EFFICIENCY OF MALAYSIA STOCK INDEX FUTURES MARKET

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By

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ABSTRACT

The efficiency of stock index futures market is an important research question, given the rapid growth in such markets and their roles in the risk transference, information processing and forward pricing. This study employs weak form efficiency and semi strong form efficiency to test the market efficiency. In the case of weak form efficiency, the long-run and short-run efficiency are examine using cointegration approach and vector error correction model respectively. In many respects, the testing of semi strong form efficiency is of greatest significance to market participants, as it asks the relevant and important question of: do futures prices fully reflect all relevant publicly available information? This study used two methods for testing the semi strong form efficiency. Each of the methods is concerned with testing the projecting quality of stock index futures prices. The first approach is the forecast error approach and the second is the social loss approach. In the case of weak form efficiency, the result shows spot and futures prices are cointegrated and that this two series are clearly $I(1)$. This means that there was evidence for the stock index futures market to exhibit long run efficiency. Meanwhile, the vector error correction model (VECM) employed that used to examine short run dynamics shows that there are deviations between futures prices and spot prices in the short run. This result also provides supporting evidence that this deviation from the short run mean can be lead back to long run convergence. In the case of testing the semi strong form efficiency, the results of the forecast error approach shows the efficient markets hypothesis (EMH) is rejected. This means that this market is inefficient or that there exists a non-zero risk premium in the stock index futures market. Finally, the results of the social

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loss approach employed also once again indicate that the null hypothesis of market efficiency is rejected. In other words, we can conclude that the stock index futures market does not process information efficiently. This finding has great implications to the users of this market.

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ABSTRAK

Keefisienan pasaran "futures" indek saham merupakan satu persoalan kajian yang penting apabila diberi pertumbuhan yang begitu cepat sekali dan peranannya sebagai medium transfer risiko, pemprosesan informasi dan hargaan masa depan. Kajian ini menggunakan kefisienan bentuk lemah dan keefisienan bentuk separa kuat dalam menguji keefisienan pasaran. Dalam kes keefisienan bentuk lemah, kedua-dua keefisienan jangka panjang dan jangka pendek diuji dengan menggunakan pendekatan kointeraksi dan model pembetulan eror vektor masing-masing. Dalam kebanyakan respek, menguji keefisienan bentuk separa kuat merupakan signifikan terhebat kepada para gunaan pasaran, kerana ia menanyakan soalan releven dan penting tentang: adakah harga "futures" refleks dengan sepenuhnya semua informasi publik yang ada dengan sedia-kala? Kajian ini menggunakan dua kaedah untuk menguji keefisienan bentuk separa kuat. Setiap kaedah mengambil berat tentang ujian kualiti projeksi harga "futures" indek saham. Pendekatan pertama adalah pendekatan eror jangkaan dan pendekatan kedua adalah pendekatan rugi social. Dalam kes keefisienan bentuk lemah, hasil kajian menunjukkan harga tempat dan harga "futures" ada kointeraksi dan dengan jelasnya menunjukkan bahawa kedua-dua siri ini adalah $I(1)$. Ini bermakna terdapat bukti menunjukkan bahawa pasaran "futures" indek saham mempamerkan keefisienan jangka panjang. Sementara itu, model pembetulan eror vektor yang digunakan untuk menguji dinamik jangka pendek menunjukkan bahawa terdapat deviasi antara harga "futures" dan harga tempat dalam jangka masa pendek. Hasil kajian ini juga ada menyediakan bukti menyokong bahawa deviasi ini dari min jangka pendek boleh dipimpin balik ke pertemuan jangka

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panjang. Dalam kes kefisienan bentuk separa kuat, hasil kajian pendekatan eror jangkaan menunjukkan hipotesis pasaran efisien ditolak. Ini bermakna pasaran ini tidak efisien atau timbul premi risiko bukan kosong dalam pasaran 'futures" indek saham. Akhirnya, hasil kajian rugi sosial yang diguna itu juga sekali lagi menunjukkan bahawa hipotesis "null" keefisienan pasaran ditolak. Dengan kata lain, kita boleh memutuskan bahawa pasaran "futures" indek saham tidak proses informasi dengan efisien. Pendapatan ini akan membawa implikasi yang hebat kepada pengguna pasaran ini.

