

CHAPTER 2

THEORETICAL BACKGROUND

2.1. Previous Study

Earlier research on transmission of information had concentrated more on the interaction between major markets in the world especially in the USA and Europe. Koutmos (1996) investigated the information transmission among four major stock markets in Europe. He concluded that the European stock markets are integrated in the sense that they react not only to local information but also information from the other market, especially when the news is adverse. Kasibhatla (2006) examined both the short run and long run linkages among major West European equity markets (UK, Germany, and France). The conclusions of this research stated that France's market is weakly exogenous. In addition, the findings also highlighted short run casual relationship running both ways between the UK and German markets. Baur and Jung (2006) investigated the contemporaneous correlation and the spillover effects between the US and German stock markets around the opening of the two markets. The results present evidence that foreign daytime returns can significantly influence the domestic overnight returns. However, they found that there is no significant spillover from overnight returns in the USA to morning trading in Germany.

There are also papers that studied information transmission at international level between major stock markets in the world with developed markets in Asia. Kim (2005) examined the stock market interdependence of Australia, Hong Kong, and Singapore compared with the USA and Japan. In the analysis, both the contemporaneous return and volatility linkages were significant and tended to be more intense after the 1997 economic crisis period. The study also revealed that dynamic information spillover effects from the USA were found in all the Asian markets investigated. However, the information transmission from Japan to other countries were relatively weak and the effects were country specific. Kurihara and Nezu (2006) studied the relationship between the Japanese stock market and the US stock market. The study presented significant evidence of Japanese stock markets being influenced by the price of the US stock market.

The research area for transmission of information has been expanded to include the relationships between the developed markets with those of the emerging markets in Latin America, Europe, Middle-East-Africa and Asia. Shachmurove (2006) analyzed the dynamic interrelationships of stock markets in the USA with the main emerging markets in the twenty-first century, namely; Brazil, China, India, and Russia. The findings revealed that the Brazilian stock market is affected to a large extent by other stock markets. However the Russian stock market experienced less impact from the other markets. Dynamic linkages from other markets investigated, have much less

affect on the Chinese and Indian Markets. The Chinese market was also found to be the least influenced by the American stock market.

Soydemir (2000) studied the information spillovers among the US, UK, and emerging markets in Latin America, namely Mexico, Argentina, and Brazil. The findings showed that significant links exist between the markets of the USA and Mexico. However, there are significant weaker links among the US, Argentine, and Brazilian markets. The study also highlighted that the response of emerging markets to innovations from the US market last longer compared to innovations from the UK market. In addition, the study mentioned that no single emerging market can affect the US stock market but the combination effect of emerging markets on the US market is found to be statistically significant.

The previous study also covered the international spillovers between developed markets and Asian markets. Caporale (2006) examined the interrelationships of US, European, and Japanese markets with the South East Asian markets by using three bivariate GARCH-BEKK models. The findings put forward were that South East Asian volatility depends on positively on shocks from European markets and Japanese markets. Furthermore, the results suggested that the innovation from the US markets decrease the South East Asian conditional variance. Daly (2003) investigated the dynamic interdependence of the stock markets in Indonesia, Malaysia, Philipines, Singapore, Thailand, and the advanced stock markets of Australia, Germany,

and the USA. The result showed an increase in the interdependences across the stock markets investigated in the aftermath of the crisis.

2.2. Capital Market

Capital market is a market in which individuals and institutions trade financial securities. Organizations/institutions in the public and private sectors also often sell securities on the capital markets in order to raise funds. Thus, this type of market is composed of both the primary and secondary markets. In primary markets, new stock or bond issues are sold to investors via a mechanism known as underwriting. In the secondary markets, existing securities are sold and bought among investors or traders, usually on a securities exchange, over-the-counter, or elsewhere.

The issue of international integration of financial markets has received a great deal of interest from practitioners and academic researchers. This interest was further fueled by the dramatic financial events of October 1997, beginning in Pacific Rim Asia and spreading rapidly, if unevenly, throughout most major international securities markets. This event more than ever brings to light the significance of the relationship of the transmission of information between emerging and smaller component elements of the world's security market network and the more dominant constituents of this system.

