CHAPTER 1

BACKGROUND AND MOTIVATION OF STUDY

This chapter begins with the discussion on the cost of equity of Malaysian firms and brings out the reasons why accurate measures of cost of equity unique to the Malaysian firms are needed. A brief history and background of the Malaysian stock market and its widely used stock index, Kuala Lumpur Composite Index (KLCI) is given in the following section. Before the chapter continues with the motivation of the study, the problem statement and the objectives of the study are outlined, the cost of equity is defined and two of the more popular measures of cost of equity are discussed. The last section provides the organization of this thesis.

1.1 Introduction

Malaysia's open trade policies and high rates of investment have seen the country achieving impressive growth and continuous economic transformation in the 1990s. Exports and imports of goods averaged 90 percent of Gross Domestic Products (GDP) while non-factor services averaged 91 percent of GDP. Nevertheless, high tariff protection in some agricultural sub-sectors and in the automobile industry in addition to the access restrictions on foreign investors to much of the services sector have reduced competition and impaired the potential efficiency for the sectors. In a trade policy review of the World Trade Organization (WTO) for Malaysia released in December 1997, the report (para. 6) stated "… *Malaysia's recent growth has largely been based on increases in the volume of capital rather than in its efficient allocation. Total factor productivity growth has slowed, with adverse implications for resource allocation.*" It seems that the WTO has the view that Malaysia is lacking efficiency in resource allocation.

In 1997, Malaysia was struck by the financial crisis, resulting in a severe deterioration in its economic performance in 1998. The WTO's 2001 trade policy review, under the secretariat's report summary (para. 2), it is reported that "… *both capital and total factor productivity (TFP) growth had dropped markedly (from an annual average rate of 2.4% in 1990-1995 to 0.9% in 1995-2000), perhaps reflecting over-investment, if not an increasingly inefficient allocation of capital*." Besides total factor productivity, it is evident from the 1997 and 2001 reports that inefficient allocation of capital is a major concern to Malaysian firms. In this regard, the efficiency of capital allocation is very much dependent on how money is allocated. Each action whether it is research and development investment, stock buyback or new equipment procurement is likely to benefit the firms differently. For a firm, the challenge is to allocate the capital so that it generates as much wealth as possible for its stockholders. In corporate finance, capital allocation is essentially related to the issue of cost of capital.

This study focuses on measuring and finding the best valuation models for estimating Malaysian firms' cost of equity. This study also explores for the determinants of cost of equity. Cost of equity is one of the two key components in estimating cost of capital (the other one is cost of debt). This study focuses on cost of equity instead of cost of debt because estimating the former is more complicated and controversial than the latter. Why then, there is a necessity to obtain a relevant measure of cost of equity specifically for Malaysian firms? Malaysia is a small and open economy. Many firms are exposed to international trade and finance. Equity market is about 166 percent[1] of the Malaysian GDP in 2010. According to Beck *et al.* (2008), equity is one of the preferred choices of external financing after bank and supplier credit for Malaysian

[1] Calculated as total market capitalization of Bursa Malaysia, the Malaysian stock exchange, divided by GDP at current prices (2010). Data is available in table 2.12 and 3.4.2 from Bank Negara's website at http://www.bnm.gov.my/index.php?ch=109&pg=294&mth=5&yr=2011.

firms. Table 1.1 shows some statistics evident in terms of the number of listed firms in Bursa Malaysia as compared to some Asian as well as other emerging stock markets since 1990, when most market liberalizes.

Table 1.1: Total Number of Listed Firms in Bursa Malaysia and Some Asian and Emerging Stock Markets

No	Exchange	Country	1990	1995	2000	2005	2009
1	BM & FBOVESPA	Brazil	579	544	467	381	386
2	Buenos Aires SE	Argentina	179	149	125	104	106
3	**Bursa Malaysia**	**Malaysia**	**271**	**526**	**790**	**1,019**	**959**
4	Hong Kong Exchanges	China	299	542	790	1,135	1,319
5	Indonesia SE	Indonesia	123	237	286	336	398
6	Korea Exchange [1]	South Korea	677	721	702	1,616	1,788
7	Mexican Exchange	Mexico	390	185	177	326	406
8	Philippine SE	Philippine	153	205	230	237	248
9	Shanghai SE	China	NA	NA	NA	833	870
10	Shenzhen SE	China	NA	NA	NA	544	830
11	Singapore Exchange [2]	Singapore	172	272	480	686	773
12	Taiwan SE Corp.	Taiwan	205	347	532	696	755
13	Thailand SE	Thailand	159	416	381	504	535

