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STOCK MARKET WINNERS: THAILAND EVIDENCE

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ABSTRACT

Stock Market Winners: Thailand Evidence

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Of all the stocks listed on the Stock Exchange of Thailand (SET) during 1990-1993, 120 of them had their stock prices double within a year. These firms share some common characteristics. These significant characteristics are changes in trading volume on the foreign board, and quarterly earnings changes.

The significant winners' characteristics are used to form the trading strategies that are applied to the stocks in the SET, excluding the winners, over the period of 1990-1993. Although these trading strategies underperform the SET index, the combined strategy improves the performance of one-criterion strategies in a quarter and a two-year scheme. On a two-screen strategy, the average CAR over a two-year holding period are –5.95 and –4.73 percent for a quarter and a two-year scheme, respectively.

The foreign investments do affect stocks on the SET. It boosts local trading of international stocks on the main board.

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INTRODUCTION

The Stock Exchange of Thailand was founded with only sixteen listed securities and a total of 400 million bahts ($US 16 million) worth of trade in the first year of operation. Today (1997) the stock exchange has more than 400 listed companies in thirty sectors. Market capitalization has rocketed since the first boom period (1986-1989) to a present value equivalent of 3,625 billion bahts ($US 145 billion). As shown in Table 1, the largest sector on the SET is the banking sector, which accounts for 26.3 percent of total market capitalization. The communication sector and the finance and securities sector follow with 16.96 and 13.05 percent, respectively, of total market capitalization.

Due to the success of Thailand's financial liberalization, the foreign investment in the stock market has substantially increased. In 1986, the foreign investment accounted for 10.36 percent of the total market value. Foreign investors now account for over a quarter of the total market value.[1] Foreign investment activities have gradually increased and expect to increase continuously in the future. Accordingly, the SET separates foreign trading from local by: 1) Setting up a foreign board for foreign investors during September 1987; and 2) Establishing foreign ownership limits on many Thai firms. According to the Alien Business Act, foreign shareholding is generally limited to a maximum of 49 percent. However, some specific areas of business have different foreign shareholding limitations. For example, commercial banks and finance companies have a maximum foreign shareholding of 25 percent.

[1] Stock Exchange of Thailand on Internet at http://www.set.or.th

Nevertheless, securities that list on both the main and foreign boards are not different in other features, except for price. Security prices on the foreign board are typically higher than those on the main board for the same firm. Bailey and Jagtiani (1993) attribute the price differences to: 1) Relatively tight foreign ownership limits or relatively limited shares to foreigners; 2) Relatively high liquidity of securities on the foreign board; and 3) Large amount of firm-specific information available to foreign investors.

Thailand economy and The Stock Exchange of Thailand

Due to the pick-up of the Thai economy in the late 80's and the liberalization of foreign exchange controls for the Thai financial system in accordance with article eight of the International Monetary Fund (IMF), both direct and indirect foreign investments, notably from Japan, Taiwan and the United States, were attracted. This trend continued until mid 1990 when the Gross Domestic Product (GDP) growth and the SET index reached its peak of 10.8 percent and 1143.78, respectively. The SET index had almost tripled its value two years earlier, before it was interrupted by Crisis in the Persian Gulf. Figure 2 compares the stock market performance for the Thai SET index and the US S&P 500 index.

The Persian Gulf Crisis in August 1990 created increases in oil prices. This in turn had a severe negative impact on the Thai stock market. It caused share prices to decline by more than 50 percent within a few months. The investment had slowed down and the market sentiment was unfavorable. Additionally, domestic political affairs, tight financial markets, increase in inflation rate coupled with rising local interest rates had further negative impacts

on the stock market. Consequently, investors' confidence diminished with the trading volume and caused the outflow of money from the market. This trend continued for about two years before the investors' confidence were restored and the economy started to pick-up again.

Although the economy maintained its growth rate of about 8.5 percent throughout 1993-1995 period, the SET index, after reaching its peak in early 1994, dropped sharply in few months upon foreign funds profit-taking. From then on, the SET index had not fluctuated much until the end of 1995.

The movement of the SET index at times followed the trend of the Dow Jones Industrial Index especially on the downside. The Dow Jones Industrial Index usually drops upon news of Fed Fund rate increase and causes a chain-reaction to take place in other markets world-wide from Japan in the far-east to London in the far-west. The SET index is no exception since the Thai currency (Baht) closely fluctuates with the US dollar. Although, a basket of foreign currencies is used in calculating the foreign exchange for the Thai Baht, much of the weight (about 80 percent) is given to the US dollar. Hence, it is not surprising that the SET index upon news of Fed Fund rate increase follows the trend of the Dow Jones Industrial Index regardless of the local economic status.

The Thai economy showed signs of slowing down since early 1996 due to the decline in exports and excessive non-productive investments in real estate. There are several factors affecting the shortfall in exports. Examples include the wide-spread requirement for the ISO standard, the cease on products from manufacturers that do not have adequate measures to protect the environment; and the anti-dumping tax surcharges imposed on some products. The signs of economic slowdown became clear in mid 1996, which triggered government actions

to improve the situation. Several measures have been implemented, but the results are yet to be seen.

The SET index turned down following the trend of the economy since early 1996, but the drop is excessive. This is due to the small market size and its immaturity, which make it easy to manipulate. Rumors are usually effective and frequently used as tools coupled with some speculative techniques to lead market directions. The local economy is often overlooked and incapable of overcoming the hostile effect generated by the external conditions, especially during their active periods.

The so-called "Mexico syndrome" has aggravated many emerging markets in the past year, although the conditions of those markets were different from Mexico's. It has been speculated that the news media was used to spread the bad news that, in turn, instigated the dumping of the currency of the target market. The public's heed to the bad news served to fulfill the veracity of that news. The process was continued in series until the crowds in the foreign exchanges markets followed and the objective was fulfilled, or the links were cut off by the authority of the target market. The "Mexico Syndrome" hit the Thai market recently by emphasizing the increasing current deficit and inflation and the decline in exports. However, the Thai government and its Central bank fought back and were able to calm down the foreign exchange market within a short period.

In early 1997, a downgrade of Thailand's long-term foreign debt by Moody's Investors Service, Inc. decreased stock prices and the baht currency. A rating of single-A-2 was drawn on the soundness of Thailand's financial sector, specifically the buildup of short-

term foreign debt, its exposure to the property sector, and the increase in non-performing loans. Still, Thailand's single-A-2 rating is higher than that of Hong Kong, Indonesia, and the Philippines. However, Standard and Poor's Ratings Groups still evaluates Thailand's long-term debt a single-A rating.[2]

Until now, most unfavorable circumstances hitting the SET were short term. It is optimistic that the present economic slow-down condition will fade away soon and the SET will start to rise again. A Thai government agency has forecasted that the country's economic growth rate for 1997 will be about 5.8 to 6.2 percent with lower inflation and current deficit compared to those of 1996.

Problems in the Stock Exchange of Thailand

Being an emerging market, the Stock Exchange of Thailand has gained a lot of attention from both local and global investors. Due to inadequacies and inconsistencies of the laws, the stock exchange has, so far, a high degree of front running, gambling and chronic pure speculation, which has caused financial crisis in the market itself. With massive amounts of information available from various sources including the media, the impact of the financial crisis was tremendous. Many investors and small finance companies were bankrupt because of this.

As is generally known in the Thailand financial community, large institutional investors who trade great quantities of any given stock, which cause sharp up and down markets and individual stock movements, today dominate the stock market. Moreover, most domestic retail investors like to invest in speculative securities by listening to rumors or inspecting institutional

2 Wall Street Journal, The Globe and Mail, Monday, February 17, 1997: B7.

or foreign investors in order to make a trading decision. Some do not even have the knowledge and understanding of investments in the market. Not surprisingly, domestic retail investors suffered great losses when institutional or foreign investors lost their confidence in the SET and sold their huge amount of securities in the market.

Objective of the study

The objective of this study is to expand the body of relevant and useful knowledge in the area of stock market investment by contributing to the understanding and application of investment knowledge. This objective will be accomplished through an analysis of the characteristics among growth stocks from 346 listed companies in the SET during the period of 1990-1993. Through an investigation of possible common characteristics among these winners, profitable investment strategies may be derived.

According to Reinganum's paper (1988) "The Anatomy of a Stock Market Winner", in the US, winners generally have fewer than 20 million common shares outstanding. In addition, the winners sell at a price less than their book value before their significant price advances, while their quarterly earnings accelerate in the quarters preceding the price increase. Moreover, trading strategies based on these characteristics significantly outperform the S&P 500 index. Over a two-year period, a market-adjusted cumulative abnormal return equals 65.4 percent, versus 14.7 percent for the index.

This paper also examines the impact of foreign funds. If foreign investor trading activities have a large impact on stock prices, one may use information from the foreign board, in additional to that from the main board, to form profitable trading strategies. Here, stocks whose prices doubled within one year during the examined period will be designated as "winners".

RESEARCH QUESTIONS

1) Are there any common characteristics such as trading activities (volume, number of transactions), valuation measures (P/B, P/E, market capitalization), technical indicators (beta, relative strength rank, relative stock price ratio, common stock outstanding), and earnings changes among winners in the stock market before the significant price change period?

2) Does the investment strategy using winners' common characteristics identified in step 1 as screening criteria outperform the market index?

3) Do the information on the foreign board yield profitable trading strategies?

DEFINITION OF WINNERS

Winner	A stock whose price doubled within a year during 1990-1993.
Domestic winner	A winner whose stock lists only on a main board.
International winner	A winner whose stock lists on both a main and a foreign board.

Winners in the Stock Exchange of Thailand are selected from all stocks listed on the main board during the period of 1990-1993. Like Reinganum (1988), winners have their prices increased, within in a year, twofold relative to the buy price. Each winner has only one event of doubled price changes, and is assigned the buy and sell dates. For example, AA stock's price has increased by 100% from January 31st to May 31st. Then, the buy-date and the sell-date for the winner is January 31st and May 31st, respectively.

LITERATURE REVIEW

The efficient market hypothesis states that every stock's price is equal to its investment value (true worth) at all points in time; however, stock price may deviate at times from this value. Some studies find that investors tend to overvalue high growth stocks and undervalue low growth stocks. The high growth stock is a stock with high past growth and high expected future growth, while the low growth stock is a stock with low past growth and low expected future growth. Contrarian strategy recommends buying attractive stocks that others have avoided and selling short unattractive stocks that others have feverishly chased. Eventually, the market will recognize the mispricing and a correction will take place until fundamental values are reached. Investors who exploit the contrarian strategy will gain due to this correction reaction. Much prior research documents this empirical evidence on the success of contrarian strategy, such as Debondt and Thaler (1985,1987), Chan (1988), Jegadeesh and Titman (1993), and Lakonishok, Shleifer and Vishny (1994).