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Finally, apologies to all that are concern as some of the contents might be confidential, and all possible efforts are being taken to preserve it. Any inconvenience is much regretted.

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Approval Sheet No.1

I certify that and Examination Committee has met to conduct the final examination of Graduate Student on her degree of Master of Economics thesis entitled "Efficiency of Malaysia stock index futures market" in accordance with University Pertanian Malaysia (Higher Degree) Act 1980 and Universiti Pertanian Malaysia (Higher Degree) Regulations 1981. The Committee recommended that the candidate be awarded the relevant degree. The Committee Members for the candidate are as follows:

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This Thesis submitted to the Senate of University Putra Malaysia and was accepted as fulfillment of the requirements for the degree of Master of Economics.

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LIST OF ABBREVIATIONS/NOTATIONS/GLOSSARY OF TERMS

ADF	Augmented Dickey-Fuller
AIC	Akaike Information Criteria
DW	Durbin Watson
ECM	Error Correction Model
ECT	Error Correction Term
EMH	Efficient Market Hypothesis
FE	Forecast Error
FKLI	Kuala Lumpur Composite Index Futures Contract
H_a	Alternative Hypothesis
H_0	Null Hypothesis
IMF	International Monetary Fund
KLCI	Kuala Lumpur Composite Index
KLIBOR	Kuala Lumpur Interbank Offer Rate
KLOFFE	The Kuala Lumpur Options and Financial Futures Exchange Berhad
KLSE CI	Kuala Lumpur Stock Exchange Composite Index
MSE	Mean Squared Error
PP	Phillips Perron
UPM	University Putra Malaysia
P/E	Price-earning ratio
SL	Social Loss
VAR	Vector Auto Regression
VECM	Vector Error Correction Model

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CHAPTER 1

AN OVERVIEW OF FUTURES MARKET

1.1 The History of Futures Trading

Historically, futures were foreshadowed by the type of agreements made in 12th century Europe, at medieval fairs in Flanders and in the Champagne district. These agreements, called letters de faire were made on the basis of samples from which merchants sold their wares ahead of their arrival by ship. The price of the goods was settled at the time the agreement was struck, so that the seller was protected against any price fall between the time of the sale and the time of delivery, while the buyer was protected against price rises.

Later, in 18th century Japan, the Shoguns evolved a system of issuing tickets representing their entitlements to rice crops growing in the fields. These would be bought by merchants in expectation of their future rice needs, and were in fact, contracts which could be bought and sold. Rules were made specifying the time of delivery of the rice, establishing standard grades and quantities for each contract, and stipulating the traders must have credit with a clearing house through which all tickets were issued.

When trading in grains and cotton between the United States of America and Europe began in the 19th century, a similar system to the letters de faire was needed because of the lengthy periods required to ships goods from one side of

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the Atlantic Ocean to the other. Goods were bought and sold at agreed prices while they were still afloat, on the understanding that they would be delivered when the ships arrived. By the 1850s a more sophisticated market had been established, similar to the Japanese rice ticket system, in which standardized amounts and grades for each commodity were specified by the contract. The only matter left unspecified was the price of the goods, which was set by an open auction system.

Buyers and sellers, or more accurately, brokers trading on their behalf, gathered in one place – the futures exchange – where the forces of supply and demand determined the prices of which goods would change hands in the future.

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1.2 Modern Futures Trading

Modern futures markets have not change greatly since the first large commodity exchanges were established in Chicago, London and other European centers. The main differences are the wide variety of new products available (i.e. interest rates, currencies, stock indices etc.) and the type of clearing system used to register contracts and to supervise delivery and payment of the good. Because it is contracts to buy or sell which are being traded, people deal on the exchange without seeing and handling the commodity or financial instrument involved. There is no need for the physical commodity to be present at the time since it is described accurately within specified limits by the contract.