Note: The reported end of year numbers represent the total number of local and foreign listed firms but exclude investment funds; NA: Not Available.
[1] From 2004, Korea Exchange figures include Kosdaq following the integration of Korea Exchange.
[2] Since 2003, Singapore Exchange includes Singapore-incorporated firms, foreign-incorporated firms with a primary listing, and foreign-incorporated firms with a secondary listing but with the majority of their trading taking place on SGX.
Source: World Federation of Exchanges, 2010.

As can be seen from the table, Malaysia has quite a high number of listed firms compared to some of the Asian and emerging markets. Even in 1990, with only 271

listed firms, Malaysia just ranked lower than Hong Kong, South Korea, Brazil and Mexico. The number of listed firms in Malaysia has almost doubled in 1995 compared to 1990. In 2000, Malaysia has the third highest growth in number of listed firms of 50.19 percent, after Singapore (76.47 percent) and Taiwan (53.31 percent). The number of listed firms is over one thousand in 2005, catching up with the bigger size capital market, South Korea, and the regional financial center, Hong Kong. Although the number dropped below one thousand in 2009, Malaysia still has the fourth largest number of listed firms among these thirteen capital markets.

Since Malaysian firms rely on equity financing, it is essential that a suitable valuation model is used to obtain cost of equity estimates. Thus, the search for a relevant valuation model becomes a significant issue for Malaysian firms' corporate financial management since accurate estimation of cost of equity is vital for making many financial decisions, for example, capital structure choice, capital budgeting analysis, performance assessment, and firm's valuation. As part of a firm's cost of capital, the cost of equity naturally becomes a significant input and its accuracy will in turn affect the accuracy of the estimation of cost of capital. The use of an incorrect cost of equity estimate can have serious consequences, from losing market share to competitors (if cost of equity is overestimated) to losing market value (if cost of equity is underestimated). Essentially, the use of less appropriate valuation model may lead to overestimating(underestimating) the cost of equity which in turn may cause an otherwise promising(value-destructive) investment opportunities to be rejected(accepted), thus the effect of using less appropriate models to estimate cost of equity can be detrimental.

1.2 The Malaysian Stock Market

1.2.1 A Brief History and Background of Bursa Malaysia

The stock market activity in Malaysia goes back to 1930 when the Singapore Stockbrokers' Association was established in 1930. In 1937, it was re-registered as the Malayan Stockbrokers' Association. Public trading of stocks started when the Malayan Stock Exchange was established in 1960. The forming of the Stock Exchange of Malaysia in 1964 was short-lived, when it was renamed the Stock Exchange of Malaysia and Singapore in 1965 following the secession of Singapore from the country. The Companies Act was enforced in the same year to oversee firms' operations in Malaysia. Under the Act, firms have the obligations to provide greater disclosure to investors.

The Kuala Lumpur Stock Exchange (KLSE) Berhad was set up in 1973 as a separate entity from Stock Exchange of Singapore when the currency interchangeability between Malaysia and Singapore ceased. In 1976, the KLSE was incorporated as a company limited by guarantee and took over the operations of the KLSE Berhad. In the following years, the KLSE had gone through various changes and improvements to promote growth. For example, the KLCI was launched in 1986, followed by the launching of the Second Board of the KLSE in 1988 to support the listing of smaller firms with good growth prospects to gain access to the stock market.

In 1993, the Main Board was reorganized through the launch of four new sectors (consumer products, construction, industrial products, and trading/services), the introduction of loans sector, the merging of oil palm and rubber sectors as the plantations sector, and the tin sector was renamed the mining sector. In 1997, Malaysian Exchange of Securities Dealing and Automated Quotation (MESDAQ) was established

to provide support for small, high-growth potential and high-technology firms. The KLSE also established new measures to enhance transparency in the stock market with changes in the rules, regulations and procedures. These measures are aimed at meeting two key objectives, (i) to ensure an orderly and fair market in securities trading, and (ii) to improve overall market transparency. Overall, the KLSE has played a significant role in allocating financial resources within the economy and contributed towards the development of the economy.