Although there is some agreement on contrarian strategy's superior returns, the explanation of its abnormal returns is unclear. A finding of abnormal return on the contrarian strategy is sometimes interpreted as support for the market overreaction hypothesis. Most people tend to overweight unexpected new information and underweight prior information. As a result, glamour stocks tend to be overvalued and value stocks tend to be undervalued. While many researchers agree that their findings (past losers significantly outperform past winners) are consistent with the overreaction hypothesis, they suggest different causes that are responsible for the overreaction effect. Debondt and Thaler (1985,1987) report that investors overreact to earnings information. They also state that the overreaction phenomenon is not

mainly a size effect nor changes in risk. Their conclusions contrast with those of Zarowin (1989) who maintains that the overreaction event is due primarily to a size effect, not investor overreaction to earnings.

Independent of the length of the time period used, the overreaction effect still remains. Debondt and Thaler (1985,1987) report that prior losers, over a long-term period (3-5 years), significantly outperform prior winners over the subsequent period of the same length. However, Zarowin (1990) demonstrates that the size effect and the January effect subsume the long run, not the short-run, overreaction phenomenon. Chang, Mcleavey and Rhee (1995) find evidence in Tokyo Stock Exchange that is consistent with Zarowin. Rosenberg and Rudd (1982) and Rosenberg, Reid and Lanstein (1985) report evidence of overreaction in short periods that losers of previous month significantly outperform winners of previous month. Howe (1986) finds that winners (losers) over a one-week period exhibit abnormal negative (positive) returns up to one year subsequent to the formation period.

On the other hand, abnormal returns on the contrarian strategies can be explained by rational valuation. Chan (1988) explains that the abnormal return on the contrarian strategy is attributed to changes in risk as measured by CAPM-betas. A decline (increase) in stock prices leads to an increase (decline) in risk. Thus, buying losers produces superior returns because they are riskier. Consistent with Chan (1988), Fama and French (1992) state that investing in value stocks yields higher return than investing in glamour stocks because value stocks are fundamentally riskier. Value stocks' higher returns are simply compensation for their risk. However, Lakonishok, Shleifer, and Vishny (1994), as well as Jegadeesh and Titman (1993), find superior returns on a number of contrarian strategies for some decades without higher

systematic risk. They show that value stocks have been underpriced comparative to their risks and returns, so simply buying value stocks gives abnormal returns.

Previous US studies have suggested that investors may use publicly available information to yield a superior investment strategy. Following is a discussion of some of the literature that provides the background for this study.

The effect of foreign funds

The Stock Exchange of Thailand (SET) has two trading boards called the foreign and the main board. The foreign board is designed specifically for foreign investors with the assurance that buyers of stocks from this board will have all the rights of shareholders, such as the rights to vote in the annual meeting or the right to buy shares offered by the companies when raising capital. The main board is for Thai investors only. However, foreign investors can also invest in the main but are not as assured of the benefits as investing in the foreign board if the limit for foreign shareholders is exceeded. For example, foreign investors may not have rights to vote or get dividends. On the other hand, local investors can invest in the foreign board, but have to sell stocks to the market from which they bought.

The SET separated foreign from local trading in September 1987 by: 1) setting up a foreign board for foreign investors to handle the increase in foreign direct and portfolio investment; and 2) Establishing foreign ownership limits on many Thai firms. Firms in the SET offer shares for foreigners, within a foreign ownership limit, on the foreign board. Nevertheless, securities that are listed on both the main and foreign board are not different in other features, except for prices.

Prices on the foreign board are typically higher than those on the main board. Bailey and Jagtiani (1993) attribute the price differences to: 1) Relatively tight foreign ownership limit or relatively limited shares to foreigners; 2) Relatively high liquidity of securities on the foreign board; and 3) Large amount of firm-specific information available to foreign investors.

In this paper, local stocks are defined as stocks that are traded only on a main board, whereas international stocks are defined as stocks that trade on both main and foreign boards. Beyond the firm-specific information that influences investors' trading decisions, foreign trading activities are boosters for local trading activities on international stocks. Local stocks, which do not have foreign trading activities as a catalyst, are activated only by local trading activities. Khanthavit (1997) reports that foreign investors brought information into the Stock Exchange of Thailand, and activated the local individual investors' trades. Consequently, various variables of the international stocks on the main board may be affected by the foreign trading activities.

Trading volume

Both price and trading volume of common stocks are believed to react swiftly to new information. Much research has inferred that the absolute value of price change is positively and linearly related to volume. Stock prices and volumes are causally related: volume induces price change, price change induces volume, and feedback between price change and volume (Rogalki (1978)). Lakonishok and Smidt (1989) report that past price changes provide current incentives to trade for investors.

From a theoretical outlook, stock price changes on a low trading volume day are more likely to invert on the next day than those on a high trading volume day. Prior research gives the possible explanation that stock price changes reflect demand for a stock and high trading volume reflects demand from informed rather than uninformed traders. Therefore, stock price changes supported by high volume are depicted as information-driven price changes, while price changes supported by low volume are depicted as liquidity-motivated trading. The impression of informed trading suggests that price changes are less likely to invert. On the contrary, the liquidity-motivated trading comes from some temporary force irrelevant to information. Hence price changes are inclined to be temporary and likely to revert on the next day.

Stickel and Verrecchia (1994) find that price changes upheld by weak volume tend to revert, at least partially, on the next day, while price changes with strong volume do not revert. Moreover, they find that a price increase supported by large volume tends to be followed on the next day by another price increase. Many researchers document that high trading volume is associated with volatile returns and volume tends to be larger when stock price increases than when stock price decreases. Consistent with Lakonishok and Smidt (1986,1989), Brener and Kato (1996) show that volume is larger for winners than for losers. They interpret their results as being due to non-tax related reasons of trading behavior rather than tax-induced trading.

Significant increases in winners' trading volumes are expected during the buy and sell quarters in order to support their significantly positive price changes due to informed trading.

Market-to-book value ratio (P/B ratio)

P/B ratio is one of the significant financial measures that are often used to distinguish value stocks from growth stocks. Based on P/B ratio, value stock is a stock that has low price relative to book value, and vice versa for growth stock. Rosenberg, Reid, and Lanstein (1984) find superior returns relative to the market for stocks with low market value relative to book value of equity.

Fama and French (1992) indicate that P/B ratio is significantly related to stock returns. When partitioned by market values, P/B ratio explains the differences in average returns across stocks and appears to subsume the roles of leverage and price-earnings ratio in explaining stock returns. Furthermore, they find that P/B ratio has a better capability than size in explaining stock returns. They claim that the P/B ratio may proxy for some distress risk. Firms with low P/B ratios, which signal low earnings on book equity, are less profitable and relatively distressed. Consequently, investing in stocks with low P/B ratio leads towards higher risk, and their higher average returns are compensation for this added risk. Their explanation of P/B ratio is consistent with a rational pricing model.

Haugen and Baker (1993) and Lakonishok, Shleifer, and Vishny (1994) elucidate the negative P/B effect with the overreaction hypothesis. The market extrapolates strong earnings growth of high P/B stocks and poor growth of low P/B stocks. Then, high P/B stocks have low average returns because future earnings growth is weaker than the market expects. While low P/B stocks have high average returns because earnings growth is stronger than expected.

With respect to the P/B effect, winners are expected to have low P/B ratios in the buy quarter and P/B ratios are anticipated to increase during the holding period. Reinganum

(1988) reports that winners' P/B ratios are less than one in the buy quarter and the preceding quarters. He also includes stocks whose P/B ratios is less than one in his trading strategy.

Price - Earnings ratio (P/E ratio)

The other significant financial benchmark investors most commonly use to differentiate between value and glamour stock is P/E ratio. Prevailing insight states that the P/E ratio effect refers to the tendency of stocks with extremely low P/E ratios to earn larger risk-adjusted returns than those stocks with high P/E ratios. Examples include Basu (1983), Debondt and Thaler (1985), Bauman and Dower (1988), Keim and Westerfield (1989), Keim (1990), Chan, Hamao and Lakonishok (1991), Fama and French (1992), and Lakonishock, Shleifer, and Vishny (1994).

One explanation for the anomaly is based on investor overreaction to future earnings. Similar to the overreaction hypothesis for P/B ratio, stocks with very low P/Es perform better because investors tend to be overly pessimistic about future growth in earnings. Therefore, low P/E stocks are temporarily undervalued. Once future earnings turn out to be larger than expected, the price adapts. Dreman and Berry (1995) find that low P/E stocks are influenced by either positive or negative earnings surprise more than high P/E stocks. That is, positive earnings surprises result in significantly positive excess returns for low P/E stocks but average excess returns on high P/E stocks. Likewise, negative earnings surprises result in a minor impact on low P/E stocks but significantly negative abnormal returns on high P/E stocks.

Prior research indicates that the extent of the size and P/E effects are period specific. That is, the size effect dominates in some periods and the P/E effect dominates in other

periods. Wong and Lye (1990) find that P/E dominates size, similar to Basu (1983) and Peavy and Goodman (1983). In contrast, Reinganum (1981) argues that P/E is just a proxy for size effect, like Banz and Breen (1986), Rogers (1988), and Bishara and Elfakhani (1990). Consistent with Cook and Roseff (1984), Jaffe, Kiem and Westerfield (1989) find equally significant effects of both P/E and size. Keim (1990) investigates longer sample interval and finds that both size and P/E effects are crucial in January, but only the P/E effect is significant during the rest of the year.

Jaffe, Keim and Westerfield (1989) find significant P/E and size effects, and also detect consistently high returns for firms with negative earnings. However, Bourgeois and Lussier (1994) find that negative P/E stocks contribute positive abnormal returns only in January but abnormally low returns in the rest of the year.

In spite of the P/E anomaly, Reinganum (1988) finds that P/E ratios for winners did not tend to be small, and only 10 percent of winners had P/E ratios less than five in the buy quarter. He indicates that a low P/E ratio is not an essential elemental of a successful trading strategy. With regard to the P/E effect, winners are expected to have low P/E ratios in the buy quarter, but higher ratios in the sell quarter which mainly reflects the result of proven growth.

Market capitalization

Generally, stock market capitalization is used as the measure of firm size. Prior researchers have scrutinized the well-known size effect, the relation between average stock returns and market values, but their results are controversial.