Although empirical regularities of the nature of information transmission are well documented for large international financial centers (and some findings

of the relationship among less active markets have been generated), less is known about the information interaction between emerging and developed securities markets. Emerging markets are typically much smaller, less liquid, and more volatile than well known world financial markets (Domowitz, Glen, and Madhavan, 1998). There is also evidence that emerging markets may be less informationally efficient. This could be due to several factors such as poor-quality information, high trading cost, and/or less competition due to international investment barriers. Further, the industrial organization found in emerging economies is often quite different from that in the developed economies. All of these conditions and others may contribute to a lower correlation between the securities markets of developed and emerging countries.

In addition, investment professionals looking for international diversification opportunities are interested in this available emerging equity market. Because the benefits of international diversification are decreasing on a global basis, diversification benefits currently result primarily from investing in emerging markets rather than in developed markets. Much of the recent literature indicates that financial market liberalization will increase emerging markets' integration into global markets, will attract foreign investment, and will reduce the cost of equity capital thereby ultimately increasing economic welfare.

2.3. Cointegration in Finance

Modern portfolio theory builds upon the correlation between financial assets, where low correlation results in diversification. In the mean-variance framework, correlation is the measure of co-movement in returns. However, correlation is a shortterm measure and gives no clue about the long-term behavior between financial markets. In fact, risk-return analyses in the standard mean-variance approach use return data, where long-term trends are lost while price data is differenced.

Price processes of financial assets are usually characterised through random walk models (or at least assumed to be $I(1)$). Thus, it is not surprising that applications of cointegration analysis may be found in miscellaneous fields in finance. Alexander (1999, 2001) offers a comprehensive overview of recent academic literature.

Bossaerts (1988) states that cointegration does not imply any market inefficiency and later Dwyer and Wallace (1992) show, based on theoretical arguments, that the presence of cointegration in some financial markets is compatible with market efficiency (one neither implies nor excepts the other). Though, Dwyer and Wallace (1992) defined market efficiency as the absence of arbitrage in the sense that "there are no risk-free returns above opportunity cost available to agents given transaction costs and agent information". Moreover, Alexander and Dimitriu (2005) discuss the use of cointegration methods for enhanced indexation and conclude that even though some

abnormal returns may be found, this does not contradict market efficiency. This is justified by the argument that abnormal returns only may be observed in one out of two states in a regime switching world and thus, may be seen as a kind of timing risk premia (Alexander and Dimitriu, 2005).

Some research covers the field of cointegration between exchange rates and it is generally agreed on that it is implausible that two markets are cointegrated (Alexander 2001). In addition, Alexander (2001) mentions that there is empirical evidence suggesting that three or more exchange rates are cointegrated.

A very strong cointegration relation is expected and empirically confirmed in a system of futures and their underlying asset. However, Alexander (2001) also mentions that arbitrage opportunities seem to be impossible to find in such relations. Furthermore, Duan and Pliska (1999) discuss whether the presence of cointegration in financial markets affects the pricing of spread options and conclude that it does not as long as volatilities are constant, but it does have a considerable impact if volatilities are modelled stochastically.

Often certain commodity prices are expected to be cointegrated following a rational argument of mean-reverting carry costs (Alexander, 1999). Foster, Havenner and Walburger (1995) indeed construct and estimate a trend state space model for seven markets of weekly live cattle prices and find some evidence for cointegration in a system of the observed markets.

Furthermore, they develop a trading strategy based on the found cointegration relation which equals a new asset with a stationary price process that may be exploited very easily to achieve almost risk free profits (Foster, Havenner and Walburger, 1995).

Term structures are often considered in cointegration analysis. Interest rates of different maturities are expected to be tied together strongly by arguments of no arbitrage and indeed the theoretical argumentation is supported by quite some empirical evidence (Alexander, 2001).