The stock exchange continues to be known as KLSE until 2004 when it was converted from a not-for-profit organization to an entity limited by its stocks and renamed Bursa Malaysia Berhad. With the transformation, Bursa Securities, a wholly-owned subsidiary, took over the securities exchange part of the business. The purpose of the demutualization exercise is to enhance the exchange's competitive position and in response to global trends in the exchange sector by becoming more market-oriented and customer-driven. At that time, Bursa Malaysia consisted of one Main Board, one Second Board and MESDAQ with RM700 billion of total market capitalization. Since the demutualization exercise, Bursa Malaysia has focused on increasing the liquidity and pace of its markets, improving its product and service offerings, as well as to increase the efficiency of its businesses and to achieve operation economies of scale. On 5 October 2007, Bursa Malaysia received certifications for conformance to the ISO 9001:2000 Quality Management System and ISO 14001:2004 Environmental Management System standards.

To ensure a more efficient entry into the Malaysian capital market, the Malaysian Securities Commission and Bursa Malaysia have launched a new fund-raising framework and listing board structure. With effect from 3 August 2009, Bursa

Malaysia's Main Board and Second Board were merged to form the Main Market. On top of that, the MESDAQ Market was transformed into the ACE Market, where ACE stands for Access, Certainty and Efficiency. The ACE market serves as an alternative market to firms of all sizes and from all economic sectors. Under the FTSE-Bursa Malaysia partnership, a comprehensive range of real-time indices which include all firms listed on the Bursa Malaysia Main Board and the ACE Market have been launched and updated to accommodate the structural changes. The FTSE Bursa Malaysia Second Board Index is retired while the FTSE Bursa Malaysia MESDAQ Index is renamed to the FTSE Bursa Malaysia ACE Index. Up to 2010, the FTSE Bursa Malaysia Index Series (please see the website of Bursa Malaysia, http://www.bursamalaysia.com/website/bm/market_information/ftse_bursa_index.html, 2010) consists of:

(a) Indices of Main Market:

- *FTSE Bursa Malaysia KLCI*

  Comprises the 30 largest firms in the FTSE Bursa Malaysia EMAS Index by full market capitalization

- *FTSE Bursa Malaysia Mid 70 Index*

  Comprises the next 70 firms in the FTSE Bursa Malaysia EMAS Index by full market capitalization

- *FTSE Bursa Malaysia Top 100 Index*

  Comprises the constituents of the FTSE Bursa Malaysia KLCI and the FTSE Bursa Malaysia Mid 70 Index

- *FTSE Bursa Malaysia Small Cap Index*

  Comprises those eligible firms within the top 98 percent of the Bursa Malaysia Main Market excluding constituents of the FTSE Bursa Malaysia Top 100 Index

- *FTSE Bursa Malaysia Fledgling Index*

  Comprises the Main Market firms that meet stated eligibility requirements but are not in the top 98 percent by full market capitalization and are not constituents of the FTSE Bursa Malaysia EMAS Index

- *FTSE Bursa Malaysia EMAS Index*

  Comprises the constituents of the FTSE Bursa Malaysia Top 100 Index and FTSE Bursa Malaysia Small Cap Index

(b) Thematic Indices:

- *FTSE Bursa Malaysia EMAS Shariah Index*

  Developed for domestic Shariah-compliant investors, comprising the Shariah-compliant constituents of the FTSE Bursa Malaysia EMAS Index that meets the screening requirements of the Securities Commission's Shariah Advisory Council (SAC)

- *FTSE Bursa Malaysia Hijrah Shariah Index*

  Comprises the largest 30 firms of the FTSE Bursa Malaysia EMAS Index by full market capitalization that are screened by Yasaar and the SAC to meet the requirements of international Shariah-compliant investors

- *FTSE Bursa Malaysia Palm Oil Plantation Index*

  Based on the FTSE Bursa Malaysia EMAS Index, this index comprises of firms which earn a substantial proportion of revenue from palm oil activities

(c) FTSE Asia Pacific (excluding Japan, Australia and New Zealand):

- *FTSE Bursa Malaysia Asian Palm Oil Plantation Index – USD (gross and net of tax)*

- *FTSE Bursa Malaysia Asian Palm Oil Plantation Index – MYR (gross and net of tax)*