Basu (1983) states that the securities of small firms earned substantially higher returns than the securities of large firms. Similarly, Stattman (1980), Banz (1981), Reinganum (1981), Fama and French (1992), and Rosenberg, Reid and Lanstein (1985) show the negative size effect with stock returns. Brown, Kleidon and Marsh (1983) suggest that the size effect is unstable over time and is sensitive to the time period and methodology used. They find that the size effect is linear in the logarithm of market value. As well, Banz (1981) finds that the size effect is not linear in market value but is most noticeable for the smallest firms.

According to the option pricing theory, the firm's financial leverage decreases as the stock price increases, which reduces the risk of the firm. Likewise, while the firm's market value increases, it may gain more economies of scale and reduce operating leverage, which reduces the risk of the firm. Chan, Chen, and Hsieh (1985) explain the negative firm size effects, as smaller firms are more vulnerable to changes in economic conditions than larger firms. Hence, smaller firms' higher abnormal returns are associated with higher risk in an efficient market.

Conforming to Banz (1981) and Reinganum (1981), Friend and Lang (1988) observe that the size effect mainly reflects the risk effect that is not caught by beta or variance measures. However, Chen (1981,1983) finds no size effect after adjusting the factor risks in the Arbitrage Pricing model (APT).

On the other hand, Zarowin (1989) proposes the negative size effect due to the overreaction phenomenon. Investors tend to extrapolate the low profit and poor growth of small firms into the future, leading to underestimated stock prices. Small firms earn higher returns due to higher growth than expected by the market. Banz (1981) construes the negative size effect, which is due to the lack of information on small firms and limited diversification. This leads to higher returns for the unwelcome stocks of small firms.

Prior research tends to support the negative size effect so winner's market capitalization is expected to be small in the buy quarter. However, in Reinganum's sample, neither low stock price nor small market capitalization characterizes winners. He reports that small firms do not outperform large firms, and suggests that small firms are not an essential element of a successful trading strategy.

Beta

Beta is a relative risk measure, which indicates the stock's systematic risk relative to market index. According to the Sharpe-Lintner Capital Asset Pricing Model (CAPM), expected returns are a function of systematic risk or beta. Securities that earn higher returns must be fundamentally riskier. Roll and Ross (1994) and Shefrin and Stattman (1995) postulate that a strong linear relationship exists between stock returns and betas measured relative to a mean-variance efficient portfolio. Nevertheless, Roll and Ross (1994) emphasize that the stock return-beta relationship may be weak if the benchmark is not a mean-variance efficient portfolio.

Merton (1987), Tinic and West (1986) and Amihud and Mendelson (1989) reiterate that stock returns are an increasing function of systematic risk or beta. Chan (1988) finds that excess returns are likely to be normal compensation for the risk inherent in his investment strategy. He also finds that the risks are not constant over time. Winners' betas are large at the beginning of the estimated rank-period and decrease after a period of significant price change. The direction of the change agrees with the option leverage effect.

Fama and French (1992) suggest that beta, used in isolation or jointly with other variables, has little connection with average returns of common stocks. Lakonishok, Shleifer and Vishny (1994) detect that high fundamental risk maintained in value stocks does not seem to explain their higher average returns. They conjecture that value stocks have been underpriced relative to their risk and return so buying value stocks produces abnormal returns. Reinganum (1981) provides evidence that winners' betas are insufficient to account for the extraordinary returns of winners although winners' betas are slightly higher than the market as a whole.

Based on the CAPM, higher risk stocks are compensated with higher returns. Hence, winners' betas are anticipated to be high.

The relative-strength ranks

Relative-strength rank is based on the weighted average of quarterly price change, which places more weight on the recent quarter than the previous quarter. Contrary to contrarian strategy, relative strength strategy is the strategy that buy past winners or stocks

with high relative-strength ranks and sell past losers or stocks with low relative-strength ranks. Although the current academic work has focused on the contrarian strategy, many practitioners such as mutual funds and value line rankings still use relative strength as one of their stock selection criteria.

According to Copeland and Mayers (1982), Stickel (1985) and Grinblatt and Titman (1989), the accomplishment of many mutual funds and the forecasting power of value line rankings suggest that the relative strength strategy may produce abnormal returns. Levy (1967) shows that trading strategies that buy stocks with current prices higher than their prices over the past twenty-seven weeks produce significant abnormal returns. Jegadeesh and Titman (1993) observe significant positive returns for the relative strength strategies over 3-12 months holding periods that are not explained by systematic risks. However, these abnormal returns lessen in the following 12-31 months. They interpret their result as price pressures which temporarily move prices away from their long-term values and induce overreacted prices. Delong, Shleifer, Summers and Waldman (1990) explain that the market underreacts to short-term information but overreacts to long-term information, given the characteristics of the long-term information as being more complicated and ambiguous than the short-term information.

Winners should be identified with high relative-strength ranks. Reinganum (1988) finds that the relative-strength ranks for all winners except one exceeded seventy in the buy quarter, and the rank moderately increases between buy quarter-1 and buy quarter. Therefore, he includes firms whose relative-strength ranks are at least seventy in the buy quarter and exhibit positive changes from the prior quarter in his investment strategy.

Percentage change in earnings

Prior research indicates that changes in stock price are a function of some measure of the changes in earnings. Ball and Brown (1968) find a significant connection between the sign of unanticipated earnings and the sign of associated stock price changes. Lipe (1990) shows that both past earnings predictability and earnings persistence has a positive link with stock returns. Strong (1993) finds a significant relationship between stock returns and earnings levels as well as earnings differences in the UK. He also notes that earnings changes rather than earnings levels may have more explanatory power for stock returns. Finally, Ohlson (1989) and Easton and Harris (1991) suggest that an earnings yield variable as well as the first differences in earnings have explanatory power for the earnings effect on stock returns. Nevertheless, Lev (1989) infers that the information value of earnings for stock returns is quite weak.

Prior research also documents a lagged response of stock prices to quarterly earnings, or post-earnings announcement drift. Investors fail to appreciate the extent to which changes in current quarterly earnings signal future changes in earnings. Stock prices appear to delay in response to earnings news, which is consistent with the underreaction hypothesis to earnings. Supported evidence is found in Rendleman, Jones and Latane (1987), Freeman and Tse (1989), Zarowin (1989), Bernard and Thomas (1989,1990), Wiggins (1991), and Abarbaneil and Bernard (1992). On the other hand, Debondt and Thaler (1985,1987) suggest that the stock market might overreact to current earnings.

Reinganum (1988) suggests stocks with a positive shift in quarterly earnings changes or earnings acceleration be included in a trading approach because it is a prevailing characteristic among his 222 winners.

Common stock outstanding

New companies usually issue a small number of shares at the beginning, and as the company expands and succeeds, more shares are issued. Ilich (1984) proposes that investing in companies with relatively low numbers of common shares issued is a possible wealth-building investment.

The first reason is that the fewer the number of shares a company has issued, the greater the fluctuations in the market price of the stock. If there is a great demand to purchase the stock, the price will rise faster because the supply is limited. Secondly, companies with fewer shares outstanding are apt to announce stock dividends or stock splits. Due to the growth of the firm and earnings per share, the stock market price will rise to such an extent that the firm must announce either stock dividends or stock splits in order to lessen the stock market price and to become more attractive to a broader group of investors.

Stock splits are regarded as a good news signal, according to some prior researchers. Firms could use stock splits as an explicit signal of superior performance or of undervalued stock prices. Some firms do not intend splits to be explicit signals, but to maintain the stock price in the desirable trading range. Investors may interpret this as an implied sign of a firm's good performance. The increase in the company's market value after the stock split or stock

dividend announcement is a common phenomenon, especially if the stock split or stock dividend is significant.

Previous studies suggest that stock splits carry information or signals that are typically followed by positive earnings performance. Therefore, positive stock price reactions are observed in response to the announcement. Liljeblom (1989) reports significant positive stock price reactions in response to stock dividend or stock split announcements that cannot be attributed to contemporaneous information disclosures of EPS or dividends. Woolridge (1983) and Grinblatt, Masulis and Titman (1984) report a favorable stock price response around the announcement dates of stock dividends or stock splits that had no other firm-specific event coincident with the announcement. Ilich (1984) states that stock splits do not change the total percentage of ownership of shareholders. Nevertheless, investors tend to match stock splits or stock dividends with company future growth. Therefore, the stock price rises at the announcement of stock dividends or stock splits.

However, Lamoureux and Poon (1987) explain the positive abnormal return to stock split announcements due to an increase in the number of transactions along with the volume of stock traded which increase the volatility of the stock price. They reject the explanation that stock splits move stock prices into a favorable trading range, by including reverse splits in their study. Consistent with Lamoureux and Poon (1987), Ohlson and Penman (1985) find that stock volatility increases by an average of 35 percent subsequent to split ex-days.

Accordingly, during the buy and sell quarters, winners are expected to increase in common stock outstanding. In Reinganum (1988), nearly 90 percent of the winners have fewer than twenty million shares of stock outstanding in the buy quarter and the average number of outstanding shares nearly double in the sell quarter. He also includes firms whose

common stock outstanding are fewer than twenty million shares in the buy quarter in his investment strategy.

DATA AND METHODOLOGY

Data Availability

Data on stocks listed on the Stock Exchange of Thailand (SET) from 1988-1995 is provided by the SET information service. The data consists of the monthly market index (SET index) and monthly trading information on the main board (i.e. stock price, number of transactions, volume, value, price-earning ratio, price-book value ratio, and listed share). For information on the foreign board, the SET information service provides only monthly number of transactions, volume and value data. The quarterly volume and number of transactions are equal to the sum of monthly volume and number of transactions. Since quarterly earnings data are not available, quarterly earnings are derived from monthly price-earning ratios and monthly stock prices.

Stock Selection Criteria and Classification

Like Reinganum (1988), a stock whose price increased, within a year, twofold relative to the buy price is deemed a winner. Winners in the Stock Exchange of Thailand are selected from all stocks listed on the main board during the period of 1990-1993. Each winner has only one event of doubled price changes, and is assigned buy and sell dates. For example, AA stock's price increased by 100% from January 31st to May 31st (i.e. its buy and sell dates). The selected stocks are arranged into domestic and international classes to investigate the impact of foreign trading activities.

Characteristics to be observed

All samples are observed quarterly for joint characteristics for the following four categories: 1) Trading information such as stock price, volume, and number of transactions; 2) Valuation measures such as price-earnings ratio, price-book value ratio, stock price and market capitalization on the buy date; 3) Technical indicators such as stock beta, relative-strength rank, relative stock price ratio, and common stock outstanding; and 4) Earnings measures such as percentage change in quarterly earnings. The values during the sell and buy quarters, and the four preceding consecutive quarters are compared to a benchmark (the average of the fifth to the eight quarters preceding the buy quarter) to determine whether the characteristics change significantly from the benchmark. The considered variables are judged as common characteristics among winners if variables change significantly from the benchmark quarter.

