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Bertajuk

IS THE KLSE EFFICIENT? EFFICIENT MARKET HYPOTHESIS VS BEHAVIOURAL FINANCE

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IS THE KLSE EFFICIENT? EFFICIENT MARKET HYPOTHESIS VS BEHAVIOURAL FINANCE

ABSTRACT

Over the last 100 years since Bachelier (1900) pioneering work on Random Walk Hypothesis, studies on the Efficient Market Hypothesis (EMH) have revealed mixed evidence. EMH states that stock prices reflect information. In an efficient market the prices of stocks reflect a rational assessment of the underlying worth of stocks. On average you will make money but the money you make is just enough to cover the risk you have assumed. If markets are efficient then new information is reflected quickly into market prices. Conversely, if markets are inefficient, information is reflected only slowly into market prices, if at all. EMH also presupposes an ability to detect incorrectly priced securities and profitable arbitraging opportunities which move the market towards efficiency. After the first marginal investor had profited from a price increase (or decrease), subsequent investors with the same information obtain no significant profits. This means that, in general, majority of investors cannot consistently profit from any delays in price adjustment reflecting new information. However continuous stream of well-documented evidence from the behavioural finance literature suggest that markets are inefficient. This paper attempts to review this controversy based on world evidence at large and with special reference to the Kuala Lumpur Stock Exchange and offers suitable panacea to rationalize this phenomena.

INTRODUCTION¹

Is it? Or it is not? Studies on market efficiency have created two camps of believers and disbelievers since Fama's seminal work on the theory of market efficiency (EMH) in 1970. However it would be an oversimplification to suggest opinion on that matter can be divided, strictly speaking, into two camps of believers and disbelievers. For practical purpose, the view held by investors without doubt range from total belief in market efficiency to total disbelief, with various degrees of skepticism in between this spectrum.

An efficient market can be defined as a market that adjusts rapidly and unbiasedly to new information² or in essence efficient in processing information (Fama, 1976). Such a market has a desirable feature. In particular, at any point in time, market prices of securities provide accurate signal for resource allocation. That is, when firms issue securities to finance their activities, they can expect to get "fair" prices, and when investors choose among securities that represent ownership of firms' activities, they can do so under the assumption that they are paying "fair" prices. In short, if the capital market is to function smoothly in allocating resources, prices of securities must be good indicators of value. In short, EMH postulates that, for a stock, its current market price (i) is the best estimate of value, (ii) reflects all available relevant information and (iii) changes immediately and unbiasedly (correctly) each time information arrive.

¹ Random walk means price movements do not follow any predictable pattern or trends. The random walk is often compared to the path of a sailor might follow out of a bar after a long hard night drinking. Findings by Leng and Keng (2000) concur with existing evidence that the behaviour of sectorial indices of the KLSE is predominantly random walk.

² In a latest study published in the Journal of Finance, Conrad et al. (2002) found stock prices to response to both negative as well as positive earnings announcements.

To date a substantial amount of research² work have been documented covering many aspects of the three major forms of market efficiency originally nested by Fama (1970), refined (for practical purpose) by Keane (1983) and further redefined by Fama (1991). The complete classifications are summarized in Table 1.

Table 1: Classification of three levels of EMH into three potential degrees

	Perfect (P)	Near Efficiency (NE)	Inefficiency (I)
Weak-form (WF)/predictability	PWF	NEWF	IWF
Semi-strong (SSF)/event studies	PSSF	NESSF	ISSF
Strong-form (SF)/inside information	PSF	NESF	ISF

DESIRABLE PROPERTIES OF EMH

The stock market act as a medium where a scarce economic resource namely investment capital is allocated optimally. The creation of wealth depends on the optimal allocation of investment capital. 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 signal to construct efficient portfolios and the borrowers can devise strategies to efficiently allocate the available capital to maximize their wealth.

If EMH is valid in a developing stock market like Malaysia, it will then reflect that the market prices of securities are reasonable estimates of the underlying worth of the securities. This does not mean that prices never change, or that they are wrong but what it does mean is 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 these deviations. It will also imply that the KLSE may be considered mature and well-functioning market. This will provide a suitable gateway for international investors to diversify their investments.

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

² Many books and review articles documenting corroborating evidence of efficient market behaviours of stock markets in many parts of the world are available. For U.S market, see Fama (1970, 1991 and 1998); for Europe, see Hawawini and Michel (1984); for UK, see Keane (1983); for Australia, see Ball et al. (1980, 1989); for India, see Gupta (1988); for Japan, see Sakakibara (1988); for Canada, see Davies and Pinches (1988); for Far Eastern share markets, see Hong (1978); for Singapore, see Ariff and Johnson (1990); for Malaysia, see Annur and Shamse (1993b).

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 the unsophisticated and naïve investors to sophisticated and informed investors (Gupta, 1988).

REASONS FOR EFFICIENCY

There are obvious reasons as to why market efficiency should hold. First, stock markets ranked highly among markets of being competitive (Ball, 1994)³: there are no serious entry barriers, there are many **rational**⁴ (as opposed to irrational) buyers and sellers (an estimated one million investors trade daily on the KLSE with an average daily turnover value of RM 500,000) and transaction costs are generally low (according to the Capital Market 10 years Master Plan, stock broking commission rates will be liberalized in two stages: Stage 1 - with effect from 1 September 2000, commission rates for all trades above RM100,000 will be fully negotiable while trades with contract values of RM100,000 and below are subject to a fixed rate of 0.75%. Stage 2 - with effect of 1 July 2001, commission rates will be fully negotiable for all trades, subject to a cap of 0.70%). Competition between rational investors keeps prices about where they should be. Furthermore, competition among analysts might be sufficient to generate prices that reflect relevant information. In addition competition among insiders may partially or fully reflect inside information into market prices. As all information that determines stock prices are analysed by numbers of investors, stock quotes reflect the best estimate of their value. Prices may not always be right, but they are unbiased.

Second, since tests of efficiency implicitly or explicitly involve test of efficiency as modelled by a particular equilibrium price behaviour, it seems more likely that failure to document efficiency might be prejudiced by failure in asset pricing model itself. This has been stressed by Ball (1989) and recently Fama (1998) attributed this to bad-model problem⁵. Since tests of efficiency are joint test of market efficiency hypothesis and a particular price equilibrium model, the problem is that all models for expected returns are incomplete descriptions of the systematic patterns in average returns during any sample period. As a result, tests of efficiency are always contaminated by a bad-model problem. A good example is the work by Annur and Ariff as documented in Chapter 17 of Ariff, Shamsher and Annur (1998a). Annur and Ariff found the Capital Asset Pricing Model to be an inadequate description of the price formation process for KLSE stocks. However Annur and Shamsher (1993a) found the Gordon share valuation model to be a good price formation model for 70% of

³ Ball (1994) argued that the basic idea underlying market efficiency is that competition will drive all information into the prices rapidly.