  Based on the universes of developed, advanced emerging and secondary emerging countries as classified by FTSE in the Asia Pacific region excluding Japan, Australia and New Zealand. This index comprises firms which earn a substantial proportion of revenue from palm oil activities

(d) Indices of ACE Market:

- *FTSE Bursa Malaysia ACE Index*

  Comprises all eligible firms listed on the Bursa Malaysia ACE Market

The segregation of large, medium and small capitalization, fledgling as well as Shariah-compliant indices is intended to measure the performance of the key divisions of the Malaysian capital market. It also offers the investment community a wider choice and the flexibility to evaluate and invest in these diverse divisions.

1.2.2 Kuala Lumpur Composite Index (KLCI)

Launched in 1986, the KLCI serves as the benchmark index for the Malaysian stock market and the Malaysian economy as a whole. It is also commonly used as the benchmark of the performance of stocks in the Malaysian stock market. It comprises 100 firms from the Main Board and is a capitalization-weighted index. A new index series, FTSE Bursa Malaysia Index, was introduced in 2006. The index series was jointly developed by Bursa Malaysia and FTSE Group (FTSE). The KLCI was transitioned to the FTSE Bursa Malaysia KLCI in July 2009 and became the main market benchmark for Malaysia.

The FTSE Bursa Malaysia KLCI is a 30-stock index calculated according to FTSE's global index standards. Therefore, it provides investors, both domestic and international, with a more translucent and tradable standard to encourage the creation of exchange traded funds and other index-linked products. The index is revised every six months by the FTSE Bursa Malaysia Index Advisory Committee to ensure conformity with a set of transparent and publically available index rules. This step is essential because the FTSE Bursa Malaysia KLCI serves as benchmark for investment portfolios as well as the basis of index-linked products.

Figure 1.1 shows the movement of weekly KLCI from 5 January 2000 to 31 December 2008. After the KLCI slumped by more than 500 points in the first six months due to the financial crisis in 1997, the index rebounded to 1009.21 points in February 2000. Unfortunately, the index started to fall thereafter and was nowhere near the 1000 points in the next five years. In November 2006, the KLCI exceeded the 1000 mark hurdle for the first time since 2000. It recorded 1007.29 points and was on the rise. The KLCI exceeded 1100 points in January and 1200 points in February. Towards the end of 2007, the KLCI has exceeded 1400 points. The index has steadily being above 1000 points before the effect of the U.S. subprime crisis took hold on global stock markets in 2008. The effect has been dramatic and the KLCI fell below 1000 points in October 2008.

Figure 1.1: Movements of the KLCI from 5 January 2000 to 31 December 2008

1.2.3 Sector Classification

In general, firms listing in Bursa Malaysia Main Board are classified into fifteen sectors. Although the Main Board and Second Board were merged into a single board known as the Main Market on 3 August 2009, the sector classification of firms remains unchanged. The sectors and their definitions are provided in Table 1.2. As the table shows, not all classifications are meant for firms. Some classifications are developed for investment entities or trusts such as the Closed-End Funds, Exchange Traded Funds, and Real Estate Investment Trusts. It should be noted that the classification provided by Bursa Malaysia may not conform to those used by database provider such as Thomson Reuters and thus the categorization of a firm by the former may differ from the latter. In order to avoid confusion, the sorting of firms in this study follows the sector classification provided by Bursa Malaysia.

Table 1.2: Sector Classification for the Main Market Bursa Malaysia

Sector Classified	Definition
Consumer Products	Companies manufacture materials or components into new products for consumer use
Construction	Companies engage in constructing any form of structure including roads and railroads
Closed-End Funds	Closed-ended investment entities
Exchange Traded Funds	Open-ended investment entities
Finance	Companies that provide services in activities obtaining and redistributing funds, in the form of deposits by Central Banks and other money institutions, insurance and other activities auxiliary to financial intermediation
Hotels	Companies that provide hospitality services in the form of accommodation, meals and drinks
Industrial Products	Companies manufacture materials or components into new products for industrial use
Infrastructure Project PLCs	Infrastructure Project Companies
Mining	Companies engage in exploration extraction, dressing and beneficiating of minerals
Plantations	Companies engage in the cultivation, planting and/or replanting of crops. The processing of agricultural products in factories on farms and plantations is also included if it is not feasible to report separately this activity from production of crops
Properties	Companies invest directly or indirectly in real estate through management or ownership
Real Estate Investment Trusts	Real estate investment trusts or corporations (REITs)
Special Purpose Acquisition Companies	Special purpose acquisition companies
Trading/Services	Companies engage in distribution of products and provision of services other than financial services, e.g. banking and insurance
Technology	Companies that provide information technology solution