Today, the main purpose of futures trading is not to buy or sell physical goods or financial instruments but to manage price risk. The futures market, therefore, acts as a risk-shifting mechanism, enabling those exposed to these risks to shift them to someone else. A borrower, for example, may agree on the futures market to borrow money in the futures at a certain rate. The borrower has shifted the risk of higher interest rates to someone else who is willing to make an agreement to lend in the future. This may be a financier – a lender – who in turn has an opposite risk, and wishes to ensure that he is not disadvantaged by falling interest rates. Sometimes, people who are prepared to take risk, that is speculators, who can make large profits by taking these risks if their judgment is correct, accept the market risk.

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1.3 Brief history of Malaysia Futures Market

Futures market in Malaysia started with commodity futures in the 1980s. At that time, Malaysian economy is very dependent on commodity for export. Rubber, Tin and Crude palm oil were the main export for Malaysia. The existence of a futures exchange has given the opportunities to plantation owners, refiners and all others involved to hedge their position in the cash market. They can lock in their selling price by offering a premium to those who are willing to undertake the risk.

There have been great success and some failures in the development of futures market. The only commodity futures remain is the Crude Palm Oil Futures. The others commodities have become less important and then being withdrawn. In aggregate, the futures market has attained unprecedented volumes of business since its launch.

The first financial future in Malaysia is the interest rate futures. This product is derived from the 3 months Kuala Lumpur Interbank Offer Rate (KLIBOR). This contract is to cater the need of financial intermediaries and other participants in wholesale market.

Stock index futures sprung up in Malaysia to meet the demand from local stock market. Its introduction acts as a booster dose to the stock market, which was then a record-breaker. Kuala Lumpur Composite Index (KLCI) stock index futures was introduced in 1995 and then followed by KLCI stock index option in 2000. Users of this product are mainly retailers and fund managers.

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As the 21st century dawns and the capital market in Malaysia evolves further with more varied and customized investment instruments, the futures industry has play a significant role in the transformation towards a more dynamic capital market and financial industry. In catering for increasing risk management needs, the diversity of products traded on Exchanges throughout Asia has expended tremendously and this is ably supported by sophisticated trading and clearing systems equal to the best available in developed countries. In Malaysia, the Bursa Malaysia Derivatives Berhad exemplifies this type of Futures Exchange, offering both futures and options contracts on a sound trading platform. The futures industry commenced with the establishment of the Kuala Lumpur Commodity Exchange (KLCE), the first futures exchange in Southeast Asia in July 1980.

In December 15, 1995, the birth of KLOFFE heralded a significant event in the development of the nation's capital market with the launch of KLOFFE's stock index futures contract. With its introduction, Malaysia became the third Asian economy after Hong Kong and Japan to offer domestic equity derivatives products.

Investment advisors are now able to offer their clients equity-related risk management instruments and access to portfolio management strategies, which were not previously available. KLOFFE as a financial futures and options exchange offers an efficient price discovery mechanism and a risk transfer capability, which has become indispensable to both corporate and individual investors.

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The Bursa Malaysia Derivatives operates under the supervision of the Securities Commission and is governed by the Futures Industry Act (FIA) 1993. The Exchange also falls under the jurisdiction of the Ministry of Finance of Malaysia, thus offering investors the security of trading on a regulated Exchange with similar rules and regulation as the more established markets worldwide.

It is the Exchange's mission to be the catalyst in the development of the derivatives industry in Malaysia. Bursa Malaysia Derivatives will continually strive to provide safe and effective risk management tools to both the commodity and financial communities. As a Futures and Options Exchange, Bursa Malaysia Derivatives has established a reputation for being a market with the necessary capacity and capabilities for servicing the needs of the international trading community.