⁴ Investors are assumed to exhibit utility maximizing (or profit maximizing) behaviour i.e for the same returns they choose securities with minimum risk and for the same risk they prefer securities that give maximum return. This behaviour is also consistent with Rational Expectation Theory where investors will exploit any profit opportunities until none are left. Rational also denotes well-informed and intelligent.

⁵ As CAPM seemed to be failing, new models are proposed. Some that do show promising were the Arbitrage Pricing Theory (APT) and Consumption Based Pricing Models. On the other hand, behavioural finance offers alternative behavioural assets pricing using non-linear pricing which include among others chaos theory, fuzzy logic and neural networks [see Hwa, (2002) for a brief review]

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KLSE stocks. Therefore in general no single price generating model can adequately describe the price adjustment process.

Third, there is a solid body of empirical work documenting the general validity of EMH and qualified interpretations of market inefficiencies. As noted by Fama (1970 p. 416) 'the evidence in support of the efficient market models is extensive, and (somewhat uniquely in economics) contradictory evidence is sparse.'

Jensen (1978, p. 95) in an introductory comment said 'I believe that there is no other proposition in economics which has more solid empirical evidence supporting it than EMH. It is evidence that we will not be able to ignore.'

Annuar, Ariff and Shamsher (1994) argued that (i) persistence presence of market anomalies may not in themselves sufficient to reject EMH if the anomalies are not exploitable and are due to market frictions (which may be an indicator of behavioural finance) and (ii) the assumption of time unvarying market return assumption embedded in many efficiency tests is not valid for volatile markets like Malaysia. For the period from 1975 to 2001, the standard deviation of returns for KLSE ranges from 25 to 30 % and has almost doubled to 59% during the 1997 crisis before settling down to its original value of 30%. A comprehensive compilation of the volatility of Asia Pacific financial markets can be found in Table 2.2 of Chapter Two of Ariff et al. (1998a) on page 20. And more recently Fama (1998) conclude that given the recent findings from behavioural finance studies, the evidence does not suggest that market efficiency should be abandoned. Most long-term anomalies are fragile. They tend to disappear with reasonable changes in the way they are measured. For example, Chotigeat, Annuar, Shamsher and Ariff (1993) found that the January effect tends to disappear after controlling for thin trading effect.

Fourth, the existence of a powerful and irreversible tendency for market's efficiency to increase over time rather than to diminish given the need to deregulate as markets developed. Deregulation helps to make information markets efficient⁶. Therefore a pre requisite for market efficiency is the functionality of the information market. A controversial view receiving attention among economists is that no market can be fully informationally efficient. A fully efficient market will not leave sufficient incentives for market participants to discover fair prices through spending resources to find fair value for a given information set. Some scholars believe that, in the absence of incentives for truthful and full disclosures in some markets, prices of securities tend to hover below (mispriced) and over (mispriced) fair (equilibrium) prices. Therefore prices under-react at some interval and over-react at other interval of time. Thus, truthful of information, such as in earnings disclosures, may have to be accepted as inadequate if the behavioural finance hypothesis of underreaction and overreaction are true. And more recently at the international scene we are plagued with the ENRON affair (the latest WORLDCOM⁷) which has put the information generators,

⁶ A study by Ariff (1996) and Tamat, Zubaidi and Annuar (1999) reveal that deregulation increases the efficiency of stock markets in Thailand, Indonesia, Malaysia, Korea, Taiwan and Singapore. Dawson (1984) found that ability to beat the market decreases over time as market becomes more competitive with fewer market frictions.

⁷ The company has file in a bankruptcy filing.

the accountants and accounting standards, into public scrutiny. Ball (2002) argues that focusing on standards is merely "window dressing," and the real problem lie with the accounting practices ingrained within the system. ENRON has revealed an aberration in the common-law accounting practices, because the company did not report its losses in a timely manner and also reported profits before they were realized. Given such untruthful information or misinformation, the market reflects biased and wrongful valuation of ENRON stock prices. If information market is inefficient, then prices of securities will not reflect fair values and as in the Enron case when price does not reflect truthful information, investors at large suffer.

Fifth, perhaps the most outstanding feature of the stock market is the highly organised and elaborate information machinery which services it. It differs from many other markets not simply in the quality and amount of information supply, but in the rapidity with which the information is disseminated amongst market participants. For example, it takes less than five minutes for any price-sensitive news lodged to the KLSE to be transmitted to all brokerage firms.⁸

In Malaysia, one of the salient objectives of the Capital Market Master Plan is to promote an active and efficient secondary market for issued securities at competitive prices. A necessary condition for investors to trade is the condition that prices fully reflect all relevant information. At the macro level prices in efficient market provide accurate signals for optimal allocation of very scarce capital resources and that is critical for emerging markets in developing countries since most of these economies are starve for capital. Over the thirty-five years from 1966 to 2000, the amount of new issues (or capital raised) in the Malaysian capital market have increased at a growth rate of approximately 17 % annually (Norhana, 1988 Table 1 on page 21).

However recent evidence of behavioural finance⁹ of overreaction and underreaction (see for example De Bondt and Vishny (2001), Barberis, Shleifer and Vishny (1998), Kahneman, Hirshliefier and Subramanyam (1998) and Hong and Stein (1998)) have put a strong challenge to the efficient market hypothesis. Others include underpricing phenomenon of initial public offers and seasoned equity offerings, mispricing of small stocks, the size effect, calendar effect in particular the January effect.¹⁰ The main crux of these behavioural finance (which is based on cognitive psychology) studies is to search for alternative theoretical rationales and framework to underpin the price adjustment process. Recent study by Theobald and Yallup (2001) on the speed of price adjustment reveal to a certain extent market underreaction over the short run.¹¹

⁸ Fama (1998) provides two additional reasons (i) In an efficient market, apparent overreaction will be as frequent as under reaction, (ii) Long-term return anomalies are sensitive to methodology.

⁹ A good elucidation of the behavioral finance literature can be found in Thaler ed. (1982).