Finally, stock markets are the subject of much research done in the field of cointegration. Alexander (1999) argues that for example "market indices in different countries should be cointegrated if purchasing power parity holds.". Some studies show such cointegrating relations in international markets and it is suggested that the US market is apparently something of an international leader (Alexander, 2001). Further, Cerchi and Havenner (1988) construct and estimate a state space trend and cycle model for a basket of only five randomly chosen US retail stocks and indeed find that these assets share one common stochastic trends and that there are three cyclical states describing the system. Moreover, they construct some simple trading strategies that enable the exploitation of mean-reversion tendencies in the system. Lucas (1997b) presents a very good analysis of continuous time portfolio optimisation given a world with cointegrated asset prices. He provides an analytical derivation by solving a Bellman function and provides a closed-form solution of an optimal

investment strategy which appears to differ significantly depending on the degree of cointegration (number of cointegrating vectors). In addition, he provides simulation results indicating that it seems to be better to overestimate the degree of cointegration for short term investments, but the opposite appears to be true for a long run investment horizon.

On the other hand, cointegration, first introduced by Engle and Granger (1987), is a long-term measure of diversification based on price data. If there exist a linear combination of two nonstationary series integrated of order one that is stationary, these series are called cointegrated series. It follows that these two series will not drift apart too much, meaning that even if they deviate from each other in the short term, they will revert to the long-run equilibrium. This fact makes cointegration a very powerful approach for portfolio diversification purposes, especially for the long-term. Meanwhile, cointegration does not imply high correlation. Two series can be cointegrated and yet have a very low correlations. Yet again, two series could be correlated but not cointegrated.

2.4. Islamic Capital Market

Investment in the form of shares, principally is in conformity with the Islamic law. In the mixture theory, Islam knows a partnership between two or more parties to do the business in which each party to deposit a sum of money, goods or services that is called *shirkah* or *musharaka*. In the literature, there is

no distinction between Islamic stocks and the non-Islamic stocks. However, the stock, as proof of ownership of a company, can be distinguished according to business activities and objectives of the stocks. Stock can be realized as *halal* (according to Islamic law) if the stocks are issued by the company whose business activities engaged in a lawful and the purpose of stock trading is not for gambling.

Judging from the Islamic law, the capital market is one of the tools or *muamalah* products. Like stock market in general, the Islamic stock market will have, and should have, a market place, commodities and price mechanism. However, there will be certain variations from that of the non-Islamic market which will make the Islamic market quite distinct. Transactions in capital markets, according to the principles of Islamic law is not prohibited or allowed as long as no transactions are contrary to the provisions outlined by the Islamic law. Interest is prohibited in Islamic law transaction. Every transactions that contains interest will be a *haram* transaction. Islamic law also prohibits transactions in which there is speculation and contain *gharar* or uncertainty that is a transaction in which a possible occurrence of fraud (*khida'*) included:

1. A fake bid (*najsy*).
2. Transactions on goods that haven't owned (short selling / *bai'u maalaisa bimamluk*).
3. Sell something that is has not been clear (*bai'ul ma'dum*).
4. Purchases for stockpiling securities (*ihtikar*).

5. Disseminate misleading information or using insider information to gain a prohibited transaction (insider trading).

Instead of relying on credit facilities, Islamic modes of finance may be used in the Islamic stock market. Partners may enter into a *mudarabah* agreement whereby one the *mudarib* or the entrepreneur uses his labor and expertise and the other *sahib-al-mal* or the capital supplier uses his capital. The *mudarib* in this partnership is the one who assumes authority on technical matters relating to the buying and selling of securities in the Islamic stock market. On the other hand, the capital supplier plays the role of the financier who provides the required capital. As in *mudarabah* contract in general, the profit would be distributed according to the agreement and the losses would be borne by the capital supplier. therefore dividends realized during the period of holding the securities as well as capital gains achieved at their sale will be shared by the partners according to predetermined percentages specified in the agreement. Capital losses at the time of sale will, on the other hand, be borne by the capital supplier.