1.3.1 Overview of Stock Index (Equity Index) Futures

In the context of financial markets, equity means shares. So equity futures are simply futures contracts based on shares. The stock index futures contract is generally known as equity index futures. It is an agreement between buyer and seller to respectively take delivery or deliver a basket of shares that make up the index or the underlying asset of the contract. In Malaysia, the stock index futures was introduced in December 1995 on The Kuala Lumpur Options and Financial Futures Exchange Berhad (KLOFFE) and is based on the Kuala Lumpur Stock Exchange's Composite 100 shares Index (KLSE CI), and now is generally known as the Kuala Lumpur Composite Index (KLCI). In the following section, I'll

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present the nature and uses of stock index futures by looking specifically at Malaysia's first stock index based futures contract: the stock index futures contract traded on the Bursa Malaysia Derivatives Berhad (Formerly known as The Kuala Lumpur Options and Financial Futures Exchange Berhad).

1.3.1.1 The Underlying Instrument

KLOFFE's stock index futures contract (FKLI) is based on the Bursa Malaysia Derivatives Berhad's (formerly known as The Kuala Lumpur Options and Financial Futures Exchange Berhad) Kuala Lumpur Composite Index (KLCI) futures contract, a widely used representation of the Malaysian futures market as a whole. A stock index seeks to serve as a measure, or index, of stock market performance. Hence, the Kuala Lumpur Composite Index measures the performance of the Malaysian stock market.

The Kuala Lumpur Composite Index (KLCI) is calculated using the market prices of a large number of companies listed on the Bursa Malaysia. The sample of companies included in the index is capped at 100 and the selection of stocks in the index is carried out according to a set of criteria determined by the Bursa Malaysia.

The KLCI is a capitalization-weighted index, which means that the index is weighted according to the market capitalization, has a larger weightage in the index. It is designed to track the performance of the Malaysian stock market, and is the lead indicator of the economic performance of the country.

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1.3.1.2 The Stock Index Futures Contract

The futures contract that is based on the KLCI is simply an agreement between seller and buyer to respectively deliver and take delivery of the basket of shares that make up the index (e.g., Kuala Lumpur Composite Index) at an agreed price, at a specified future date.

However, like almost all stock index futures, the KLCI futures contract is cash settled. This means that on the last day of trading, any outstanding contracts are settled by reference to the price of the underlying stock index. This is in lieu of accepting (or taking) delivery of the basket of stocks, which would be a very cumbersome exercise. By being cash settled, users of the futures contract know for certain that, at expiry of the futures contract, the futures price will equal the cash index. Thus, convergence will occur.

There are altogether four contracts traded with different maturity dates. These contracts are known as the spot month contract, the next month contract, and the next two calendar quarterly months contracts. For example, in August 2004, the four contracts spot month contract, the September next month contract and the December and March quarterly month contracts.

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1.3.1.3 Uses of Stock Index Futures

A major purpose of any futures market is to provide a facility for the management of price risk. Everyone who trades the stock market, or holds a portfolio of stocks, including companies that underwrite stocks, is subject to such risk. The two major types of risk in the share market are:

- Market risk
- Specific risk

1.3.1.3.1 Hedging Against Market Risk

Market risk is the risk that he overall market will rise or fall. If interest rates rise, the performance of many businesses will be adversely affected by the resulting increase in operating costs, and the market as a whole will tend to fall.

This market risk can be reduced by the appropriate use of stock index futures. A portfolio manager with a large diversified share portfolio is subject to the risk that the market as a whole will fall. The manager is able to reduce that risk by selling KLCI futures contracts equivalent in value to the portfolio. If the market should fall, the value of the portfolio would be protected, since losses would be offset by futures market gains

1.3.1.3.2 Hedging Against Specific Risk

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Specific risk is the risk that the price of stock in a specific company will change. The usual way to hedge against specific risk is to diversify one's stock holdings over a number of different companies, so that price declines in one stock are likely to be offset by price rises in one or more other stocks.