¹⁰ A good summary of stock market anomalies worldwide is documented in Dimsom ed. (1988).

¹¹ Currently a Ph.d student is investigating the speed of price adjustment w.r.t 8 information set released on the KLSE. Preliminary result indicates that stock market tend to overreacts in the short run.

MARKET EFFICIENCY: THEORY

The early ideas of market efficiency date back to the year 1900 where Bachelier provides non-trivial evidence that commodity speculation in France follows a fair game model and that current price of a commodity was an unbiased reflection of its future price. The fair game implies that, on average and across a large number of securities, the expected return equals its actual return. The fair game model does not imply that market participants will earn positive return, only that expectations are not biased.¹²

$$Z_{j,t+1} = r_{j,t+1} - E(r_{j,t+1} | \#, 0_t)$$

- where
- $r_{j,t+1}$: the realized return on security j in period t+1
 - $E(r_{j,t+1} | 0_t)$: the expected return on security j in period t+1, conditional on # and 0_t
 - 0_t : the information set assumed to be fully reflected in prices in period t,
 - # : price generating model, and
 - $Z_{j,t+1}$: the abnormal return on security j in period t+1

For example, let us suppose #, the price generating model follows a simple random walk:

$$P_{t+1} = P_t + e_{t+1}$$

And the following properties hold:

$$E(e_{t+1}) = 0; E(e_{t+1}, e_{t+1-s}) = 0 \text{ for } t \text{ not equal to } s-1.$$

Suppose further, let 0_t includes history of past prices: $P_t, P_{t-1}, \dots, P_{t-s}$

at t+1

$$\begin{aligned} E(P_{t+1} / P_t, P_{t-1}, \dots, P_{t-s}) &= E(P_t + e_{t+1} / P_t, P_{t-1}, \dots, P_{t-s}) \\ &= P_t + E(e_{t+1}) \\ &= P_t \end{aligned}$$

¹² An excellent theoretical exposition of EMH is documented in Annuaire (1991, pg 12-26).

at $t+2$, assuming no change in information set,

$$\begin{aligned} E(P_{t+2}/P_t, P_{t-1}, \dots, P_{t-s}) &= E(P_{t+1} + e_{t+2})/P_t, P_{t-1}, \dots, P_{t-s} \\ &= E(P_t + e_{t+1}) + E(e_{t+2}) \end{aligned}$$

after noting $E(e_{t+1})$ and $E(e_{t+2}) = 0$, $= P_t$

at $t+3$,

$$\begin{aligned} E(P_{t+3}/P_t, P_{t-1}, \dots, P_{t-s}) &= E(P_{t+2} + e_{t+3})/P_t, P_{t-1}, \dots, P_{t-s} \\ &= E(P_t + e_{t+2}) + E(e_{t+3}) \\ &= P_t \end{aligned}$$

Generalising, at $t+1+T$ ($T>0$), given 0_t as historical past prices and $\#$, the price generating model follows a simple random walk, current prices reflect an unbiased estimates of future prices. This is the essence of an efficient market. This also means that net of transaction costs the value of gain from information randomly fluctuates around zero.

Continuing on the same argument, if the revealed information at $t+1$ is different, that is

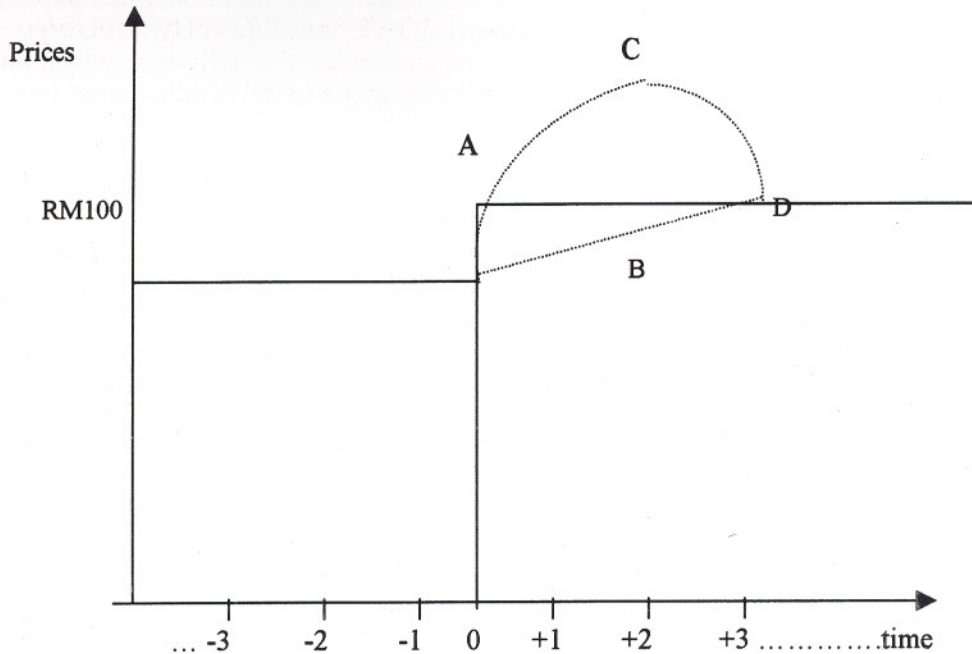
$$0_{t+1} \neq 0_t$$

then, the prices formed at the next time period, $t+1$, must be different. Thus the price at time $t+1$ will adjust to reflect the new information set. This is essentially EMH as one in which prices always reflect all revealed information and prices react rapidly to the economic value of new information.

The early 1970s can be identified as the time of the systematic development of the efficient market idea taking a dramatic turn. The idea has been expanded to describe how information relating to an asset is impounded in prices of assets. It is hypothesized that an asset-specific information set will have an impact on the asset's excess or predicted return at a particular time given a price generating model that describe the asset's return. Given market efficiency, across assets and over time, the average excess or predicted return will randomly fluctuates around zero. If an information is to have value it must accurately tell market participants something they do not already know. If the information processing market is inefficient, it does not mean that market is inefficient {Verrechia (1979)}. If we identified market anomalies because of inadequacy of price generating model, it does not indicate once again market is inefficient {Fama (1998)}.

The idea of market efficiency versus behavioural finance can be illustrated using Figure 1. Figure 1 shows a hypothetical situation of how price of a particular stock reacts to a typical information (for example earnings announcement) arrival at time $t = 0$, the announcement day.

