the period from 1993 to December 2002	six Asian-Pacific regions, namely the Malaysia, Thailand, Korea, Hong Kong, Japan, and Australia	Johansen and Juselius maximum likehood method and Engle Granger test	Stock prices	Inflation, industrial production output and exchange rate	The findings indicated that there was a long run equilibrium relationship existing among the variables in only four countries which are Japan, Korea, Hong Kong and Australia
Büyükşalvarcı (2010)	Monthly data January 2003 to March 2010	Turkish	Multiple regression model	Turkish Stock Exchange Market (TSEM)	Consumer price index, money market interest rate, gold price, industrial production index, international crude oil price, foreign exchange rate	Interest rate, industrial production Index, oil price, foreign exchange rate were negatively influence the TSEM return, while the money supply was positively influence the TSEM return. However, an inflation rate and gold price did not show any significant effect on TSEM index returns.
Kuwornu (2011)	January 1992 to December, 2008	Ghana	Full Information Maximum Likelihood Estimation Procedure (FIMLEP)	The stock portfolio returns	Consumer price index, crude oil price, exchange rate and 91day Treasury bill rate	All the selected macroeconomic variables were significantly effect the stock portfolio return in Ghana except the oil price, which showed insignificant effect on the portfolio return.
Rasool et al. (2012)	Monthly time series data for the period January 2001 to December 2010	Pakistan	Johansen Co-integration test, Vector Error Correction Model (VECM) and Granger Causality test	Stock price	Exchange rate, foreign exchange reserves, industrial production index, interest rate, imports, exports, money supply, and wholesale price index	The overall outcomes showed the existence of long-run relationship between the selected macroeconomics variables and stock prices in Pakistan.

Study from the Malaysian Equity Market						
Majid and Yusof (2009)	Dduring the post 1997 financial crisis period until the beginning of 2006.	Malaysia	Autoregressive distributed lag (ARDL) model	Islamic stock market	Money supply (M3), the treasury bill rates, industrial production index, real effective exchange rate and federal reserve rates	Findings of the study indicated that money supply (M3), industrial production index, treasury bill rate, real effective exchange rate and federal reserve rate improve the predictability determine of the Malaysian Islamic stock market return.
Hussin et al. (2012)	As monthly data for period (April 1999 to October 2007)	Malaysia	Vector Auto Regression (VAR) method	Islamic stock market which represented by Kuala Lumpur *Sharī`ah* Index (KLSI)	Industrial production index, consumer production index, aggregate money supply (M3), Islamic interbank rate and exchange rate (RM/USD).	The overall results indicated that Islamic stock prices are cointegrated with the selected macroeconomic variables, where Industrial Production Index (as proxy of economic growth) and Consumer Production Index (as proxy of inflation) have significant positive effect on the Islamic stock prices. While the money supply (M3) and foreign exchange rate variables have significant negative effect on the Islamic stock prices
Hussin et al. (2012	Using monthly data over the period January 2007 - December 2011.	Malaysia	Vector Auto Regression (VAR) method	Islamic stock price	Oil price and exchange rate	The outcomes of the study demonstrated that Islamic stock prices were co-integrated with both variables oil price and exchange rate
Ibrahim and Aziz (2003)	From January 1977 to August 1998.	Malaysia	The cointegration and vector autoregression methods	Equity prices measured by KLCI	Industrial production index, consumer price index, money supply (M2) and the	There was a positive short-run and long-run relationship between the stock prices and the CPI as well as the long-run positive relationship between the stock prices and the industrial production. However, there was a negative relationship between the stock price and the exchange rate.
Fadhil and Azizan (2007	Covering the period from 2002 to 2005	Malaysia	Johansen co-integration test and the error correction model	NAV	Consumer Price Index (CPI), the money supply (M2) and the Interbank rate (IBR) as well as the KLCI	The results showed that the NAV of the UTFs in Malaysia has a long-term relationship with the macroeconomic variables. In particular, the KLCI, the M2 and the CPI have strong positive relationship with the NAV of the unit trust, while the IBR has a weak negative relationship with the NAV of the unit trust.
Thaker et al. (2009)	The study period contain two different periods, during the pre–crisis period (January 1987 to January 1995) and the post–crisis period (January 1999 - January 2007).	Malaysia	Error correction model (ECM), the co-integration test	Stock price	Inflation, the money supply and the nominal effective exchange rate	The findings indicated that there was a co-integration between the stock price and the macroeconomic variables in Malaysia.
Rahman et al. (2009)	Monthly covering the period from January 1986 to March	Malaysia	Time-series regression technique	Price of the KLCI	An industrial production index, a real exchange rate, a money	All the six variables contributed significantly to the co-integrating relationship.

	2008.				supply (M2), reserves (RES) and an interest rate (TB).	
Bekhet and Mugableh (2012)	Using annual time-series data over the period of 1977 to 2011.	Malaysia	Pesaran, Shin, and Smith (PSS) bounds tests Approach	Stock market index	Money supply (M3), Exchange Rate (ER), Gross Domestic Product (GDP), producer price index (PPI) and Consumer Price Index (CPI	The outcomes indicated that all variables were co-integrated with Malaysian stock market index.
Impact of the Global Financial Crisis on Islamic UTFs						
Mansor and Bhatti (2011)	January 1995 to December 1998 and from January 2005 to December 2008.	Malaysia	Sharp Ratio and Treynor Index	Return Performance	Asian financial crisis (1997-1998) and global financial crisis (2007-2008)	The findings revealed that Islamic mutual funds slightly outperform the conventional mutual fund during the crisis period while the conventional funds perform better during non-crisis period.
Kamil (2010)	January 2000 to December 2009	Malaysia	Adjusted Sharp index, the adjusted Jensen Alpha index and the Treynor	Funds Performed	Global Financial Crisis	The results revealed that the Islamic UTFs performed better during the financial crisis than the sub-period of the whole sample period.
Abdullah et al. (2007)	January 1992 to December 2001	Malaysia	Treynor's Index, the Sharpe Index, the Jensen Index and the Adjustment Jensen Index	Performance of 65 UTFs	Asian financial crisis pre-crisis (1992-1996), during-crisis (1997-1998) and the post-crisis (1999-2001).	The results of the study showed that, the Islamic UTFs perform better than the conventional funds during the crisis period than the pre-crisis period.
Dewi and Ferdian (2008)	January 1, 2006 to April 30, 2009.	Malaysia and Indonesia	Treynor (1965), the Sharpe Index, the Jensen Index, the Snail trail and the Market Timing	Funds Returns	Global Financial Crisis	The result revealed that the Islamic UTFs outperformed the market even in the situational circumstances of the global financial crisis.