According to Metwally (1995) the function of the existence of Islamic capital market are:

1. Provide opportunities for communities to participate in business activities with a share of the profits and risks.
2. Provides an opportunity for shareholders to sell their shares to get liquidity.

3. Allows companies to raise capital from outside to build and develop the production line.
4. Separate operations of the business activities of short term fluctuations in stock prices which are a common feature in the conventional capital market.
5. Allow investment in the economy is determined by the performance of business activities as reflected in stock prices.

While the characteristics required in forming the Islamic capital market (Metwally, 1995) is as follows:

1. All shares must be traded on stock exchanges.
2. Stock exchanges need to prepare the post trading where the stock can be traded through brokers.
3. All companies that have shares that can be traded on stock exchanges are required to convey information about the calculation of profit and loss and balance sheet to the management committee of the stock exchange with a distance of no more than three months.
4. Management committee sets the highest share price (HST) of each company at intervals of no more than three months.
5. Shares should not be traded at prices higher than the HST.
6. Shares can be sold at a price below the HST.

7. Management committee must ensure that all companies involved in the stock market has followed the Islamic accounting standards.
8. Stock trading should only take place within one week trading period after the determination of HST.
9. Companies can only issue new shares in the trading period with the HST price.

2.5. Islamic Market Structure

Although the Islamic code of conduct is a basic prerequisite for the operation of the Islamic stock exchange, it is not persesufficient to guarantee that the Islamic stock exchange will be free from misconduct. There is still need for the support of law. This will be reflected in the degree of government involvement in the work of exchange which will be projected in the latter's organizational structure.

2.5.1. Organizational Structure

On the top of Islamic stock exchange comes a government agency that observes, directs and controls the work of the exchange. This is in line with the institution of *hisbah*. However, as flexibility is needed to help achieving smooth running of operations a balance between control and flexibility is desirable. To strike such a balance the government may constitute board that, though administratively autonomous, is accountable to government. The board may draw the general policies of the stock exchange such as laying

down the conditions for company listing, establishing clearing house, allowing foreign competition among brokerage firms, and fixing commission policies. From the investor's point of view the establishment of this supervisory board would help:

1. Ensure that the market irregularities are under the surveillance of the state.
2. Stress that the market operates in conformity with Islamic principles.
3. Encourage the small investors to get into the stock market.
4. Widen the base of share ownership.

Distinguished from other forms of stock exchanges, the Islamic exchange will have a Religious Supervisory Body on the top of the organization structure. The main functions of this board will be:

1. To ensure that the activities of the exchange are run in accordance with the rules of the *shari'ah*.
2. To provide necessary advice and guidance.
3. To issue religious opinion, *fatwa*, whenever the need arises or to arrange for the issuance of these *fatwas* with other religious scholars.
4. To work towards providing *shari'ah* training and education programs to those working in the field.

2.5.2. Single Capacity or Dual Capacity

The stock exchange single capacity system is that which does not give the broker the right to trade with other brokers directly. Trading has to be carried out through jobbers. By contrast, the dual capacity system is that which gives the stock brokers the right to do so. In effect, the broker in the latter system acts as a broker and jobber. Favoring a market with a minimum role of the middle man, Muslim economists may advocate a capital market that is based on the dual capacity system. To them this may appear as helping to reduce costs, speeding up operations, and improving service, especially when the role of the broker still exists. Also, jobbing firms may find it difficult to cope with deals of large numbers of shares, especially if the market is dominated by large institutional investors. To act as principals, buying shares on their own behalf with a view to selling them in future, jobbers, in an institutional market, need large funds that may not always be available. However, in the context of Islamic stock exchange, the single capacity system can be more advantageous. These are for the following reason why the single capacity is more preferable in the Islamic stock exchange:

1. In the absence of jobbers in the dual capacity system, the market becomes less competitive and consequently less beneficial to the final investors.
2. By acting as a jobber, the stock broker in effect buys from, or sells to, himself on behalf of his clients. This will make him unwilling to buy

from, or sell to, another broker whose prices may be more beneficial to the client.