Source: Bursa Malaysia's website: http://www.bursamalaysia.com/website/bm/regulation/rules/listing_requirements/downloads/bm_main_sector_classification.pdf

1.3 Cost of Equity – Definition and Measurement

Capital is the money used by firms to run their businesses. Capital can come in two forms - debt and equity. When a firm borrows or secures loans from others (normally financial institutions), it is known as debt. When the capital comes from investors who invest in the firm's common stocks, it is known as equity. Therefore, cost of equity can be defined as the rate of return required by investors for investing in a firm's common stock. Sometimes, it is also referred to as the required rate of return, minimum return or hurdle rate.

Cost of equity is an important term in corporate finance as it is part of the core of Weighted Average Cost of Capital (WACC). Since funds are made available to firms in the form of debt and equity, a firm's WACC is the weighted average of the after-tax cost of debt and the cost of equity for any given year. The WACC is the discount rate that is used to discount a firm's expected free cash flows to estimate firm value. It can also be viewed as a firm's opportunity cost of capital, which is the expected return that the firm's investors forgo from alternative investment opportunities with equivalent risk. Since the firm's investors forgo other equivalent risk investment opportunities when they purchase its bonds or shares of stock, they give up the return that could have earned by investing in say, another firm. Therefore, firms regularly track their WACC and use it as a benchmark when evaluating new investment projects, in capital budgeting analysis, in deciding capital structure choice and when evaluating their own performance using Economic Value Added (EVA).

Since the ultimate goal of any firm is to maximize shareholders' wealth, each investment decision needs to be made with utmost care and precision. This includes getting an accurate estimation of the firm's cost of capital. While cost of debt is

typically made known to firms in the form of interest paid on borrowed funds, the cost of equity is the more difficult estimate one has to make in order to obtain a firm's cost of capital. This is due to the fact that common stockholders are the residual claimants of a firm's earnings. They get what is left after all other claimants have been paid. Therefore, there is no pre-specified return as in the case with bondholders or preferred stockholders whereby their interests are governed by a financial contract. Given that the relevant cost of equity is the expected return of investors from investing in a firm's common stocks and this return normally comes in the form of cash dividends and cash proceeds from the sale of the stock, the conventional way of estimating cost of equity has been done using the Discounted Cash Flow (DCF) approach.

The DCF approach is a classic method of estimating cost of equity by discounting the expected future cash flows from holding the firm's common stocks at the required rate of return of investors to arrive at a present value. However, instead of using the DCF approach to determine the present value of the firm's common stocks, current stock price and estimated future cash flows are taken to estimate the *implied* cost of equity. Sometimes the DCF approach is also known as Dividend Discount Model (DDM) as dividends are the only cash distribution that a firm actually makes to its common stockholders.

To use DDM, dividends are the most important input. Basically, there are three growth rate models for dividend; zero growth, constant growth, and multiple growth. In the zero growth rate model, dividend is assumed to be a fixed amount every year from now to infinity. The constant growth model assumes dividend to be growing at a constant rate, g. The multiple growth model assumes that dividend grows at variable rates, for example, g_1 for the first 3 years and g_2 thereafter. Among the trio, the best known and

the simplest DDM is the constant growth model by Gordon and Shapiro (1956). In this model, if a firm's current dividend per share is D_0, and the current stock price of the firm is P_0, then the cost of equity, k_e, is the dividend yield plus the dividend growth rate: $k_e = \frac{D_1}{P_0} + g$ where $D_1 = D_0(1+g)$. The constant dividend growth model provides an effective approach to determine the cost of equity for dividend paying firms that are expected to grow their dividends at a steady rate. Like the constant growth model, the other two DDM can also be rearranged to arrive at the cost of equity.