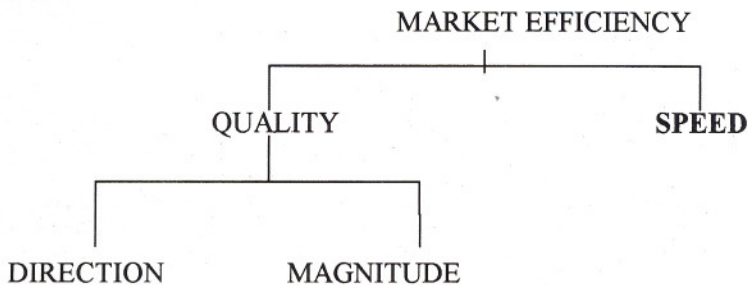
Figure 1: Share price reaction to new information



Three important dimensional aspects can be abstracted from price reaction to new information namely

- (i) magnitude
- (ii) direction
- (iii) speed.

Magnitude and direction describe the quality of the price formation and may be considered an ordinal ranking of markets based on the quality of price formation. A market that is weak form efficient is less superior to one with semi-strong efficiency and so on. Speed measures the time lapse over which all information is incorporated as price changes, thus enabling researchers to typecast a market with one-day efficiency as being superior to say a market with 12 days to achieve efficiency.



Most of the early studies confined its attention to the **direction** and **magnitude** of the price movement around the announcement time. These studies gathered numerous evidence on the share price reactions or impacts and the wealth effects of different types of corporate announcements events. There is another dimension of market efficiency which have received less attention all this while. That is the **speed** of price adjustment to new information.

If the new information is interpreted by market participants as positive, then price will react in a positive direction (either via A, B or C). If the positive signal carries a value of say RM 10, then at $t = 0$, price will move to a new value of RM100 from its original position (prior to $t = 0$) of RM90 (magnitude). If price instantaneously reflects this new value, then the speed of price adjustment will be immediate (via A). B and C indicate signs of behavioural finance of underreaction and overreaction respectively where it takes some time before reaching the equilibrium price at D. Behavioural finance researchers claim that at a certain time, prices are mispriced and at a later time, prices may tend towards equilibrium value suggested by theory. Hence, it is argued that there is room for over- or under- reactions in prices, at least over some undefined forward window of time.

BEHAVIOURAL FINANCE: DEFINITION

Behavioural finance¹³ is a blend of psychology and economics which seeks to explain the irrational financial behaviour of investors. With its roots in the psychological study of human decision making, behavioural finance has become an emerging science that offer alternatives financial models of decision making based on the premise that humans often depart from rationality in a consistent manner.

The origin of behavioural finance began, in essence, with the publication of De Bondt and Thaler's paper "Does the Stock Market Overreact?" in 1985 which was one of the first to directly challenge EMH. However no history of behavioural finance would be complete without giving full credit to the work of psychologists Daniel Kahneman and Amos Tversky for "Prospect Theory: An Analysis of Decision Under Risk" (1979).

Behavioural finance studies how individual and collective behaviours influence market prices. People in general, and investors in particular, are not totally "rational" in their decisions. Those biases create market inefficiencies in the shape of mispricing. They are deviations between quoted market prices and stock intrinsic values based on equilibrium pricing models.

¹³ Behavioural finance encompasses generic terms like, among others, behavioural economics, market psychology, experimental finance and behavioural pricing. For an excellent compilation of behavioural finance studies see Thaler ed. (1982). The interested readers can also access the behavioural finance website at www.behaviouralfinance.net/papers or <http://groups.com.group/Behavioural-Finance>.

Four main types of behavioural phenomenons are sources of mispricing namely (i) individual cognitive bias, (ii) collective cognitive biases, (iii) individual motions/ passions and (iv) social psychology (group and crowd behaviours).

■ WORLD EVIDENCE

Of the 16 share markets in the Asia Pacific including Japan, Ariff et al. (1998a) find that five have shown to meet the criteria as Fama-efficient market. These are Japan, Australia, Hong Kong, Singapore and Malaysia. Share markets across US, UK, and certain parts of Europe have been shown to be also Fama-efficient. Solnik (1973) found the French, Italian, German, Dutch, Belgian, Swiss and Swedish markets to be weak-form efficient (see also Hawawini and Michel, 1984). Niarchos (1972) found the Greek market to be efficient in the weak-form. Similar findings on weak form and other aspects of market efficiency were observed for the German market (Guy, 1977), Australia (Praetz, 1969; Ball, Brown, Finn and Officer, 1980 & 1989), Japan (Ang and Pohlman, 1978; Hong, 1978; Sakakibara, 1988) Canada (Davies and Pinches, 1988) and New Zealand (Emmanuel, 1979).

However evidence of inefficiency were reported in studies, for example, by Rosenberg and Rudd (1982) for US, Dryden (1970) and Girmes and Benjamin (1975) for UK, Jennergren and Korsvold (1975) for Swedish and Norwegian markets, Theils and Leender (1965) for the Netherland, and Juttner and McHugh (1976) for Australia.