3. Giving advice to the client by the stock broker will be biased towards his own interest.
4. By contrast to jobbers who specialize in certain shares, stock brokers by trading in all types of shares will spread their skill thin or will bear substantial costs to develop and maintain the required expertise.
5. Share prices in the dual capacity system can be influenced by the policies of highly influential brokerage firms which may lead to sharp fluctuations in the price of a share. This is in contrast to the single capacity system where jobbers help smooth changes in the price of the share.
6. In general, the market under the single capacity system is more beneficial to the final investor.

2.5.3. Stock Exchange Automated Quotation (SEAQ)

There is no reason in principle why the Islamic stock exchange should not use the SEAQ, Stock Exchange Automated Quotation system. International stock exchanges tend to move towards the application of more advanced technology in their operations. The limitation on the use of the automated quotation as far as the Islamic stock exchange is concerned will be related to the availability of technology and the ability to pay for it.

However, the application of SEAQ might lead to adverse consequences. Unnecessary fluctuation in share prices might indeed be the side product of

using the automated technique more than being the result of real price changes. This has been echoed in the interest circles in the capital market, though concrete research has yet to prove the point. By the use of computer programs on widely available PC terminals stock brokers may tend to act quickly on computer flashing messages: sell or buy. They may do so without sufficient examination of circumstantial evidence that caused the message to appear. A temporary drop, or rise, in the price of the share that might be adjusted during the day may be reason for unnecessary concern. The time of day as well as the day of week, start or end of week, may be taken into account when making a buy or sell decision. There seems to be unexplainable perception that the time of day, and the day of week, has some bearing on the mode of the market and consequently the way prices go. This does not, obviously, appear on the screen.

In conclusion, while the use of technology in the Islamic stock exchange is, and should be, encouraged special care should be taken to minimize the effect of potential technology hazard when technology is applied to stock exchange in Muslim countries at present. It might be advisable that the Islamic stock exchange should be avoid using the automated system right from the start. Refinement period during which staff competence and expertise can be developed may be needed first, before automated quotation may be used. Emphasis should be placed on the role of personnel in the exchange, which lies within the essence of the Islamic philosophy that places man highly

in the universe. Proper training should of course be given and expertise acquired before the quatomated system can be implemented.

2.6. Price Mechanism of Islamic Stock Market

There are two approaches to share price valuation in the financial literature, there are the fundamental approach, and the technical approach. Because of their relevance, these approaches will be examined briefly from an Islamic perspective.

2.6.1. The Fundamental Approach

In the fundamentalist's view, the share has an intrinsic value that can be calculated by the use of mathematical methods. These methods are mainly two: the dividens methods and the earnings methods. However, the basic technique is the same in both methods.

In the dividens method, the value of the share is calculated by discounting the expected stream of dividends that will be received over the period of holding the share plus the discounted terminal value of the share at the time of disposal. The terminal value includes potential gain and losses. Since the share is not refundable, the terminal value at the time of disposal is calculated as the discounted value of the expected stream of dividends to perpetuity. This boils down to calculating the value of the share as the capitalized value of dividends. For the shareholder, the value can be calculated

in the above manner for the period during which he anticipates to hold the share.

The advocates of the earnings method (Modigliani and Miller) argue that it is the company's earnings, not dividends, that influence the value of the share. Also, in adjusting the discount factor for the level of risk involved, no adjustment should be made in their view for the financial risk that is related to the capital structure of the firm. With the exception of the effect of taxation, a highly geared company is as good as a low geared one. Arbitration will bring the values of shares together if there is any difference in value resulting only from differences in financial structure. The pattern of the mathematical calculation of the intrinsic value of the share is similar.

The value of the share is affected by four main factors, there are level of dividends (or earnings), growth rate of dividends (or earnings), level of risk involved, and the discount factor prevailing in the economy. Those factors are also applicable to the Islamic stock market. The difference between the Islamic setting and that of non-Islamic revolves only around the discount factor.