Nevertheless, the process of inferring the cost of equity from future dividend growth rates is highly subjective. Madanoglu and Olsen (2005) pointed out that one of the major drawbacks in using DDM is the determination of the dividend growth rate. The assumption of constant dividend growth is also unrealistic as future growth can be higher or lower than current level due to inflation and real earnings growth. In addition, a small variation in the inputs can change the estimated value by a large percentage. This is especially true for the multiple growth rate model. Furthermore, determining the length of the abnormal growth period is quite difficult to do in practice, if not impossible. Also, the model assumes an immediate transition from unusual growth to constant growth, whereas in practice the transition may not take place that quickly. Indeed, the Capital Asset Pricing Model (CAPM) approach shows that there need not be any connection between the cost of equity and future growth rates of cash flows.

In the pre-CAPM paradigm, risk did not enter directly into the computation of the cost of capital. Most of the time, the assumption was that a firm that can afford to be financed mostly with debt is assumed to be safe and thus have a low cost of capital. On the other hand, a firm that cannot support much debt is probably risky and is thus

assumed to command a high cost of capital. These rules of thumb for incorporating risk into discount rates were ad hoc at best. As in a remark made by Modigliani and Miller (1958, p. 262), "*No satisfactory explanation has yet been provided ... as to what determines the size of the risk discount and how it varies in response to changes in other variables*." In a nutshell, before the manifestation of the CAPM, the question as to how expected returns and risk were related has been put forward but still awaiting an answer.

The foundations for the development of asset pricing models, which were later widely used in estimating cost of capital, were laid by Markowitz (1952). Unlike investment theorists before him, Markowitz argued that an investor's main concern is the risk of his/her total wealth made up of a collection of securities or the portfolio and not the volatilities of individual securities. He observed that (i) when combining two risky assets that are not perfectly positively correlated, their standard deviations are not additive and (ii) when a portfolio of risky assets is formed, the standard deviation of the portfolio is less than the sum of the standard deviations of its components. Forming the relationship between expected return and risk of a portfolio, the Markowitz model generates an efficient frontier from an efficient set of portfolios. Investors are expected to select the most appropriate portfolio from the efficient set of portfolios available to them.

Nevertheless, the computation required for the Markowitz model is tedious. The CAPM developed by Sharpe (1964) and Lintner (1965) is a more efficient method where it describes the relationship of expected return, or in this case, cost of equity, as the function of the risk-free rate, a firm's beta and the expected market risk premium. The Sharpe-Lintner CAPM equation is given as follows:

$$E(R_i) = R_f + \lfloor E(R_m) - R_f \rfloor \beta_{iM}, i = 1,..., N \quad (1.1)$$

where, $E(R_i)$ is the expected return on any asset i, R_f is the risk free rate, $\lfloor E(R_m) - R_f \rfloor$ is the market risk premium, and β_{iM} is the asset's market beta.

The birth of the CAPM offers academics and practitioners an alternative to the DCF approach. The CAPM soon became popular because the model allows appraisers to measure risk, and relates expected return and risk in a convenient way. More importantly, it addresses the question of how risk should be measured. In addition, the model also avoids the uncertainties involved in managing cash flow stream as with the case of the DCF approach. Nevertheless, the CAPM is not without critiques, partly due to the strict assumptions surrounding the application of the model. One of the assumptions includes obtaining a comprehensive market portfolio that strictly speaking should consist of not just traded financial assets, but also consumer durables, real estate and human capital. It is obvious that this assumption does not hold in the real world. Hence it is not surprising that the famous Roll's (1977) critique questioned the validity of the CAPM due to the unobservable market portfolio.

A host of modified versions of the CAPM which relaxed some of the more stringent assumptions began to appear in the literature in the 1970s. Among them is the Black (1972) version of the Sharpe-Lintner CAPM which relaxed the assumption of unrestricted risk-free borrowing and lending of the original CAPM. The Black version only differs in the sense that the risk-free rate must be less than the expected market return, so that premium for beta is positive. Other studies such as Merton (1973), Mayers (1973), Friend *et al.* (1976), Gonedes (1976), Elton and Gruber (1978) and Breeden (1979) have all tried to relax some of the more restrictive assumptions of the

Sharpe-Lintner CAPM. Later, the development of the CAPM is extended to include other factors that are found to influence stock returns besides the market returns.

Although the traditional CAPM was developed by researchers for the developed markets and subsequently empirical tests were also heavily focused on these markets, the emergence of developing markets in the 1990s has steered interests on the application of the CAPM in the emerging markets as well.