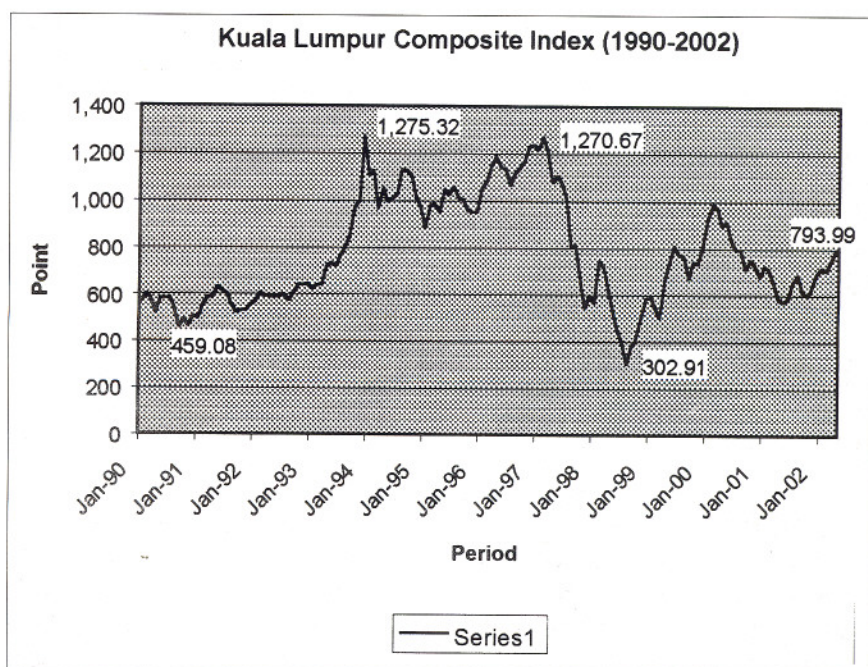
■ OVERVIEW OF KLSE

Over the last decade, the stock market in Malaysia witnesses rapid change and growth both in terms of number of companies and market capitalization. With an initial listing of over 50 companies in 1960s, the KLSE (inclusive of main board, second board and MESDAQ) has now a total of over 800 companies with a market capitalization of over RM500 billion. As an integral part and indicator of economic development, the KLSE represents a vital part of the overall financial landscape of Malaysia, and together with the banking sector and other financial intermediaries, support the economic development and growth of the country. A fair, **efficient** and liquid market facilitates the mobilization and allocation of funds within the domestic industry and provides a gateway to Malaysia for international investors.

The history of KLSE can be traced way back to the 1930s, but the Exchange as we know it today, was formally established in 1973 and its main function is to provide a central market place for buyers and sellers to transact in shares, bonds and various other securities of Malaysian listed companies. An order-driven market, trading on the KLSE was fully computerized in 1992 replacing the trading floor system (open outcry) which shaped many transaction prior to 1992. In 1993 the Central Depository System (CDS) was implemented which provide an automated clearing and settlement system. The CDS replaced the practice of holding and moving physical scrip of quoted shares (which has resulted in a lot missing

scrip issues) with a safe and dependable computerized book entry system. Figure 1 below depicts the movement of the KLSE Composite Index, widely accepted as market barometer, from 1990 - 2002. The average annual return over the 13-year period is about 11% with a standard deviation of returns of about 30%, and giving a risk per unit of return value of 2.7.

Figure 1: The Kuala Lumpur Composite Index: Jan 1990 -Jan 2002



In terms of fund raising activity, Table 2 provides some statistics. Over the thirty years from 1966 to 1995, the amount of new issues of securities raised by both the private and public sectors have increased at a growth rate of 16.5 percent annually. In 1995 the total amount raised was RM 26.3 billion compared to RM262 million in 1965.

Table 2: Fund raised in the capital market under Malaysia plans

	1MP* (1960-70)	2MP (1971-75)	3MP (76-80)	4MP (81-85)	5MP (86-90)	6MP (91-95)	7MP (96-2000)
<u>Funds Raised (RM million)</u>							
Public Sector	1,997.4	4,875	12,250	24,530	32,725.6	20,098	29,683
Private Sector	290.7	348.9	638.5	5,988.6	20,375.9	70,530.6	119,769
Total	2,288.1	5223.9	12,888.5	30,518.6	53,101.5	90,628.6	149,452

(Source: Norhana:1998 pg 21)

Table 3 provides a snapshot performance of selected types of investments in Malaysia from 1986 to 2000.

Table 3: Average investment performances and risk comparison

Type of investment	Annual compounded return (1986 to 2000)	Level of risk
Fixed deposit	6.15%	Low
EPF	7.70%	Low
KLSE Composite	10.50%	High
Unit trust	11.80%	Medium

(Source: Normandy Research Services)

In term of performance, Table 2 shows that lately investment in unit trusts tends to outperform the market in the long run.

KLSE: EVIDENCE OF MARKET EFFICIENCY

Early evidence of market efficiency of the KLSE were documented by Nassir (1983), Barnes (1986) and Yong (1987). Subsequently corroborating evidence on many aspects of market efficiency of the KLSE are compiled in Ariff et al. (1998a), Annur and Shamsher (1993b), Annur et al. (1994), Annur, Ariff and Shamsher (1992), Annur (1991) and more recently by Cheng (2001). For example Annur et al. (1994) found KLSE, using Keane (1983) classification, to be moderately efficient with some inefficient pricing at the margin for some 13% of the shares traded on the KLSE. Shamsher and Annur (1993) found KLSE to fully reflect information contained in bonus issue announcements. Others information include resignation and appointment of directors (Annur and Shamsher, 1994), interim earnings (Annur and Shamsher, 1992a), annual dividend and earnings (Annur et al. 1992), relative strength theory (Shamsher and Annur, 1994), unit trusts performances (Shamsher and Annur, 1995a and Annur, Shamsher and Ngu, 1997), annual and extra ordinary earnings (Cheng, 2001), cashflows disclosure (Cheng, Ariff and Annur, 2002), technical analysis and technical analysis indicators (Annur, Ariff and Shamsher, 1991 and Shamsher et al. 1995), auditors' opinions (Shamsher, Annur and Ali, 1994), auditor switch decisions (Huson, Ali, Shamsher, Annur and Ariff, 2000, and Shahnaz, Annur, Ali and Huson, 2002), switching from second to main board (Ariff, Lamba and Shamsher, 1998b), rights issue announcement (Annur and Shamsher, 1993c; Norhana, Ariff and Annur, 1999), research and development expenditure announcement (Shamsher and Annur, 1997a), corporate name change announcement (Zulkarnain, Shamsher, Annur and Ali, 2000) and audit committee formation (Shamsher and Zulkarnain, 2001)¹⁴. The

¹⁴ Currently a Ph.d student is investigating the impact of corporate real estate information on stock prices in Malaysia.

general consensus of these studies reveals that market prices reflect the information content or economic value of information embedded in these announcements.

KLSE: EVIDENCE OF BEHAVIOURAL FINANCE

Evidence of market inefficiencies of the KLSE in the context of behavioural finance can be found in Neoh (1986), Annur and Shamsher (1987), Annur, Shamsher and Ali (1988), Annur (1991), Annur and Shamsher (1993b), Annur et al. (1994), Ibrahim and Yong (1994) and recently by Manap Ali (1999). Some indirect evidence of behavioural finance can also be traced in documented work of Ariff, Kuhan, Shamsher and Annur, (1994), Ariff, Annur and Shamsher (1994), Shamsher and Annur (1995b), Shamsher and Annur (1997b), Annur and Shamsher (1998b), and Shamsher and Annur (2000). For example Annur, Shamsher and Ali (1988) found daily average return to be negative on Monday and Tuesday and positive (highest) on Friday. Another example, Annur and Shamsher (1987) found the January return to be highest among the calendar months. The market anomalies literature termed this phenomenon as the weekend and January effects respectively.¹⁵ Evidence of superior selection ability among fund managers was documented in Annur et al. (1997) and Shamsher and Annur (1997c). Annur and Shamsher (1992b) and Annur et al. (1994) found KLSE to be strong form inefficient with respect to share recommendations. Institutional investors who have well-established channels to secure price sensitive information are relatively in a better position to exploit inside information before it is released to the public.