Due to the prohibition of interest in Islamic economics, the prevailing rate of interest will not be relevant to the calculation of the value of the share in the Islamic stock market. Nevertheless, time has a value in Islamic economics, credit sale is permitted in Islam and the credit price is allowed to be higher than cash price. Therefore, there does not seem to be contradiction in principle between discounting in Islamic economics and discounting in

conventional economics. Discounting a stream of dividends, or earnings, for the purpose of calculating the value of the share is not in contradiction with the Islamic principle. What remains is to find a suitable discount factor to replace the rate of interest.

The market average of return can be suggested as a suitable candidate for discounting in the Islamic capital market. The rate which incorporates both dividends and capital gains reflects the performance of the market as a whole. This rate can be adjusted for the risk involved. Risk is expressed as the volatility of the value of the variable around its mean. Taking the market of return on share as the average rate, the risk involved can be measured in terms of volatility of the rate of return on share for a particular share in relation to the market of return. For better results, the rate of return on share in the industry concerned can be used instead of that of the market. This helps in obtaining a more representative comparison between the performance of the share under valuation and that of the industry to which the share belongs. Adjusting the rate of return of the industry in relation to the market rate of return, and/or the share rate of return to the industry rate, would lead to the calculation of the price of risk involved.

2.6.2. The Technical Approach

The advocates of the technical approach to share valuation argue that it does not help to talk about a share's intrinsic value. Share prices are what they are because this is how the market wants them to be. Though the term market

in this respect might seem vague, it refers to the great number of buyers and sellers of shares in the stock exchange. In other words, like the price of other goods, the price of shares is determined by the power of demand and supply. This is particularly applicable to free market economies where market forces are expected to play an influential role in decision making. Islam advocates free market structure.

In line with the technical approach to share valuation, share prices in the Islamic capital market will be also influenced by market forces, there are demand and supply. As in the non-Islamic market, the intrinsic value of the share may or may not coincide with the market value. The reason for this variation is that while the intrinsic value provides a calculated value of the share, the market value reflects changes in the mode of the market. Besides being affected by most recent development in the economic and political environment, the mode of the market is also influenced by the psychology condition of buyers and sellers, their ability to interpret market signals, and the bearing of that on people's expectation of market behavior. People rank between extreme optimism and complete pessimism, as they lie between entire risk seeking and full risk aversion. This is bound to have bearing on their expectation of true market behavior and anticipated price movements. Even personal events may affect the value of the share if it is believed that the events will have bearing on the affairs of the company. It is not unusual to hear of personal scandals toppling governments, and it is therefore understandable

if such events have powerful adverse effects on company boards of management.

To support their point of view, the advocates of the technical approach argue further that share prices do not follow any particular pattern. The lack of correlation between the historical share price movements, that has been testified empirically, support this view. The price of today is not indicative of the price of tomorrow. Prices tend to move in a random pattern. Plotting price movement of a particular share, or even a bundle of shares move randomly, which implies that knowing past prices does not help anticipate future prices. No investor therefore can outperform the others by the use of this type of information.

The difference between the intrinsic value and the market value is that while the former takes to long to adjust to new changes in economic and non-economic parameters, the latter adjusts to these changes on the spot. Also, the former takes into account the changes that tend to be of a stable nature. Temporary changes that tend to be of a stable nature.

2.7. Hypothesis

The research hypothesis will be focus on price and volatility information transmission between Jakarta Islamic Index (JII) and Dow Jones Islamic Market World Index (DJIMID). These hypotheses are based on the

previous research of information transmission between Islamic stock indices in South Asia. Author change the object and the research time period.

1. H_{a1} : There is an information transmission at return level between Jakarta Islamic Index (JII) and Dow Jones Islamic Market World Index (DJIMID).
2. H_{a2} : There is an information transmission at volatility level between Jakarta Islamic Index (JII) and Dow Jones Islamic Market World Index (DJIMID).