1.4 Motivation of the Study

In May 2009, the International Accounting Standards Board (IASB) issued an exposure draft of the *Fair Value Measurement*.[2] The exposure draft is aimed at providing a single, unified definition of fair value as well as setting up a structure for measuring fair value and requires disclosures of fair value measurements. Timelines have been established among major economies to converge to or adopt the International Financial Reporting Standards (IFRS) in the coming years. On 1st August 2008, Malaysian Accounting Standards Board (MASB) issued a statement on their plan for full convergence of Malaysia's Financial Reporting Standards with IFRS by 1st January 2012. In other words, all publicly listed firms in Malaysia will need to adhere to the framework outlined in IFRS in measuring fair value as well as disclosing the fair value measurements in the very near future. This means that determining the fair value of equity is becoming more important as accounting bodies such as the IASB is advocating the use of fair value accounting.

Empirical evidence suggests that the use of the CAPM to estimate discount rate or cost of equity is widespread among practitioners. Arnold and Hatzopoulos (2000) found 70

[2] The draft is available online at http://www.iasb.org/NR/rdonlyres/C4096A25-F830-401D-8E2E-9286B194798E/0/EDFairValueMeasurement_website.pdf. Accessed 23 November 2010.

percent of their sample of UK firms employing the WACC to determine cost of capital have used the CAPM to arrive at the cost of equity, while AL-Ali and Arkwright (2000) reported that 85 percent of their UK sample used the CAPM. McLaney *et al.* (2004) also found the CAPM to be the most popular technique for calculating the cost of equity in a sample of 155 UK firms. In a survey of 27 best-practice firms in the U.S., Bruner *et al.* (1998) concluded that the CAPM is the preferred model for estimating cost of equity while Graham and Harvey (2001) reported that 73.5 percent of their 329 CFOs always or almost always relied on the CAPM. Truong *et al.* (2008) conducted a survey on 356 Australian firms across nine sectors and a majority of 72 percent of their respondents employed the CAPM to estimate cost of equity. It appears to them that alternative asset pricing models were not adopted by Australian firms.

Unlike for the developed markets, surveys done on emerging markets are much less, probably due to the fact that emerging markets did not gain sufficient interests from the academics as well as practitioners before their emergence in the 1990s. Nevertheless, from the limited number of studies conducted on emerging markets, it is clear that the CAPM is the preferred measure as well. In a study by Correia and Cramer (2008) on 28 South African listed firms, 71.4 percent of the firms were found to calculate cost of equity through a variant of the CAPM. They further noted that the dividend discount model and arbitrage pricing theory were not used at all in practice. In a recent survey done by Abdul Samad and Shaharuddin (2009) on 83 Malaysian firms, they too found that majority used the CAPM to estimate required return by investors.

Apparently, the CAPM is preferred for estimating the cost of equity among Malaysian firms. However, it has been shown by Estrada (2002, 2007) that cost of equity estimates generated by a model based on downside risk were about 250 basis points higher than

those generated by the CAPM for a sample of 27 emerging markets. In his studies on downside risk, Estrada has consistently documented evidence that downside risk has a stronger explanatory power on stock returns than the standard risk measure (beta) used in the CAPM. Chen and Chen (2004) also provided support for Estrada's findings. Assuming that a model based on downside risk will also provide a better cost of equity estimates for Malaysian firms than the CAPM in the view that Malaysia is an emerging market, there is a risk of underestimating the cost of equity should the CAPM be used. To the best of our knowledge, no study has focused on exploring for the most appropriate model for estimating the cost of equity for Malaysian firms, particularly to look at the issue from the viewpoint of local investors. In addition, there is also little understanding on the factors that determine the cost of equity of Malaysian firms.

1.5 Problem Statement

Although the CAPM receives widespread popularity in the corporate world, there is no consensus in the academic literature as to which variant of the CAPM is the best model for estimating a firm's cost of equity. As a general rule of thumb, local CAPM (LCAPM) should be used when appraisers believe that markets are segmented. If appraisers believe that markets are fully integrated, then a global CAPM (GCAPM) should be used instead. The LCAPM is designed to capture the variation in firm returns that are explained by local market returns while the GCAPM captures the variation of firm returns that are explained by global market returns. Nonetheless, problem arises when estimating the cost of equity for emerging markets as studies have shown that some emerging markets have become partially integrated into world capital markets (see Bekaert and Harvey, 1995 and Bekaert *et al.*, 2005).