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1.4 Efficiency Concept

Two decades have passed since the term 'efficient market' was introduced in the literature of financial economics. This term was first used in the context of Efficient Market Hypothesis (EMH) by Fama, Fisher, Jensen and Roll (1969) who defined it as a market that adjusts rapidly to new information. Prior to that, Fama (1965) proposed the EMH in some detail based on the theory of random walk. The idea of random walk, which preceded EMH, is attributed to Bachelier (1900). The idea of random walk has stimulated interest, controversy, agreement and lately, some disagreement among both researchers and practitioners in the fields of finance and economics. Over the years, a rich boy of literature has grown, documenting the general validity of EMH particularly in several developed securities markets of the world (Annuar and Shamsher, 1993). Fama (1970) points out

"... the evidence in support of the efficient market models is extensive, and (somewhat uniquely in economics) contradictory evidence is sparse..."

Early empirical work provides evidence that securities market prices are unbiased in their reaction to relevant information. This is seen as an implication of rational wealth maximizing investor behavior in competitive markets. In a well functioning market, the prices of stocks will reflect unbiased predictions based on all relevant and available information (Annuar and Shamsher, 1993).

It is generally believed that the stock market, being intensely competitive in nature, is efficiently priced both in a weak form and semi strong sense. However,

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empirical evidence has not reached a consistent conclusion, although the evidence supporting EMH is being continually documented. For example, evidence of "anomalous" return behavior of size effects, turn of the year effects, low price earning (P/E) ratio effects, Value Line phenomenon and weekend effects, are some of the voluminous evidence of market idiosyncrasies (Ariff and Johnson, 1990).

However, Officer (1975) and Ball and Brown (1978) assert that the presence of a seasonal behavior in stock prices is not itself a sufficient condition for rejecting the EMH. A more likely explanation is related to the structure of the economy, foe example, changing opportunity cost of money through the year: the assumption of constant returns throughout a given period is not a necessary condition of capital market equilibrium. Furthermore, Ball (1989) notes that the evidence of apparent inefficiency is uncomplicated and readily discernible to investor, implying a relatively disingenuous use of information. He anticipates that most of the inefficiencies will be resolved in favour of efficiency. It is therefore premature to reject EMH based purely on empirical issues raised by the persistent anomalous stock return behavior documented in the 1980s (Annuar and Shamsher, 1993).

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1.5 Reasons for Efficiency

There are various reasons as to why market efficiency should hold. First, futures markets rank highly on a prior likelihood of being competitive: there are no serious entry barriers, there are many buyers and sellers, and transactions costs are low and continue to get lower. Second, there is a solid body of empirical work documenting the general validity of EMH and qualified interpretation of market 'inefficiencies' (in view of the reluctance to totally reject the notion of market efficiency by academics and to a lesser extent by practitioners) (Annuar and Shamsher, 1993). Third, there exists of a powerful and irreversible tendency for a market's efficiency to increase over time rather than to diminish, that is, markets learn from experience (Dawson, 1984).

The developed derivatives markets generally conform to the expectations of EMH, and are characterized by active trading, a large turnover, a large number of utility maximizing investors, no entry barriers and efficient dissemination of relevant information. The Bursa Malaysia (formerly known as Kuala Lumpur Stock Exchange) is relatively small in size and thinly traded compared to developed markets. Tests on EMH on Bursa Malaysia (a developing stock exchange) generate inconclusive results (Ang and Pohlman, 1978; Hong, 1978; D'Ambrosio, 1981; Lim, 1980; Dawson, 1981; Laurence, 1981; Nassir, 1983; Neoh, 1986; Barnes, 1986; Yong, 1987; Ariff and Johnson, 1990; Annuar, 1991) (Annuar and Shamsher, 1993). Much of the evidence suggests that the actively traded futures tend to be efficiently priced. However, none of the research adjusted for thinness of trading, which is peculiar to developing futures markets.