These common characteristics are used as criteria for choosing stocks in constructing trading strategies. The investment strategy is tested to determine if it yields a superior gain. The stocks listed in the SET during the period of 1990-1993, excluding former winners, are screened by each common characteristic and by combining all common characteristics together. For each trading strategy, the buy dates for selected stocks are thirty days[3] following the buy signals to ensure that the accounting information has been released. The positions in the stock are held for two years. The cumulative holding-period returns for each stock are compared with the cumulative returns of the SET index over the same period. The differences are the cumulative

3 The SET places disclosure for quarterly financial statement, which must be within 30 days from the end of each quarter.

abnormal returns (CAR). All returns are tested to determine if they are significantly different from zero.

EMPIRICAL RESULTS

Winners of the Stock Exchange of Thailand

Of about 386 stocks listed on the Stock Exchange of Thailand (SET) for the period of 1990-1993, firms are classified as winners if their stock prices doubled within one year. After matching all available data with winners, a list of 120 winners was compiled. Ninety-five of which were traded by foreign investors while the remaining twenty-five were not. The international stocks account for 79.16 percent of the winner samples. This suggests significant influences of foreign investment on the SET. Winners consist mostly of stocks in the finance and securities sector, which are 16 and 19.5 percent of the local and international winners, respectively. The next concentrated sector in the winners' samples is the banking sector, which accounts for 12 and 11.7 percent for local and international winners, respectively.

The winners' price appreciation is shown in Panel A of Table 2. The criterion for winner selection is that its stock price must increase at least 100 percent within the study period. During the holding period, half of the winners have their prices increase by more than 142.03 percent, while the average growth is 197.93 percent. The average value is pulled up by an extra-ordinary jump of 2,425.62 percent in one stock (i.e. The Laem Thong Bank Public

Co.Ltd which is a local stock). About one-tenth of the winners have their prices advance by more than 279.49 percent.

Panel B of Table 2 illustrates the length of time winners are held. The average and the median holding period are three months. The minimum as well as the most concentrated holding period is one month, but the buy and sell quarters are different. The maximum holding period is nine months. During 1990-1993, winners on the SET doubled their value in a relatively short period. Nearly 90 percent of them have a price increase, at least, by two-fold in less than six months, and only 10 percent were held more than half a year.

Variables, which are observed for the winners' characteristics, are classified into four groups. The first category, trading information, is shown in Table 3. Panel A illustrates winner stock price. The average of local stock price in the buy quarter is 51.37 bahts while that for the international stocks is 145.18 bahts, for a difference of 182.62 percent. Two explanations can account for the difference. First, according to Bailey and Jagtiani (1993), prices on the foreign board in the Stock Exchange of Thailand are typically higher than those of the same stocks on the main board. This signifies that foreign trading on the foreign board affects the international stock prices on the main board by inducing their prices to be higher as compared to the local stock prices, which are not traded by the foreign investors. Prices are not available for the foreign board. Second, international stocks are typically larger, and hence have higher prices than local stocks.

The median stock prices during the buy quarter-4 to the buy quarters for both local and international stocks are not significantly different from the benchmark quarter (the average of the buy-5 to the buy-8 quarters). Being winners, the median stock prices in the sell

quarter are significantly different from the benchmark quarter with a 5 percent level of significance.

Panels B and C illustrate the trading volume and the number of transactions, respectively. Only a quarter of the winners have a large number of transactions and trading volume, which is quite different from the rest of the winners, and can bias the reported averages.

According to prior studies, high trading volume reflects demand from informed rather than uninformed investors. Consequently, stock price changes supported by high trading volume are less likely to reverse but are more likely to change in the same direction on the next day. Preceding the buy quarters, the trading volumes for both local and international stocks increase and are significantly different from the benchmark. The increase in the trading volumes supports the positive price changes and also signals the price advancement in the buy quarter. Similarly, the significant increase in price during the buy and sell quarters is supported by the large increase in trading volume.

During the buy quarter-1 and buy quarters, the trading volume of the international stocks on the main board grows from about 14 to 26 million shares on average. It is 210 million shares during the buy and sell quarters. The median of international stocks' trading volume in every quarter except the sell quarter differs significantly from the benchmark quarter at a 5 percent significance level. For local stocks, the trading volume increases, on average, from 4.93 million shares in the buy-1 quarter to 9.88 million shares in the buy quarter, and to 21 million shares in the sell quarter.

The trading volume of international stocks is higher than that for local stocks. This suggests that international stocks are more favorable than local stocks. One reason might be the participation of foreign investors, which the local stocks cannot imitate.

Due to the limited number of large capital shares available to foreigners and a relatively tight foreign ownership limit, trading volume and number of transactions on the foreign board are much less than that on the main board. Most of the international stocks have less than a million shares of trading volume on the foreign board while they have well over a million shares of trading volume on the main board. For the number of transactions, about 50 percent of the international stocks have less than twenty transactions and only 10 percent of them have more than a hundred transactions. Although trading volume and number of transactions on the foreign board are relatively small compared to those on the main board, the impact of the foreign trading on the main board is enormous. International stocks' trading volume and number of transactions are much higher than local stocks' trading volume and number of transactions.

The number of transactions of local stocks increases by about 43 percent on average from the buy quarter-2 to the buy quarter, while that for the international stocks increases more than two times on average for the same period. However, these numbers are not significantly different from the benchmark. Only international stocks on the foreign board have median values in every quarter that varies significantly from the benchmark at the 5 percent significance level.

Either the trading volume or the number of transactions can represent stock liquidity. The higher is the liquidity, the higher the stock price. Thus, both the trading volume and the number of transactions can be an indicator of stock market winners. However, the information

contained in the number of transactions overlaps with that in trading volume. The results show that the number of transactions is less significant than trading volume. Therefore, the number of transactions is not included as a criterion in the trading strategy.

On the foreign board, the median trading volume in the buy quarter is five times larger than the average quarter and is significantly different at a 10 percent significance level, while the trading volume on the main board for both local and international stocks in the buy quarter is less than those for the benchmark. An increase in the trading volume before the buy quarter is shared by all 120 winners of the SET. This suggests that an increase in trading volume should be included in the investment strategy. The increase of, at least, three times in trading volume on the foreign board can be used as a criterion to screen stocks in the trading strategy.

The second category, valuation measures, are exhibited in Table 4. Panel A of Table 4 shows the price-book value ratio results. According to the US studies, low P/B ratio yields high returns. In the buy quarter, the average P/B ratio of local stocks is 3.06 and that of international stocks is 3.79. The winners' P/B ratios are greater than the market P/B ratio. (The market P/B ratio, at the end of year 1992, for local stocks is 3.07 and for international stocks is 3.23.) About 90 percent of all winners have P/B ratios of more than one. Winners' P/B ratios are not significantly different from the benchmark quarter.

The median P/B ratio in the sell quarter of local and international stocks are 3.32 and 3.43, respectively, which are significantly different from the benchmark quarter at a 5 percent level of significance. Since these stocks are winners, the result is certainly expected.

The SET winners' P/B ratios do not seem to be low but seem to be overvalued compared to their fundamental value. The P/B ratio tends to increase prior to the significant

price change period, and does not show any significant differences from the benchmark. Therefore, the low P/B ratio does not seem to be a common characteristic among winners.

In Panel B, the price-earnings ratios are displayed. The average and median P/E ratio for the local stocks in the buy quarter are 33.55 and 20.52, respectively. The average and median P/E ratio for the international stocks are 44.66 and 16.47, respectively. In 1992, the mean and median market P/E ratios for the local stocks are 37.55 and 16.83, respectively. For the international stocks, the mean and median market P/E ratios are 17.88 and 15.77, respectively. The winner P/E ratios are not significantly different from the benchmark.

About 90 percent of all winners have P/E ratios of more than ten. Previous studies indicate a relationship between low P/E ratios and high returns. However, the results for the Stock Exchange of Thailand does not seem to show that low P/E ratios are a common characteristic among winners. Consequently, the P/E ratio may not be an essential component of a successful trading strategy.

Relative-strength ranks are shown in Table 5. Relative-strength rank is the weighted average of quarterly price changes during the previous year. The idea is that the weight of the most recent quarter is twice that of earlier quarter(s). Like Reinganum (1988), the recent quarter gets a weight of 40 percent, while the earlier three-quarters get a weight of 20 percent each. In the case where data of one-quarter is missing, the latest quarter weights 50 percent while the rest weight 25 percent each. If only two quarters' data are available, the recent one receives 70 percent of weight and the other 30 percent.

In the buy quarter, the average relative-strength rank for local stocks is quite low, only 1.49. That is, stock prices increase only 1.49 percent on average during a year prior to the buy

quarter. While international stock prices increase 1.26 percent, on average, over the same period. However, the median rank of both local and international stocks is zero or the stock prices are constant on average. Additionally, about one-fourth of winners experience a decline in stock prices before the great run-up or have negative relative-strength ranks.

At the median ranks, winners experience negative changes in stock prices prior to the buy-3 quarter and non-changes in stock prices afterwards. Furthermore, the relative-strength rank jumps significantly during the buy and sell periods. In the sell quarter, the mean and median relative-strength ranks for both local and international stocks differ significantly from the benchmark quarter with a 5 percent level of significance.

Notwithstanding, the overall relative-strength ranks do not change significantly from the benchmark period. The relative-strength ranks may not be a necessary component of a successful trading strategy in the Stock Exchange of Thailand. This implies that the strategy of buying stocks with high relative-strength ranks or with large positive price changes over a preceding year might not work effectively in the Stock Exchange of Thailand.

Table 6 indicates the common stock results. Winners' shares do not change significantly between the buy and sell quarter. This evidence suggests that the winners do not split their stocks, given a great run-up in price as reported in the US studies. Preceding the buy quarter, winners do not significantly increase their number of shares, and the winners' common stock outstanding over the studied period do not significantly vary from the benchmark quarter.

The international winners have a greater number of shares outstanding than the local winners. The median number of international shares is 24 million whereas the median number

of local shares is 10 million in the buy quarter. About half of the international winners have shares outstanding more than twofold of local winners. This evidence supports the result that the international firms are larger than the local firms. Compared with the common stocks outstanding for the median firm at the end of 1992, international winners do not have much different amounts of common stocks outstanding from the median firm. However, the local winners have slightly less stocks outstanding than the medium firm does. The median market value of common stock outstanding for the international and local firms are 22 and 13 million, respectively.

Table 7 illustrates the relative stock price ratio. Relative stock price ratio is the ratio of the average price in a quarter relative to the maximum price during the two previous years. This ratio is used to test whether the higher return of winners is related to a contrarian strategy.