Several studies were devoted to come up with measures that better suit an emerging market setting. Most of the proposed models are actually modifications of the traditional one-factor CAPM, for example, Lessard's (1996) model, Godfrey and Espinosa's (1996) model, Mariscal and Hargis's (1999) model, Pereiro's (2001) adjusted hybrid CAPM, and Damodaran's (2003) model. There are also non-CAPM-based models such as Erb *et al.*'s (1996) credit rating model and Estrada's (2000, 2001) downside risk model. These studies, nonetheless, do not consider both local and global factors simultaneously. A two-factor setting is common in the literature of asset pricing for partially integrated markets (see for example, Errunza and Losq, 1985; Errunza *et al*., 1992; Kearney, 2000; Gérard *et al*., 2003), although the approach may differ from one study to another. If Malaysia is partially integrated to the world capital market, then a model which considers both local and global factors might offer greater explanatory power on stock returns of a firm. Hence, better cost of equity estimates could be obtained.

Malaysia has a very diverse economy structure. Thus, cost of equity estimates could be distinct from one sector to another. Indeed, Lessard (1974) found that the sectoral factor plays a significant role in explaining the variation of market returns. In a recent study, Hardouvelis *et al.* (2007) revealed strong convergence in the cost of equity across the member countries of European Union (EU) within a given industrial sector, but little convergence across the different sectors of a given EU country. The implication for portfolio managers is that sectoral effects are becoming more important. Nevertheless, cost of equity has not been studied extensively on a sectoral basis.

There is also a lack in research exploring for determinants of cost of equity, particularly at the sectoral level. Considering the studies of Collins and Abrahamson (2006) and Hearn and Piesse (2009) that observed a wide dispersion in cost of equity estimates

across sectors, the determinants of cost of equity might differ across sector as well. Given the importance of accurate cost of equity estimation in achieving effective strategic decision making and firm performance evaluation, an examination on the determinants of cost of equity would assist firms in reviewing their cost of equity estimates.

1.6 Objectives of the Study

There are three main objectives in this study. The first objective is to identify the CAPM-based and non-CAPM based models that are appropriate for estimating cost of equity for firms listed in the Malaysian stock market. Starting with the traditional one-factor local CAPM, the model is expanded to a global setting. Models that have been proposed to measure cost of equity in emerging markets are also examined. A two-factor model that is general enough to encompass the features of a partially integrated market is proposed in this study and assessed for its suitability for the estimation of cost of equity.

The second objective is to obtain the most relevant model for estimating cost of equity. To compare the performance of several models, as with previous studies (Estrada, 2000, 2001, 2002; and Chen and Chen, 2004), the commonly used R^2 and adjusted R^2 are applied in this study. Risk measures that have good explanatory power on the firm returns are also better measures for the calculation of cost of equity.

The third objective is to investigate the determinants of the cost of equity of Malaysian listed firms. A panel regression approach is used as it endows both spatial and temporal dimension of the longitudinal data and so offers a larger sample size and thus higher degrees of freedom, more precise estimators, and greater statistical test power. With the

panel setting, the spatial dimension of Malaysian firms as well as the time span dynamics over the sample period can be incorporated into a single model. A list of potential determinants is identified and is divided into accounting-based (measured using accounting information) and market-based (measured based on relations between market data and accounting data) variables. The results enable us to draw inferences on the variables that are associated with the variations in cost of equity and whether the accounting-based or market-based information has stronger explanatory variable on cost of equity. The findings will allow us to draw policy conclusions on the management of cost of equity for a firm.

1.7 Organization of the Study

This study consists of six chapters. The current chapter sets the background and motivation for the study. The second chapter provides a literature survey on cost of equity estimation, focusing on the studies done for emerging markets. Chapter 3 discusses the methodology used to achieve the three main objectives, as well as a brief discussion covering the time-series data used. Chapter 4 presents the findings on the best model for cost of equity calculation and Chapter 5 discusses the results obtained from the analysis of cost of equity determinants. Chapter 6 summarizes the major findings of the study and their implications, as well as some recommendations for future study.