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On a prior basis, one would expect a developing futures market to be more efficient as it develops. The truth in this expectation is a subject of empirical investigation. As the Bursa Malaysia Derivatives Berhad is a small and developing derivatives market, the EMH may not be expected to hold (Annuar and Shamsher, 1993). Developing derivatives markets are characterized by low liquidity, unsophisticated investors, inadequate disclosure requirements and some non-trivial barriers to entry. It is therefore critical that appropriate tests of market efficiency on these markets take into account these characteristics. For example, Ariff (1978) and Ariff and Lim (1989) have demonstrated the severe problem of thin trading on the Stock Exchange of Singapore (SES), a closely related exchange to the Bursa Malaysia. Sareewiwatthana (1986) documented the same problem for the Stock Exchange of Thailand. There is also a growing body of literature suggesting that thinness of trading may predispose the efficiency proposition to be erroneously rejected (Lo and Mckinlay, 1989) (Annuar and Shamsher, 1993).

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1.6 Introduction

The importance of stock index futures markets as price risk management and forecasting tools has become a central issue recently. Prior to capital control imposed by Malaysian government in 1998, turnover and price volatility in the futures market tends to supersede the cash market. If the stock market is not active, it serves no purpose to introduce derivatives. It will just generate more arbitrage opportunities, which might not even be exploited. An active cash market will be further enhanced by the availability of derivatives. In the case of stock index financial futures, i.e. the KLCI futures, the question is this market is a very liquid spot market, which is the criteria to facilitate the growth of the futures market.

The Bursa Malaysia ("the exchange") is actually the third largest in the region after Tokyo and Hong Kong. In Malaysia, stock index futures were introduced in December 1995 with the launch of the Kuala Lumpur Composite Index futures contract on KLOFFE. KLOFFE's stock index futures contract (FKLI) is based on the Kuala Lumpur Composite Index (KLCI) (formerly known as the Kuala Lumpur Stock Exchange Composite Index (KLSE CI)), a widely used representation of the Malaysian stock market as a whole. A stock index seeks to serve as a measure, or index, of stock market performance. Hence, the Kuala Lumpur Composite Index measures the performance of the Malaysian stock market.

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The relative hedging effectiveness of a futures market is dependent upon two related concepts: the relative co-movement over time of the respective cash and stock index futures prices and the intertemporal ability of contemporaneous futures prices to provide unbiased forecasts of subsequent cash prices at contract maturity. This study focuses on the second of these two issues, otherwise referred to in the literature as the unbiasedness hypothesis. The Johansen cointegration procedure (Johansen and Juselius) is used to test for long-run market unbiasedness and the short-run price dynamics are analyzed using an error correction model (ECM).

The ECM framework recognizes that although futures markets may be unbiased forecasters of subsequent cash prices in the long-run, the potential exists for futures markets to exhibit short-run pricing inefficiencies and be biased in the short-run. More specifically, if futures prices fail to reflect the information contained in historical prices, they violate the weak form version of the Efficient Markets Hypothesis (EMH) defined by Fama.

While our ECM allows us to detect potential short-run inefficiencies in a weak form sense, we would argue that further testing is required to determine if such potential inefficiencies translate into actual pricing biases in a forecasting sense. With this question in mind, we draw upon the semi strong form efficiency tests as it asks the relevant and important question of do futures prices fully reflect all relevant publicly available information. This can be accomplishing using forecast errors approach and social loss approach.