From the results, local winners have relative stock price ratios less than 0.5 generally. This indicates that local winners are sold at a price less than 50 percent of their maximum price during the two preceding years. For international winners, they are sold at a price of about 60 percent of their maximum price during the two previous years, on average. Compared to the local winners, the international winners are sold at higher prices relative to their maximum prices during the previous two years. However, all the winners' relative stock price ratios are not significantly different from the benchmark. All local winners are sold at a price less than their maximum price over the previous two years, whereas only one-tenth of the international winners are sold at a price higher or, at least, equal to the maximum price over the previous two years.

According to the contrarian strategy, contrarian investors buy stocks that have dropped in price because of some recent bad news. However, the cumulative abnormal returns of winners are positive on average. Only about 10 percent of winners have negative cumulative abnormal returns. Generally, stock prices before the buy quarter are not on a downward trend but the stock prices on the buy dates are just lower. As a result, the contrarian strategy may not be used to pick winners.

The last category of variables is measure of earnings, which is displayed in Table 8. In the buy quarter, both international and local winners experience a decrease in quarterly earnings. Quarterly earnings of the international and local stocks decline by 3.75 and 12.67 percent on average. Consistent with the overreaction hypothesis, a decrease in quarterly earnings between the buy quarter-1 and buy quarter is regarded as bad news, which, in turn lowers the stock prices in the buy quarter. The negative changes in quarterly earnings for the buy quarter are not significantly different from the benchmark. Before the buy quarter, half of the winners have positive changes in quarterly earnings. At the median level, positive quarterly earnings changes are significantly different from the benchmark at the 5 percent significance level. Moreover, the local winners have higher levels of quarterly earnings changes than the international winners.

During the buy and sell periods, winners experience a significant increase in earnings on average. This supports the great increase in the stock price. The local stocks' earnings expand by about 262.87 percent versus 123.77 percent for the international stocks. The investment strategy might include the characteristic of negative changes followed by positive changes in quarterly earnings as a screening criterion.

Are winners riskier?

To see whether the winners are smaller and riskier, the stock price and the market capitalization on the buy date are illustrated in Table 9. In general, the median winners' firm size is larger than the median firm size on the market. The median firm size for the international and local winners are 69 and 50 million bahts, respectively. For the market firm size at the end of 1992, the median of the international stocks on the main board is 48 million bahts, and the median of the local firm size is 19 million bahts, respectively. Generally, large firms are less risky than small firms. Thus, the higher returns associated with winners cannot be explained by higher risks.

The range of international firm size is wider than that of local firm size, which is indicated by either stock price or stock market capitalization. Fewer than 10 percent of the international stocks have smaller size than the local stocks. Overall, the international winners are larger in size than the local winners, about two times on average. This suggests that foreign investors tend to invest in large firms, probably due to better availability of firm-specific information.

Table 10 illustrates the stock beta, which is one variable in the technical indicators category. Betas are calculated using monthly returns during the period three years prior to the buy date. The proxy for the market portfolio is the SET index, which is a value-weighted index of all stocks listed on the Stock Exchange of Thailand. According to the CAPM, high-risk stocks earn high returns. The SET winners, both local and international, have risks around 70 percent on average relative to market risk. Despite having betas less than one, which is

usually considered having low risk, the SET winners earn exceptional returns. Hence, betas cannot explain the superior returns of the SET winners. The low betas of the SET winners are conforming to their large firm size.

After considering various variables in the winners' set of the Stock Exchange of Thailand, the characteristics of the winners can be drawn. As a whole, the SET winners are large in size compared to the market average firm size. The international firms tend to be larger than local firms. However, the SET winners generally have betas less than one. Other common characteristics among the SET winners are the increase in trading volume, number of transactions, and quarterly earnings.

The foreign investments do affect stocks on the Stock Exchange of Thailand. The foreign trading of international stocks on the foreign board boosts local trading of their respective international stocks on the main board, as evidenced by trading information such as stock price, trading volume, and number of transactions. This trading information of international stocks is higher than the trading information of local stocks.

Trading Strategies' Results

Given the characteristics of the SET winners, only characteristics which change significantly from the benchmark are used as screening criteria in the investment strategy. The significant characteristics are applied to stocks on the market during 1990-1993, excluding former winners. Two characteristics of the SET winners are chosen. They are:

1) Changes of, at least, three times in trading volume on the foreign board.

2) Changes in quarterly earnings from negative to positive changes.

To test for robustness, these changes are considered relative to the prior quarter, and to the previous one and two years. Each characteristic is employed initially as one trading strategy, then these two characteristics are applied together as another investment strategy. Each strategy is held for two years. The buy dates for each trading strategy is assigned after the screening criteria have been met for thirty days.

The first investment strategy uses the changes in trading volume on the foreign board as a screening criterion.[4] The method searches for changes in trading volume of, at least, three times from prior quarter, previous one and two years. The results are shown in Table 12. The strategy generates 40, 57, and 25 buy signals for changes from prior quarter, previous one and two years, respectively. For the changes in trading volume from prior quarter, the strategy yields positive cumulative returns up to one year, on average. The strategy gives negative

[4] This criterion is applied to the set of winners. It screens 49, 36 and 37 winners from a total of 95 international winners under the changes from prior quarter, previous one- and two-year scheme, respectively.

cumulative returns of three percent over subsequent two year holding-periods, which are significant at 10 percent level. The median cumulative returns from buy+1 to buy+5 quarters are zero for both the changes in a quarter and in a year scheme. Only for the changes in a two-year period are the cumulative returns equal to zero for up to seven quarters after the buy quarter.

Compared with the market portfolio's performance over the same period, the trading volume change strategy underperforms the market. In a buy+1 quarter, the scheme of changes from prior quarter produces a –4.18 percent cumulative abnormal return (CAR), on average. Over the same period, the changes in one- and two-year scheme give, on average, -14.20 and –16.35 percent CAR, respectively. Although all three change schemes produce negative CAR, the changes over a quarter time exhibit the best performance.

The second strategy uses a screen based on changes in quarterly earnings from negative changes to positive changes.[5] It produces 155, 113 and 71 buy signals for changes in a quarter, one- and two-year schemes, respectively. The results are displayed in Table 13. The strategy yields positive cumulative returns at the 5 percent significance level throughout the holding-period of the changes in a two-year scheme. It also generates positive cumulative returns in the second year of the holding period for the changes in a quarter scheme, and up to buy+7 quarter for the changes in a year scheme. The changes in a two-year scheme produces the highest cumulative returns of 15.09 percent at the 10 percent significance level in a quarter

[5] This criterion is applied to the set of winners. Under the changes from prior quarter, previous one- and two-year scheme, it screens 87, 80 and 56 out of 95 international winners and 25, 23 and 14 out of 25 local winners, respectively.

subsequent to the buy quarter. Over the same period, the strategy yields 1.98 and –2.47 percent of cumulative returns for the changes in a year and in a quarter scheme, respectively.

The strategy produces zero median cumulative returns up to buy+6 quarter for the changes in a quarter scheme. The zero median cumulative returns are also shown for the changes in one- and two-year schemes which are up to buy+4 and buy+3 quarters, respectively. Generally, the changes in a two-year scheme generate the best cumulative returns whereas the changes in a one-year scheme produce the best CAR. Similar to the trading volume changes strategy, the quarterly earnings changes strategy underperforms the SET index. Among three schemes, the change in a year scheme performs the best. It generates, on average, -7.92 and –8.18 percent CAR with a 5 percent significance level after one- and two-year's holding-period. Subsequent to the holding-period of two years, the changes in a quarter and a two-year scheme yield CAR of -10.68 and –12.31 percent, on average, with a 5 percent significance level.

Using two criteria together to screen stocks over the period of 1990-1993, the two-screen strategy produces only 10, 11 and 6 buy signals for changes in a quarter, a year and two-year scheme, respectively. The results are summarized in Table 14. The two-screen strategy produces positive cumulative returns up to buy+3 quarter for the changes in a quarter scheme and only in a buy+1 quarter for changes in a two-year scheme. No positive cumulative returns for the changes in a year scheme. After two years holding-period, the changes in a two-year scheme produces average cumulative returns of –0.06 percent and average CAR of –4.73 percent. Its returns are better than the other two schemes. However, after a one year

holding-period, the changes in a quarter scheme yields the least negative cumulative returns of −1.53 percent and CAR of −5.10 percent with a 5 percent significance level.

Although the two-screen strategy underperforms the market, it improves the performances of a quarter and a two-year scheme of one-criterion trading strategies. For a two-year scheme, subsequent to the holding-period of eight quarters, the combined strategy insignificantly underperforms the market by 4.73 percent while the quarterly earnings and the trading volume changes strategies underperform the market by 12.31 and 13.26 percent, respectively, with a 5 percent significance level. For a quarter scheme, the two-screen strategy yields CAR of −5.95 percent with 5 percent significance level over a two-year holding-period. The quarterly earnings and the trading volume changes strategies yield CAR of −10.68 and -8.39 percent, respectively, with a 5 percent significance level over the same holding period.

Obviously, the selected two characteristics whether employed alone or together yield negative returns and underperform the SET index. Nevertheless, between the two one-criterion strategies, the quarterly earnings changes strategy displays better CAR in the changes in one- and two-year scheme over the eight quarters of the holding-period, while the trading volume changes strategy provides less negative CAR in a quarter scheme over the two years of the holding-period. The combined strategy improves the performances of one-criterion trading strategies in a quarter and a two-year scheme.

Ultimately, unfavorable results of the trading strategies may be caused by short periods of time used in selecting winners. In addition, the methodology used may not be robust enough to identify true winners. To the extent that the trading strategies are applied to the

same period as the formation period, it is not an out-of-sample test. Since the SET index which is the value-weighted index of all stocks listed on the Stock Exchange of Thailand is used as a benchmark in the trading strategies, it may have negative biases to the strategies' results. Further, the winners' common characteristics may be unique, and may apply effectively only to the winners.

For future research, one might consider a longer period of time and more vigorous statistical methods such as a PROBIT model. Application of the trading strategies to other time periods should eliminate any with-in sample biases. Lastly, one might remove winners from the SET index before using as a benchmark for the trading strategies.

CONCLUSIONS

This paper examines the common characteristics among winners in the Stock Exchange of Thailand and the influence of foreign investments on the stock market over the period of 1990-1993. The results of the tests contradict some previous US studies. SET winners are larger firms and have lower risks than the market. Along with the great run-up in prices, the stocks' trading volumes, numbers of transactions, and quarterly earnings increase.