SOME IMPLICATIONS OF MARKET EFFICIENCY

- EMH distinguish between a firm and its shares. The shares of the firm will reflect the economic wealth of the firm. If the firm is well managed and generates high returns on its assets, the price of the stocks will fully reflect this expectation. Any investors who purchase the shares would then be paying for the good fortune of the firm (i.e. purchasing at a higher price).
- If there is a possibility of a dramatic change in the prospects of the firm during a short period of time, then one must accept the fact the share prices will tend to be volatile in the short period of time. Therefore, it is nothing peculiar for share prices to fluctuate considerably in an efficient market. Market efficiency implies its capacity to respond to any relevant information available about the firms.
- Stock markets have shares as the primary traded commodity, and it is in the interest of the market participants for the share prices to reflect the worth of the

¹⁵ Annur, Shamsher and Zainal (1987) found the treasury bills market in Malaysia to be inefficient. Taufiq (2001) found both evidence of efficiency and inefficiency in the financial futures market of Malaysia. A good summary of stock market anomalies in Malaysia is compiled in Annur and Shamsher (1993b).

underlying securities such that shares can be traded at reasonably fair prices. In such a market, excess return can be earned only by chance. Efficient market implies that a buy and hold investment strategy with the objective of diversifying all diversifiable risks. However, this strategy does not restrict investors to a low or high risk strategy as it accommodates the tastes of investors with different risk preferences.

■ IMPLICATIONS OF BEHAVIOURAL FINANCE

- Irrational behaviour/decisions create mispricing and artificial prices. If there are transactions, there may be a transfer of wealth from the seller (buyer) to the buyer (seller).
- Disincentives to trade among market participants. At artificially inflated or deflated prices which may be too high or far below true values, few market participants will risk their money to trade at such prices.
- Paradoxically, discovering inefficiencies make market prices move toward true values.

■ SUMMARY

Are we rational? Irrational? Is efficient market a good and practical working model? Is KLSE efficient? Should market efficiency be abandoned? Should we ignore the numerous literatures on market efficiency and also not to forget recent evidence of behavioral finance phenomenon? I conclude that, given the world and KLSE evidence both collaborative and contradictory, market efficiency and behavioural finance co-exist just as God created us and many observations in pairs. Chaotic (irrational) and rational behaviours co-exist in any market be it efficient, moderately efficient and inefficient. At times, we may act rationally; at other times irrationally. It is a matter of degree.

■ REFERENCES

- Ang, J.S and R.A. Pohlman (1978), "A Note of the Price Behaviour of Far Eastern Stocks", **Journal of International Business Studies** 9(Spring): 103-107.
- Annur M.N (1991), "*The Efficiency of the KLSE: Tests with Appropriate Refinements*" unpublished Ph.D thesis, Universiti Putra Malaysia.
- Annur, M.N., M. Ariff and Shamsher M. (1991), "Technical Analysis, Unit Roots and Weak-Form Efficiency of the KLSE." **Banker's Journal Malaysia**, April: 55-57.

- Annur, M.N., M. Ariff and Shamsher M. (1992), "A Test of Semi-Strong Efficiency of the KLSE: The Effect of Annual Earnings and Dividend Announcements on Stock Prices", **Malaysian Journal of Economic Studies**, 29(1): 35-50.
- Annur, M.N., M. Ariff, and Shamsher M. (1994), "Is Kuala Lumpur's Emerging Share Market Efficient?," **Journal of International Financial Markets, Institutions and Money**, 4(1): 89-100.
- Annur, M.N., and Shamsher, M., (1987), "The January Effect on Stocks Traded on the Kuala Lumpur Stock Exchange: An Empirical Analysis", **Hong Kong Journal of Business Management**, 5: 37-50
- Annur, M.N., and Shamsher M. (1992a), "Do Interim Earnings Announcements Convey News to Investors? The Case of Kuala Lumpur Stock Exchange," **Akauntan Nasional, The Journal of the Malaysian Institute of Accountants**, 3(1): 29-35:
- Annur, M.N., and Shamsher, M. (1992b), "Not Just Any Tips", **Investors Digest (KLSE)**, February: 9-10.
- Annur, M.N. and Shamsher M., (1993a), "Factors Associated with Stock Price Volatility and Evaluation of Gordon's Share Valuation Model on the Kuala Lumpur Stock Exchange", **Pertanika: Journal of Social Science and Humanities**, 1(2): 179-186.
- Annur M.N., and Shamsher M., (1993b), *The Efficiency of the KLSE*, Penerbit UPM
- Annur, M.N., and Shamsher, M (1993c), "What To Look For In A Right Issue", **Investors Digest (KLSE)**, June: 12-13.
- Annur, M.N., and Shamsher, M., (1994), "The Wealth Effect of Appointments and Resignations of Board of Directors", **Malaysian Management Review**, 29(2): 44-52
- Annur M.N and Shamsher M., (1998b) "The Performance and Signalling Process of Malaysian IPOs: 1980-1996" **PERTANIKA: Journal of Social Sciences and Humanities**, Vol 6:
- Annur, M.N., Shamsher M and M.H. Ngu (1997), "Timing and Selectivity: Evidence From The Performance of Malaysian Unit Trusts", **Pertanika: Journal of Social Sciences and Humanities**, 5(1): 45-58.
- Annur, M.N., Shamsher M., and M. Ali (1988), "Stock Returns and the Weekend Effect: The Malaysian Experience", **Pertanika**, 11(1): 107-114.
- Annur M.N., Shamsher, M., and Zainal Abidin Mohamad., (1987), "An Empirical Study of the Treasury Bill Market in Malaysia: Part 1 - Using Treasury Bills as Predictor of Inflation," **Pertanika**, 10(3) : 349-355.