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Figure 1: Daily Volume & Open Interest for all Equity Contracts, 1995-2004

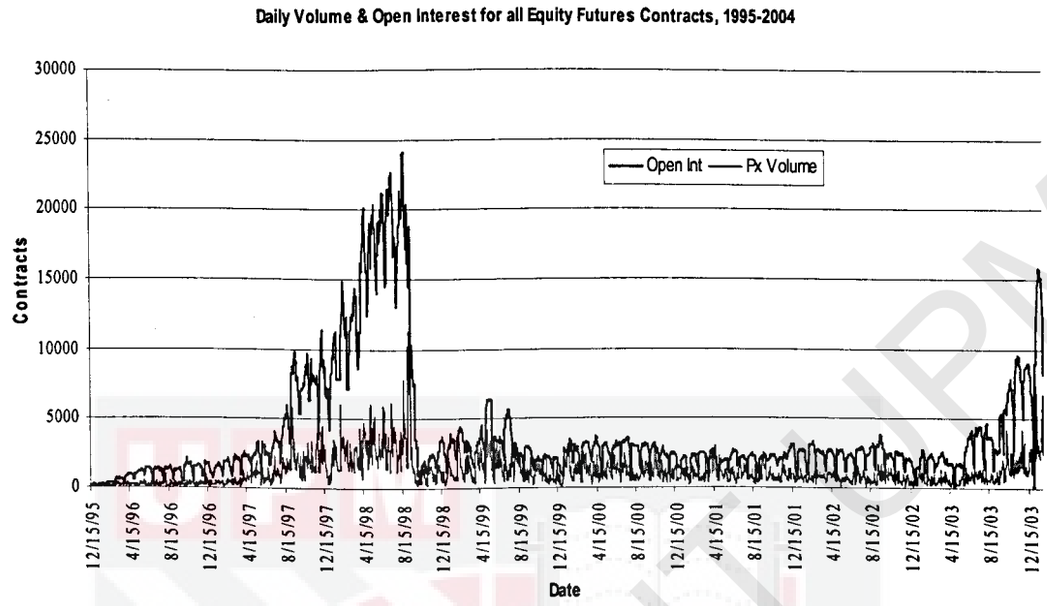

Figure 1 shows the daily levels of volume and open interest of the stock index futures Kuala Lumpur Stock Exchange Composite Index Futures Contract (FKLI) from December 1995 to October 2004. Although there has been a strong upward trend towards greater participation in the contract from 1995 to 2004, interest declined during 1998, and remains low until 2004. Daily open interest for this period was averaged between 3,000 and 7,000 contracts, while volume of contracts traded averaged between 100 and 1,500 contracts per day. Because of this relatively low level of trading in the stock index futures market, the results of my study are of interest in determining whether a relatively thinly traded futures market exhibit inefficiencies.

An unbiased futures market could be used as a risk management tool for all market participants. Unbiasedness also has important implications for derivation of optimal hedge ratios. Bennigga, Eldor, and Zilch note that the minimum

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variance hedge ratio, which is often calculated in empirical hedging models, is only optimal if futures markets are unbiased. In addition, Zulauf et al., point out that a biased futures market implies avoidable social loss resulting from non-optimal resource allocation. From a hedging perspective, a downward (upward) biased futures market implies that the short (long) hedgers must pay a premium to use futures as a price risk management tool. If futures prices are downward biased, the current futures price is lower than the realized futures price at contract maturity, and futures prices should increase over the life of the contract. In this case, short-hedgers will incur trading losses, which may be considered a form of risk premium payment, and represent the cost of transferring price risk to speculators with long futures positions. Conversely, if futures prices are downward biased, the current futures price is higher than the realized futures price at maturity and futures prices should decrease over the life of the contract. In this case, long-hedgers will incur trading losses, which may be considered a form of risk premium payment, and represent the cost of transferring price risk to speculators with short futures positions.

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1.7 Problem Statement

Though there have been numerous studies on developed country futures market, there have been few in depth studies of such market in emerging countries such as Malaysia. Hence, it will be interesting to uncover more facts about it. I am unaware of any published study of a comprehensive nature on the Kuala Lumpur stock index futures contract (FKLI). My objective is to examine the efficiency of this market. It will mainly be based on the Efficient Market Hypothesis (EMH, Fama). This has by far been the most influential theory in market efficiency. In this study, stock index futures market is chosen in view of its importance in a market such as Malaysia that grows at a lower stage of development, with incomplete markets and is bound to tight short selling regulation.