The trading volume and quarterly earnings changes are significant characteristics of the SET winners, which are used in constructing trading strategies. The results show that these trading strategies underperform the market portfolio. However, the combined strategy improves the performances of one-criterion trading strategies for a quarter and two-year schemes. By the end of two years, the two-screen strategy's average CAR of a quarter scheme is –5.95 percent with a 5 percent significance level, while that of a two-year scheme is a statistical insignificant –4.73 percent. Generally, the quarterly earnings changes strategy performs better than the trading volume changes strategy in a one- and two-year scheme. The trading volume changes strategy provides less negative CAR in a quarter scheme.

The evidence indicates that foreign trading activities do have influences on the international stocks. Foreign investment boosts local trading activities on the international stocks. The trading information, price-book value ratio, and relative-strength ranks of the international stocks on the main board are, on average, greater than those for local stocks. However, to the extent that foreign and local investors may invest in securities on both main and foreign boards, the effect of the foreign trading activities may not be as clear. Finally,

international stocks tend to be larger and are included in the winner set more often than local stocks.

In conclusion, the winners of the Stock Exchange of Thailand share some common characteristics and are influenced heavily by foreign investment. However, the trading strategies using the identified winners' common characteristics do not yield favorable results. In fact, they underperform the market portfolio over the holding-period.

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APPENDIX 1

TABLES

TABLE 1: *DESCRIPTIVE STATISTICS ON SECURITIES IN THE MARKET BY SECTOR IN DECEMBER 1995.*

Type of Sectors	number of issues	Market value (Million Bahts)	% of total Mkt Cap
1 Agribusiness	30	44,432.99	1.301
2 Banking	16	898,550.69	26.303
3 Building&Furniture Materials	30	320,956.09	9.395
4 Chemicals&Plastics	13	92,713.33	2.714
5 Commerce	14	66,930.15	1.959
6 Communication	10	579,365.53	16.960
7 Electrical Products&Computer	13	23,296.18	0.682
8 Electronic Components	8	31,901.52	0.934
9 Energy	8	169,873.51	4.973
10 Entertainment&Recreation	5	33,453.90	0.979
11 Finance&Securities	45	445,740.25	13.048
12 Food&Beverages	27	35,168.29	1.029
13 Health Care Services	11	10,246.24	0.300
14 Hotel&Travel Services	13	23,136.56	0.677
15 Household Goods	11	17,856.15	0.523
16 Insurance	22	32,465.01	0.950
17 Jewelry&Ornaments	5	3,414.30	0.100
18 Machinery&Equipment	4	3,841.60	0.112
19 Mining	3	2,857.25	0.084
20 Packaging	17	20,568.93	0.602
21 Pharmaceutical Products&Cosmetics	2	890.38	0.026
22 Printing&Publishing	9	19,628.73	0.575
23 Professional Service	2	849.50	0.025
24 Property Development	38	294,211.04	8.612
25 Pulp&Paper	3	48,470.85	1.419
26 Textiles, Clothing&Footwear	32	54,714.57	1.602
27 Transportation	7	112,405.23	3.290
28 Vehicles&Parts	9	16,297.12	0.477
29 Warehouse&Silo	4	2,737.50	0.080
30 Others	5	9,179.25	0.269
Total	416	3,416,152.64	100.000

TABLE 2 : PRICE APPRECIATION FOR WINNERS OVER THE HOLDING-PERIOD (IN PERCENT) AND LENGTH OF TIME POSITION HELD (IN MONTHS)

PANEL A : PRICE APPRECIATION (IN PERCENT)

mean	197.93	percentile 10th	103.11
median	142.03	25th	115.95
sd	232.09	75th	197.56
min	100.00	90th	279.49
max	2425.62		

PANEL B : LENGTH OF TIME POSITION HELD (IN MONTHS)

mean	3.00	percentile 10th	1
median	3.00	25th	1
sd	2.28	75th	5
min	1.00	90th	6
max	9.00		

TABLE 3 : TRADING INFORMATION FOR WINNERS

PANEL A : STOCK PRICE (BAHTS)

	Local stock						International stock					
		Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	165.98*	43.23	57.25	77.33**	170.00	524.67	267.32	24.33	69.33	153.33**	358.00	628.80
Buy	51.37*	14.90	25.88	32.00	65.50	113.80	145.18	10.42	29.00	78.00	166.67	311.07
Buy-1	50.53	14.90	25.13	32.00	64.50	109.30	138.69	10.11	28.50	85.17	184.33	321.33
Buy-2	52.30	14.90	26.38	33.25	65.00	111.73	147.53	10.26	29.00	92.33	212.00	371.93
Buy-3	65.96	14.90	26.38	32.00	66.00	128.53	138.97	10.18	32.00	93.00	198.00	360.07
Buy-4	78.92	14.90	25.75	37.00	70.92	137.25	142.45	9.90	29.00	91.83	204.00	367.67
Average★	77.62	21.28	34.84	52.33	99.85	156.83	147.82	14.50	38.39	96.88	195.54	360.00

PANEL B : TRADING VOLUMES (IN MILLIONS)

	Local stock						International stock											
							main board						foreign board					
		Percentile						Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	21.00	0.05	0.18	0.57**	16.00	100.00	210.00	0.27	0.79	4.08	25.00	96.00	0.57	0.01	0.04	0.13*	0.35	2.20
Buy	9.88	0.12	0.33	2.14	6.92	49.00	26.00	0.35	0.94	3.66**	13.00	59.00	0.41	0.02	0.05	0.15*	0.46	0.96
Buy-1	4.93**	0.01	0.09	0.84**	4.51	19.00	14.00	0.23	0.50	2.69**	9.87	32.00	0.51	0.01	0.04	0.12*	0.48	1.67
Buy-2	2.90**	0.01	0.05	0.42**	5.60	12.00	14.00	0.11	0.43	1.94**	8.60	43.00	0.97	0.00	0.02	0.12	0.69	1.29
Buy-3	3.63**	0.02	0.09	0.39**	4.43	16.00	8.71	0.12	0.56	1.81**	9.19	22.00	0.39	0.00	0.05	0.14**	0.36	1.44
Buy-4	6.91*	0.01	0.14	0.58	4.55	29.00	19.00	0.19	0.42	2.92**	11.00	32.00	3.11	0.03	0.05	0.14**	0.52	1.16
Average★	18.00	0.20	0.91	3.22	27.00	69.00	48.00	0.66	1.90	8.10	32.00	92.00	0.56	0.00	0.00	0.03	0.48	2.01

PANEL C : NUMBER OF TRANSACTIONS

	Local stock						International stock											
							main board						foreign board					
		Percentile						Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	11,787.77	63.00	238.00	694.50	9,177.00	54,538.00	21,519.57*	277.10	826.25	4,126.50	25,357.50	62,604.90	161.61*	1.00	3.00	19.50**	86.00	396.80
Buy	4,004.81	259.60	602.00	2,208.00	6,302.50	9,383.80	49,571.44	597.70	1,167.50	4,603.50**	8,939.50	28,388.40	121.51*	1.00	2.00	10.00**	55.00	443.00
Buy-1	2,202.71**	45.60	188.00	7,636.00	3,886.50	6,876.00	27,027.21	221.60	578.00	2,837.00**	8,511.00	18,239.80	101.63	2.80	6.00	14.00**	55.00	342.60
Buy-2	2,798.70*	25.90	104.75	351.00	3,213.25	11,485.00	23,647.86	96.50	336.25	1,503.50	7,652.50	17,307.00	47.87	1.00	2.00	8.00**	25.00	236.40
Buy-3	2,936.74	71.00	190.00	551.00	3,069.00	16,070.00	25,565.40	142.90	683.00	1,962.00	8,949.50	19,806.70	41.61	2.00	7.25	19.00**	36.50	158.10
Buy-4	5,677.85	74.20	403.25	734.50	7,911.00	19,136.80	10,046.13	164.20	472.50	3,447.00	12,981.00	25,684.20	27.58	0.70	3.00	7.50**	26.50	80.40
Average★	6,825.36	0.00	290.00	1,868.00	11,108.00	24,907.20	11,035.33	0.00	0.00	654.00	13,316.00	27,689.40	18.82	0.00	0.00	0.00	5.00	38.60

Note : ★ The average of the 5th - the 8th quarters prior to the buy quarter
* Test significant at 10% [Ho : Mean(Median) of considered quarter = Mean(Median) of average quarter]
** Test significant at 5% [Ho : Mean(Median) of considered quarter = Mean(Median) of average quarter]

***TABLE 4** : PRICE/BOOK AND PRICE/EARNINGS RATIOS*

PANEL A : PRICE / BOOK RATIO

	Local stock						International stock					
		Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	3.48	1.80	2.31	3.32**	3.94	6.34	5.13	1.23	2.26	3.43**	5.48	7.43
Buy	3.06	1.27	2.09	2.78	3.86	5.61	3.79	1.01	1.58	2.54	4.15	7.23
Buy-1	2.74	1.11	1.57	2.51	3.08	4.71	3.19	0.99	1.67	2.51	4.45	6.20
Buy-2	2.42	1.04	1.43	2.24	3.25	4.13	3.26	0.98	1.71	2.55	4.63	7.03
Buy-3	2.77	1.05	1.77	2.53	3.45	5.13	3.20	1.06	1.93	2.93	4.24	5.58
Buy-4	2.75	1.08	1.80	2.44	3.58	4.45	3.30	0.92	1.77	2.87	4.28	5.55
Average★	5.31	0.88	1.52	2.24	3.80	18.87	3.96	0.87	1.55	2.61	4.17	7.52

PANEL B : PRICE / EARNINGS RATIO

	Local stock						International stock					
		Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	26.44	11.47	14.31	24.61	32.17	56.33	45.72	11.91	14.88	19.12**	34.66	50.35
Buy	33.55	8.94	12.49	20.52	30.67	62.92	44.66	8.89	10.77	16.47	24.16	38.54
Buy-1	32.97	7.80	9.44	16.19	20.83	76.53	19.56**	9.79	11.23	15.53	22.34	39.83
Buy-2	37.60	8.42	10.35	15.82	22.73	43.96	24.87	9.37	11.19	15.69	25.85	37.65
Buy-3	26.08	7.82	12.29	16.77	23.29	40.22	25.16	9.33	11.83	15.83	25.40	35.53
Buy-4	28.92	10.72	13.67	19.03	25.02	43.38	23.94	8.48	10.90	15.97	25.94	40.57
Average★	69.57	8.42	12.00	19.58	53.02	205.11	36.04	7.02	10.49	14.88	21.25	87.35

Note : ★ The average of the 5th - the 8th quarters prior to the buy quarter
* Test significant at 10% [H_o : Mean(Median) of considered quarter = Mean(Median) of average quarter]
** Test significant at 5% [H_o : Mean(Median) of considered quarter = Mean(Median) of average quarter]

***TABLE 5** : RELATIVE - STRENGTH RANKS ///*

	Local stock						International stock					
		Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	103.68**	17.62	36.05	62.86**	97.04	192.76	50.47**	13.43	22.58	29.50**	63.70	98.22
Buy	1.49*	-10.31	0.00	0.00	0.00	24.90	1.26	-10.84	-1.06	0.00	1.41	11.39
Buy-1	-0.87	-14.05	0.00	0.00	0.00	3.79	1.72	-10.81	-1.24	0.00	1.82	16.83
Buy-2	2.49*	-7.01	0.00	0.00	0.00	19.56	5.30	-5.03	0.00	0.00	5.52	27.47
Buy-3	3.08**	-3.56	0.00	0.00	1.60	19.03	4.85	-6.92	0.00	0.00	10.09	18.86
Buy-4	-4.45	-17.06	-13.80	-10.75	-2.35	30.48	6.00	-15.53	-13.23	-4.97	9.33	27.06
Average★	-6.04	-23.90	-16.00	-10.68	1.64	26.01	6.26	-16.89	-13.65	-4.39	4.52	12.90

Note : ★ The average of the 5th - the 8th quarters prior to the buy quarter

* Test significant at 10% [H_o : Mean(Median) of considered quarter = Mean(Median) of average quarter]

** Test significant at 5% [H_o : Mean(Median) of considered quarter = Mean(Median) of average quarter]

/// Relative-Strength Rank is the weighted average of quarterly price changes.