- Ariff, M., (1996) "Effect of Financial Liberalization of Four Southeast Asian Financial Markets, 1973- 94" **ASEAN Economic Bulletin** Vol 12(3): 325 - 338.
- Ariff, M and L.W Johnson (1990, *Securities Markets and Stock Pricing: Evidence from a Developing Market in Asia*, Singapore: Longman Publishers (Pte) Ltd.
- Ariff, M., Annur, M.N., and Shamsher, M., (1994), "Underpricing of Initial Public Offers: Are IPOs Excessively Underpriced in Malaysia?", **Capital Markets Review**, 2(2): 17-27.
- Ariff, M., K. Kuhan, Shamsher M. And Annur M.N., (1994), Finding the Factors Associated with Stock Price Volatility, in D. Ghosh (ed) **Managerial Finance in Corporate Economy**, Routledge Finance Series, pp 97-111, London.
- Ariff, M., Shamsher, M., and Annur M.N., (1998a) *Stock Pricing in Malaysia*, Penerbit UPM
- Ariff, M., A.S. Lamba and M. Shamsher (1998b), "Shareholder Wealth and Liquidity Effect of Section Switches on the KLSE and SES", *working paper*, Monash University, Australia.
- Bachelier, L. (1900) "Theorie de la Speculation" in Cootner, P.H (ed), "The Random Character of Stock Market Prices", 1964: 17-78.
- Ball, R. (1989), "What Do We Know About Stock Market Efficiency", Keynote speech, The Inaugural International Conference on Asia-Pacific Financial markets, 16-18 November, National university of Singapore.
- Ball, R. (1994) "The Theory of Stock Market Efficiency: Accomplishments and Limitations" **Managerial Finance** 30(2/3):
- Ball, R. (2002) "Accounting Abroad - How to Keep Managers and Auditors in Line" **Capital Ideas** Vol 3 (4): 1 and 6.
- Ball R., P. Brown, F. Finn and R.R. Officer eds (1980 & 1989), *Share Market and Portfolio Theory: Readings and Australian Evidence*, St Lucia, Queensland: University of Queensland Press.
- Barnes P. (1986), "Thin Trading and Stock Market Efficiency: The Case of KLSE", **Journal of Business Finance and Accounting**, 13(4): 609-617.
- Barberis, N., Shliefer, A., and R. Vishny (1998) "A Model of Investor Sentiment" **Journal of Financial Economics** 49: 307-343.
- Cheng F. F (2001) "*The Impacts of Accounting Earnings Disclosures on Stock Prices in Malaysia*" unpublished Ph.D thesis, Universiti Putra Malaysia.

Cheng, F.F, Ariff, M., and Annuar M.N. (2002), "Operating Cash Flows, Earnings and Share Prices Changes", working paper Department of Finance and Economics, Monash University.

Capital Market Master Plan 2001-2010: Securities Commissions of Malaysia 2001.

Chotiget, T., Annuar, M.N., Shamsher, M., and M. Ariff (1993), "Thinness of Trading and Firm Size: Do They Influence the January Effect on the Kuala Lumpur Stock Exchange", **Business Science: Theory and Practice**, Edited by Sammy G.Amin, Academy of Business Administration, Maryland, USA: 725 - 733.

Conrad, J. B. Cornell and W.R. Landsman (2002), "When is Bads News Really Bad News?", **The Journal of Finance** 57 (4): December issue.

Davies, A. and G. Pinches (1988) *Canadian Financial Management*, New York: Harper and Row Publishers.

Dawson , S.M (184), "The Trend Toward Efficiency for Less Developed Stock Exchange: Hong Kong", **Journal of Business Finance and Accounting** 11(2): 151 - 161.

Debondt W.F.W and R.H Thaler (1985) "Does the Stock Market Overreact?" **The Journal of Finance** 40(3): 793 - 805.

De Bont and Vishny (2001) **Capital Ideas: Research Highlights from the GSB University of Chicago**, Vol 2: 1

Dimson E. ed (1988) *Stock Market Anomalies*, Cambridge: Cambridge University Press.

Dryden, M.M (1970) "Filter Tests of UK Share Prices" **Applied Economics** 1(4): 261-275.

Emmanuel, D.M (1979), "Capitalization Changes and Share Prices Movement: New Zealand Evidence" **Australian Journal of Management** 4(2): 97-104

Fama , E.F (1970) "Efficient Capital Markets: A Review of Theory and Empirical Work", **The Journal of Finance** 25(2): 383-417.

Fama , E.F (1976) *Foundation of Finance*: Basic Books, New York.

Fama, E.F., (1991), "Efficient Capital Market II", **The Journal of Finance** 46: 1575-1617.

Fama., E.F., (1998) "Market Efficiency, Long term Returns and Behavioural Finance" **Journal of Financial Economics** 49(3): 283-306.

Girmes D.H. and A.E. Benjamin (1975), "Random Walk Hypothesis for 543 Stocks and Shares Registered on the London Stock Exchange" **Journal of Business Finance and Accounting** 2(1): 135-141.

Gupta, O.P (1988), *Stock Market Efficiency and Price Behaviour: The Indian Experience*, Amnol Publication: New Delhi.

- Guy, J.R.F (1977), "The Behaviour of Equity Securities on the German Stock Exchange", **Journal of Banking and Finance** 1(1): 71-93.
- Hawawini, G.A. and P.A. Michels (1984), *European Equity Markets: Risk, Return and Efficiency*, New York and London: Garland Publishing Inc.
- Hong H. (1978), "Predictability of Price Trends on Stock Exchange: A Study of Some Far Eastern Countries", **Review of Economics and Statistics** 60(4): 619-621.
- Hong, H., and Stein, J., (1989) "A Unified Theory of Underreaction, Momentum Trading and Overreaction in Assets Markets", **The Journal of Finance** 54: 2143 - 2184.
- Huson, J., Ali, A.H, Shamsheer M, Annur M.N and M. Ariff (2002), "Auditor Switch Decision of Malaysian Firms: Tests of Determinants and Wealth Effect" **Capital Market Review** 8(1&2): 1 -23.
- Hwa, O.K (2002), *Dynamic Approach to Return Predictability: Application of Chaos Theory to Financial Markets*, unpublished M.A thesis, Universiti Sains Malaysia.
- Ibrahim I., and Yong, O., (1994), *The Behaviour of Far Eastern Stocks*, Leeds Publication
- Jensen M., (1978) "Some Anomalous Evidence Regarding Market Efficiency", **Journal of Financial Economics**, 6(2): 95-101.
- Jennergren, L.P and P.E. Korsvold (1975), "The Non-random Character of the Norwegian and Swedish Stock Market Prices", in Elton and Gruber (eds) *International Capital Markets* (1975): 32-54.
- Juttner D.J.P and A.J. McHugh (1976), "Is the Australian Stock Market Really Efficient in the Weak Sense", **Investment Analyst** 44 (April): 35-36.
- Kahneman D and A. Tversky (1979) Prospect Theory: An Analysis of Decision Under Risk", **Econometrica** 49: 313 - 327.
- Kahneman D., D. Hirshleifer and A. Subrahmanyam (1998), "Investor Psychology and Security Market Under- and Overreactions," **The Journal of Finance** 53:1831-1886.
- Keane, S.M., (1983) *Stock Market Efficiency: Theory, Evidence and Implication*", Oxford: Philip Allan.
- Leng, G.K and G.H Keng (2000), "Forecasting Sectorial Indices in the KLSE", **Capital Market Review** 8(1&2): 63 - 88.
- Manap Ali (1999), *Hubungan Pulangan Saham dengan Faktor Fundamental: Kajian Rentas Seksyen ke atas BSKL*, Tesis Doktor Pentadbiran Perniagaan, Universiti Kebangsaan Malaysia.
- Nassir M. L., (1983) "A Study of Market Efficiency and Risk Return Relationship in the Malaysian Capital Market", Ph.d dissertation, Katholieke University of Leuven, Belgium.