Since the creation of wealth is depends on the optimal allocation of investment capital; thus, market efficiency is very much important. In an efficient market, prices provide an accurate signal for resource allocation. Thus market efficiency benefits all market participants, the lenders, the intermediaries who get a normal return, and the borrowers. The lenders can use the signals to construct efficient portfolios and the borrowers can devise strategies to efficiently allocate the available capital to maximize their wealth (Annuar and Shamsher, 1993).

If EMH is valid in a developing stock market, it will then reflect that the market prices of derivatives are reasonable estimates of the underlying worth of the derivatives. This does not mean that prices never change, or that they are wrong but it does mean that the errors in prices never change, or that they are wrong but

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it does mean that the errors in prices are randomly distributed about the true values. Sometimes, prices are too high, other times too low, but it is not possible to consistently identify this deviations. It will also imply that Bursa Malaysia (formerly known as Kuala Lumpur Stock Exchange (KLSE)) may be considered a maturing and well-functioning market. If EMH does not hold, then profitable investment rules may be devised to exploit above risk-adjusted returns through an arbitrage process. Such a condition may be detrimental to the future development of the market while it will also have the salutary effect of moving the market towards efficiency. Market 'inefficiencies' suggest that some investors are making money at the expense of others. There will be a transfer of wealth from unsophisticated and naïve investors to sophisticated and informed investors (Annuar and Shamsher, 1993).

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1.8 Objectives

1.8.1 General Objective

The general objective of this study is to examine whether the Malaysian stock index futures market is efficient or not. There are many approaches in answering this question but I tend to restrict this to two main categories of testing the efficiency, namely: weak form efficiency and semi-strong form efficiency.

1.8.2 Specific Objectives

The specific objectives of this study are:

1. To examine the long-run cointegration and short-run dynamic relationship between FKLI and KLCI.
2. To calculate the forecast error of the stock index futures market.
3. To determine whether there is a significant social loss in the Malaysian stock index futures market.
4. To determine whether the Malaysian stock index futures market is in the semi-strong efficiency condition.

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1.9 Significance of Study

The efficiency of futures markets is critical to their price discovery role. This study investigates the joint hypothesis of market efficiency and unbiasedness of futures prices for the KLCI stock index futures contract. Just like previous studies, it tests for both long-run and short-run efficiency using cointegration and error correction models. Besides, this study takes a closer look at the conceptual definition of efficiency by adopting the narrow measure of publicly available information of past forecast errors on the futures contracts being studied. Moreover, to the extent that futures prices make predictive errors, they impose welfare losses on market participants due to imperfect resource allocation. As a result, this study will attempt to determine whether social losses exist or not in stock index futures market.

Since there have been few in depth studies of futures markets particularly in stock index futures market especially in emerging countries such as Malaysia, this study will provide a better scenario to all readers, whether this markets is able to perform its variety functions, including risk transferences, information processing and forward pricing. This is to be done by assessing the futures market on the basis of whether such functions performed efficiently or not.

This study contributes mainly to market participants. For hedgers, whoever wish to pursue a strategy of 'rolling hedges' (i.e. carrying a hedge from one contract to another), it appears that when the market is not efficient, it is not the time that the hedge should be rolled over. On the other hand, if the finding shows pricing inefficiency where the actual futures prices do not converge towards theoretical

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prices with the passage of time, it implies that arbitrage opportunities are available. In short, this study may provide insightful information to investors (e.g. arbitrageurs, speculators or hedgers) in gaining some profits in the futures markets.

Besides that, this study is also beneficial to market participants such as analyst and ordinary investors. Analyst can be alerted that some of their analytical work might be unnecessary if the market is efficient. As for the ordinary investors, he/she will be unable to beat the market (except by chance) or will be not be able to profit from insights of the superior analysts as any effort to transmit information to the ordinary investors will be reflected in the futures prices (Annuar and Shamsher).

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