***TABLE 6** : COMMON STOCKS OUTSTANDINGS (IN MILLIONS)*

	Local stock						International stock					
		Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	17.00	4.60	6.70	10.00	25.00	44.00	81.00	4.84	9.62	20.00	53.00	170.00
Buy	21.00	4.00	6.70	10.00	24.00	46.00	72.00	4.44	11.00	24.00	53.00	170.00
Buy-1	14.00	4.00	6.50	10.00	17.00	33.00	62.00	4.82	10.00	22.00	53.00	130.00
Buy-2	13.00	3.73	6.50	9.51	17.00	30.00	57.00	4.36	9.50	22.00	51.00	120.00
Buy-3	11.00	3.12	5.00	8.00	16.00	24.00	53.00	4.28	11.00	21.00	45.00	110.00
Buy-4	11.00	3.12	5.00	7.50	16.00	24.00	49.00	4.78	10.00	20.00	40.00	93.00
Average★	18.00	2.03	4.40	8.00	15.00	54.00	68.00	2.80	8.00	16.00	45.00	100.00

Note : ★ The average of the 5th - the 8th quarters prior to the buy quarter

* Test significant at 10% [H_o : Mean(Median) of considered quarter = Mean(Median) of average quarter]

** Test significant at 5% [H_o : Mean(Median) of considered quarter = Mean(Median) of average quarter]

TABLE 7 : RELATIVE STOCK PRICE RATIO AND CUMULATIVE ABNORMAL RETURN

PANEL A : RELATIVE STOCK PRICE RATIO♂

	Local stock						International stock					
		Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	3.42**	0.92	1.46	2.45**	3.48	5.67	1.91**	0.77	1.06	1.53**	2.47	3.53
Buy	0.43	0.13	0.24	0.40	0.57	0.75	0.56	0.26	0.32	0.47	0.74	1.01
Buy-1	0.47	0.13	0.23	0.41	0.64	0.84	0.62	0.22	0.38	0.60	0.82	1.04
Buy-2	0.44	0.12	0.21	0.40	0.62	0.84	0.66	0.21	0.30	0.58	0.86	1.05
Buy-3	0.44	0.12	0.19	0.39	0.56	0.76	0.64	0.19	0.30	0.58	0.85	1.04
Buy-4	0.43	0.12	0.22	0.39	0.62	0.84	0.63	0.20	0.32	0.55	0.81	1.06
Average★	0.55	0.23	0.32	0.43	0.79	0.99	0.82	0.19	0.33	0.58	0.86	0.99

PANEL B : CUMULATIVE ABNORMAL RETURN♯

	Local stock						International stock					
		Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	258.59**	9.11	83.18	148.65	236.81	617.57	115.07**	6.34	37.67	92.73	141.26	240.03
Buy	7.66	-15.86	0.00	0.00	0.00	39.15	17.83**	-10.91	0.00	0.00	19.41	54.00
Buy-1	9.88	-11.71	0.00	0.00	0.00	47.33	-7.93**	-52.03	-13.46	0.00	0.00	9.07
Buy-2	1.97	-19.53	0.00	0.00	0.00	33.39	10.12**	-10.14	0.00	0.00	8.75	39.04
Buy-3	4.66	-27.85	0.00	0.00	0.00	45.02	10.68	-17.02	0.00	0.00	10.09	34.29
Buy-4	-3.86	-27.53	-7.06	0.00	0.00	15.16	7.68**	-15.43	0.00	0.00	10.34	40.48
Average★	1.04	-17.53	-14.27	-7.60	2.16	43.65	2.89	-17.73	-10.54	-4.90	5.13	20.62

Note :
★ The average of the 5th - the 8th quarters prior to the buy quarter
* Test significant at 10% [H_0 : Mean(Median) of considered quarter = Mean(Median) of average quarter]
** Test significant at 5% [H_0 : Mean(Median) of considered quarter = Mean(Median) of average quarter]
♂ Relative Stock Price Ratio is the ratio of the average price in a quarter relative to the maximum price in previous two years.
♯ Cumulative Abnormal Return is the difference between winner's cumulative return in a quarter and the SET index's cumulative return over the same period of time.

***TABLE 8** : PERCENTAGE CHANGE IN QUARTERLY EARNINGS*

	Local stock						International stock					
		Percentile						Percentile				
Quarter	mean	10th	25th	50th	75th	90th	mean	10th	25th	50th	75th	90th
Sell	262.87**	-1.68	26.19	123.49**	266.41	975.81	123.77	-16.34	1.70	18.30**	148.69	307.20
Buy	-12.67	-42.92	-26.33	-16.08	1.17	24.89	-3.75	-36.37	-20.98	-2.66	13.50	26.15
Buy-1	99.16	-40.61	-9.21	-3.89	10.31	32.70	-0.10	-31.18	-12.27	0.49**	11.24	28.90
Buy-2	14.38	-9.96	3.33	12.29**	35.33	49.56	6.16	-24.01	-5.80	3.56**	16.80	44.95
Buy-3	3.64	-36.75	-6.25	7.01**	18.48	33.02	2.51	-25.54	-8.62	1.86**	9.78	40.32
Buy-4	0.90	-40.03	-16.02	0.88	14.32	45.48	-1.80	-34.61	-15.87	-3.03	4.52	23.75
Average★	6.83	-31.52	-22.99	-12.26	7.76	117.93	7.95	-28.88	-14.85	-4.56	5.44	46.73

Note : ★ The average of the 5th - the 8th quarters prior to the buy quarter
* Test significant at 10% [H_o : Mean(Median) of considered quarter = Mean(Median) of average quarter]
** Test significant at 5% [H_o : Mean(Median) of considered quarter = Mean(Median) of average quarter]

TABLE 9 : SHARE PRICE AND MARKET CAPITALIZATIONS

PANEL A : SHARE PRICE ON THE BUY DATE (BAHTS)

Local stock				International stock			
mean	45.75	percentile 10th	14.90	mean	118.09	percentile 10th	9.90
median	32.00	25th	24.25	median	63.50	25th	27.25
sd	39.75	75th	59.75	sd	171.96	75th	145.00
min	7.40	90th	104.20	min	4.00	90th	263.40
max	193.00			max	1,378.00		

PANEL B : STOCK MARKET CAPITALIZATION ON THE BUY DATE (MILLIONS OF BAHTS)

Local stock				International stock			
mean	110.00	percentile 10th	4.65	mean	290.00	percentile 10th	14.00
median	50.00	25th	14.00	median	69.00	25th	27.00
sd	190.00	75th	130.00	sd	770.00	75th	280.00
min	2.12	90th	380.00	min	1.80	90th	650.00
max	780.00			max	6,870.00		

TABLE 10 *: STOCK BETAS**

Local stock				International stock			
mean	0.62	percentile 10th	-0.35	mean	0.56	percentile 10th	-0.12
medain	0.15	25th	-0.10	medain	0.51	25th	0.14
sd	1.60	75th	0.89	sd	0.65	75th	0.86
min	-0.40	90th	1.47	min	-1.00	90th	1.34
max	7.82			max	3.43		

Note : * Betas are calculated by using monthly returns during the period of three years prior to the buy date.

TABLE 11 : *STATISTICS ON ALL THE STOCKS IN THE SET AS OF DECEMBER 1992*

PANEL A : INTERNATIONAL STOCK

Variables	mean	Percentile				
		10th	25th	50th	75th	90th
Stock price (Bahts)*	126.78	17.35	38.00	76.25	159.75	330.40
P/B ratio	3.23	1.52	2.09	2.74	3.81	5.49
P/E ratio	17.88	8.91	11.46	15.77	21.72	30.64
Market Capitalization (Million Bahts)						
-Main board	390.00	3.28	11.00	48.00	220.00	1,000.00
-Foreign board	11.00	0.00	0.00	0.00	2.54	25.00
C/S outstanding (Millions)	76.00	7.18	12.00	22.00	53.00	150.00

PANEL B : LOCAL STOCK

Variables	mean	Percentile				
		10th	25th	50th	75th	90th
Stock price (Bahts)	68.22	14.50	24.63	38.75	74.00	154.70
P/B ratio	3.07	1.29	1.73	2.71	4.03	5.46
P/E ratio	37.55	6.12	11.72	16.83	28.59	46.97
Market Capitalization (Million Bahts)	140.00	1.34	3.38	19.00	93.00	350.00
C/S outstanding (Millions)	22.00	4.80	7.50	13.00	25.00	70.00

Note : * The exchange rate 26 Bahts = 1 USD.