- Neoh, S.K., (1986), "An Examination of the Efficiency of the Malaysian Stock Market" Ph.d dissertation, University of Edinburgh.
- Niarchos, P., (1973) "The Stock Market in Greece: A Statistical Analysis: quoted in Cooper (1982) "World Stock Markets: Some Random Walk Tests," **Applied Economics** 14 (October): 516-531.
- Norhana S., (1998) "Equity Capital Raising and Determinants of Its Price Behaviour in Malaysia," unpublished Ph.d thesis, Universiti Putra Malaysia.
- Norhana, S, M. Ariff and Annuar M.N (1999) "Economic Influence on Announcement Behaviour of Right Issues in Malaysia", **Pacific Basin Finance Journal** 7(2): 405 - 427.
- Praetz P.D. (1969), "Australian Share Prices and Random Walk Hypothesis", **Australian Journal of Statistics** 11(3): 123-139.
- Rosenburg, B. and A. Rudd (1982), "Factor Related and Specific Returns of Common Stocks Serial Correlation and Market Efficiency", **The Journal of Finance** 37(2):543-554.
- Sakakibara, S. (1988) "The Japanese Stock Market: Pricing System and Accounting Information, New York: Praeger Publication.
- Shahnaz I, Annuar M.N, M. Ali and J. Huson (2002) "Wealth Effect of Auditor Switch: Evidence from Second Board Companies" *proceedings, Asia Pacific Economics and Business Conference 2002, Kuching, Sarawak*: 1042 - 1049.
- Shamsher M., and Annuar, M.N., (1993), "Bonus Issues and Market Reaction: Is It Favourably Received?", **Capital Markets Review**, 1(2): 67-81.
- Shamsher M., and Annuar, M.N. (1994), "Can Past Winners Be Future Champions", **Investors Digest (KLSE)**, August: 22-23.
- Shamsher M., and Annuar, M.N., (1995a), "The Performance of Unit Trusts in Malaysia: Some Evidence", **Capital Markets Review**, 3(2): 51-69.
- Shamsher, M., and Annuar, M.N., (1995b), "Price Changes and Trading Volume Relationship: Preliminary Evidence From KLSE", **Pertanika: Journal of Social Sciences and Humanities**, 3(2): 147-154.
- Shamsher M and Annuar M.N. (1997a), "The Wealth Effect of Research and Development Expenditure on Firms Listed on the KLSE" **Capital Market Review** 5(2): 17 - 26.
- Shamsher, M., and Annuar, M.N., (1997b), "Auditing Firm Reputation and Underpricing of Malaysian Initial Public Offers on the Second Board of the KLSE: 1990-1995", **Pertanika: Journal of Social Sciences and Humanities**, 5(1): 59-64.

- Shamsher, M., and Annuar, M.N. (1997c), "Prestasi Pengurus-Pengurus Dana Di Malaysia: Keupayaan Pemilihan Dan Jangkaan Perubahan Keadaan Pasaran", **PELABUR**, Penerbitan Bersama PNB Dan Mingguan Malaysia, 28hb September 1997.
- Shamsher M and Annuar M.N (2000) "Regulatory Intervention Effect on IPO Underpricing" **Capital Market Review** 8(1/2): 109-122.
- Shamsher, M., Annuar, M.N., and M. Ali, (1994), "Do Stock Market Reacts To Auditors' Opinion", **Akauntan Nasional, Journal of Malaysian Institute of Accountant**, 5(5):12-14.
- Shamsher M., Annuar, M.N., and B.T. Ong (1995), "The Economic Viability of Some Commonly Used Technical Analysis Tools in the Malaysian Securities Market", **Capital Markets Review**, 3(2): 91-99.
- Shamsher M and Zulkarnain S., (2001) "The Wealth Effects on the Announcements of Audit Committee Formation", **Akauntan Nasional** 14(6): 22-24.
- Solnik B.H (1973) "Note on the Validity of the Random Walk Hypothesis for European Stock Prices", **The Journal of Finance** 21(5): 1151-1159
- Tamat, S., A. Zubaidi and Annuar M.N (1999) "Dasar Liberalisasi dan Hubungkait Dinamik antara Pasaran Saham di Negara-negara Asia Kian Muncul", *working paper*, Jabatan Statistik UKM.
- Thaler R.H ed. (1982), "*Advances in Behavioural Finance*" New York: Russell Sage Foundation.
- Theobald, M., and P. Yallup (2001) "Determining Security Speed of Adjustment Coefficient", *working paper*, Department of Accounting and Finance, Birmingham Business School.
- Theils, H. and L. Leender (1965), "Tomorrow on the Amsterdam Stock Exchange" **Journal of Business** 38(3): 277 -284.
- Taufiq C. H (2001), *Overall Performance of Malaysian Futures Market*, Ph.d thesis Universiti Putra Malaysia.
- Verrechia, R.E (1979) "On the Theory of Informational Efficiency," **Journal of Accounting and Economics** 19(1): 77-90.
- Yong, O., (1987), *A Study of Weak-form EMH on the KLSE*, Ph.d dissertation, Mississippi State University.
- Zulkarnain M. S., Shamsher M, Annuar M.N, and M. Ali (2000) "Announcement effect of Corporate Name Change: Failed vs Non-failed firms" *paper presented at the Faculty of Economics and Management Seminar*, October, Penang.

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