TABLE 12 *: DISTRIBUTION OF CUMULATIVE HOLDING-PERIOD RETURNS AND CUMULATIVE EXCESS HOLDING-PERIOD RETURNS FROM CHANGES IN TRADING VOLUME ON THE FOREIGN BOARD CRITERION (PERCENT)*

Quarter	Changes in one quarter				Changes in one year				Changes in two years			
	Cumulative Returns		CAR***		Cumulative Returns		CAR***		Cumulative Returns		CAR***	
	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median
Buy+1	1.04	0.00	-4.18	-4.56	-1.57	0.00	-14.20**	-6.85	0.83	0.00	-16.35**	-9.63
Buy+2	4.54	0.00	-0.36	-1.39	0.49	0.00	-10.41*	-4.13	1.34	0.00	-14.74**	-9.34
Buy+3	2.05	0.00	-3.07	-3.53	1.04	0.00	-11.25**	-3.81	-0.55	0.00	-15.73**	-7.61
Buy+4	0.77	0.00	-4.45	-3.29	-0.36	0.00	-13.64**	-5.24	-0.72	0.00	-16.28**	-8.58
Buy+5	-0.87	0.00	-6.11*	-5.18	-0.82	0.00	-13.88**	-7.37	-0.52	0.00	-16.13**	-9.84
Buy+6	-2.06	-0.57	-7.58**	-5.65	0.40	-0.45	-13.07**	-9.15	-0.57	0.00	-15.72**	-9.88
Buy+7	-2.88	-0.79	-8.29**	-5.18	0.48	-0.32	-13.05**	-6.71	0.30	0.00	-14.05**	-7.44
Buy+8	-3.00*	-1.07	-8.39**	-5.29	0.52	-0.43	-12.36**	-6.86	0.13	-0.18	-13.26**	-6.00

Note :
* Test significant at 10% [H_0 : Mean = 0]
** Test significant at 5% [H_0 : Mean = 0]
*** CAR : Cumulative Abnormal Return is the difference between the holding-period return on the security and the holding-period return on the SET index over the same period of time

TABLE 13 *: DISTRIBUTION OF CUMULATIVE HOLDING-PERIOD RETURNS AND CUMULATIVE EXCESS HOLDING-PERIOD RETURNS FROM CHANGES IN QUARTERLY EARNINGS CRITERION (PERCENT)*

Quarter	Changes in one quarter				Changes in one year				Changes in two years			
	Cumulative Returns		CAR***		Cumulative Returns		CAR***		Cumulative Returns		CAR***	
	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median
Buy+1	-2.47**	0.00	-14.11**	-9.63	1.98	0.00	-8.84**	-9.63	15.09**	0.00	-5.36	-9.63
Buy+2	-3.27**	0.00	-14.87**	-10.19	0.32	0.00	-11.24**	-10.19	5.31**	0.00	-15.27**	-18.35
Buy+3	-0.83	0.00	-11.93**	-6.50	0.26	0.00	-10.12**	-8.88	3.71**	0.00	-14.27**	-12.19
Buy+4	-0.65	0.00	-11.50**	-7.04	7.98	0.00	-7.92**	-5.24	3.91**	1.59	-12.53**	-5.24
Buy+5	0.27	0.00	-10.85**	-7.26	1.16	1.14	-8.76**	-5.46	3.91**	2.41	-12.48**	-8.62
Buy+6	0.10	0.00	-10.90**	-6.76	0.40	0.72	-8.68**	-5.54	2.93**	2.60	-12.41**	-6.83
Buy+7	0.49	0.74	-10.04**	-4.67	0.13	1.27	-8.02**	-4.28	2.42**	2.19	-11.20**	-4.16
Buy+8	-0.38	-0.26	-10.68**	-5.02	-0.04	0.87	-8.18**	-4.39	0.81	0.88	-12.31**	-5.23

Note :
* Test significant at 10% [H_0 : Mean = 0]
** Test significant at 5% [H_0 : Mean = 0]
*** CAR : Cumulative Abnormal Return is the difference between the holding-period return on the security and the holding-period return on the SET index over the same period of time

***TABLE 14** : DISTRIBUTION OF CUMULATIVE HOLDING-PERIOD RETURNS AND CUMULATIVE EXCESS HOLDING-PERIOD RETURNS FROM TWO-SCREEN STRATEGY (PERCENT)*

Quarter	Changes in one quarter				Changes in one year				Changes in two years			
	Cumulative Returns		CAR***		Cumulative Returns		CAR***		Cumulative Returns		CAR***	
	mean	median	mean	median	mean	median	mean	median	mean	median	mean	median
Buy+1	4.24	2.45	-3.03	-8.76	-0.27	0.00	-19.87	-5.97	4.46	0.00	-14.98	-12.11
Buy+2	0.91	-0.53	-2.01	-4.09	-1.75	0.00	-15.34	-11.22	-0.39	0.00	-13.11*	-16.84
Buy+3	0.34	-0.38	-1.73	-0.18	-1.41	-0.44	-15.06	-6.62	0.77	0.00	-7.38*	-7.06
Buy+4	-1.53	-1.66	-5.10**	-3.57	-2.47	-0.67	-18.50*	-10.60	-2.21	-2.66	-10.59**	-12.63
Buy+5	-1.18	-1.61	-4.65**	-4.78	-0.69	0.00	-15.27	-9.83	-2.01	-2.84	-10.01*	-13.45
Buy+6	-2.23	-2.34	-5.25**	-6.03	-2.27	-2.40	-15.44	-6.85	-2.78	-2.47	-8.69*	-10.16
Buy+7	-2.53	-2.01	-5.84**	-6.65	-2.27	-2.06	-16.37*	-8.15	-0.56	-1.43	-5.57	-7.44
Buy+8	-2.24	-3.02	-5.95**	-7.22	-1.53	-1.64	-15.58	-7.99	-0.06	-1.71	-4.73	-6.53

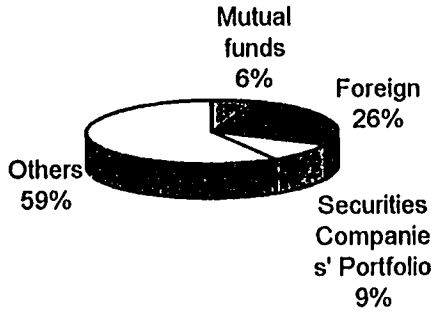
Note :
* Test significant at 10% [H_o : Mean = 0]
** Test significant at 5% [H_o : Mean = 0]
*** CAR : Cumulative Abnormal Return is the difference between the holding-period return on the security and the holding-period return on the SET index over the same period of time

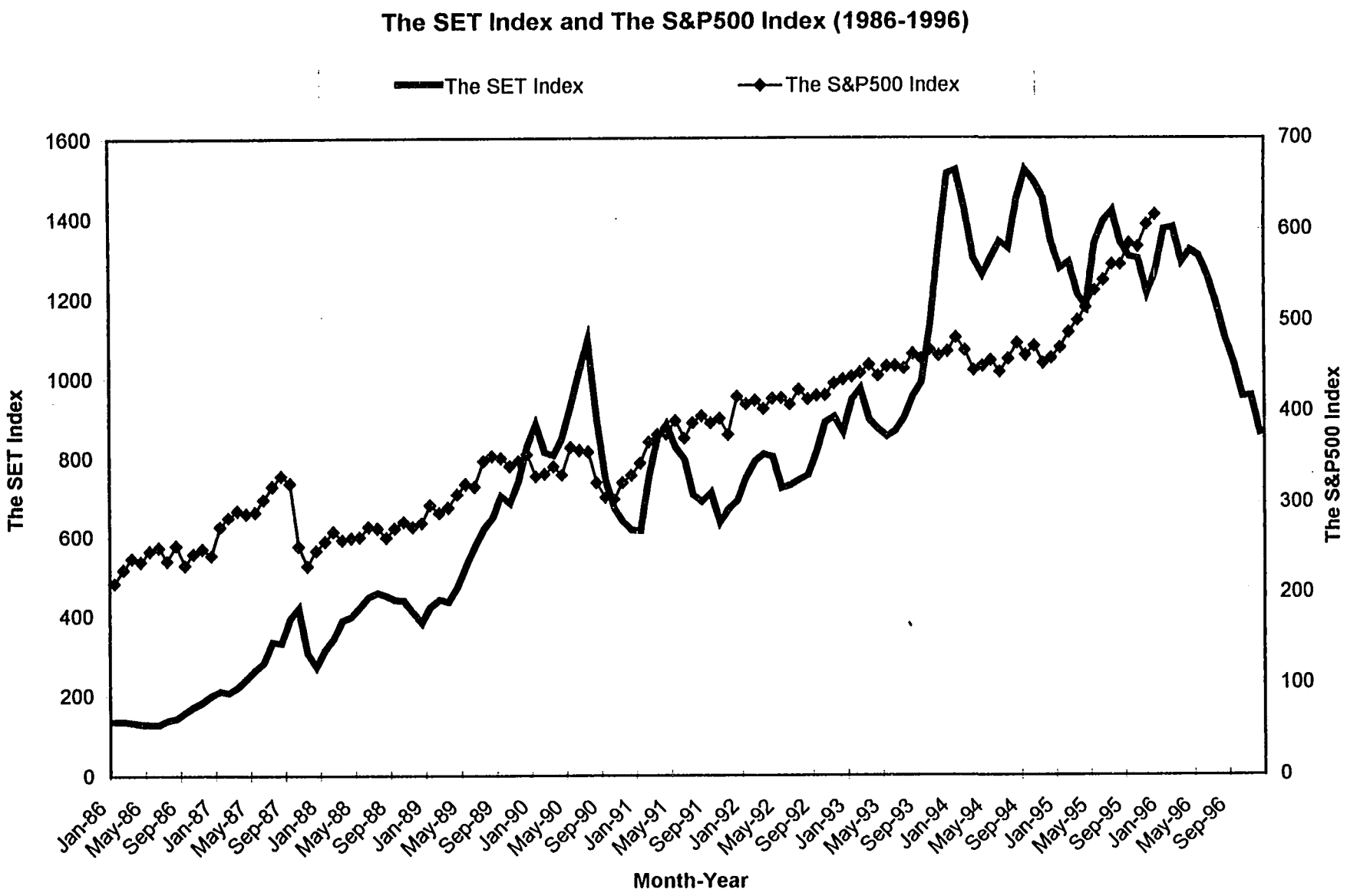
APPENDIX 2

FIGURES

FIGURE 1 : *TRANSACTIONS BY SELECTED GROUPS OF INVESTORS AS OF DECEMBER 1995*

Group of investors	Number of Transactions
Mutual funds	6,321.40
Foreign	28,616.79
Securities Companies' Portfolio	10,295.59
Others	63,345.34




The SET Index and The S&P500 Index (1986-1996)
The SET Index
The S&P500 Index
1600
1400
1200
1000
800
600
400
200
0
700
600
500
400
300
200
100
0
The SET Index
The S&P500 Index
Jan-86
May-86
Sep-86
Jan-87
May-87
Sep-87
Jan-88
May-88
Sep-88
Jan-89
May-89
Sep-89
Jan-90
May-90
Sep-90
Jan-91
May-91
Sep-91
Jan-92
May-92
Sep-92
Jan-93
May-93
Sep-93
Jan-94
May-94
Sep-94
Jan-95
May-95
Sep-95
Jan-96
May-96
Sep-96
Month-Year