

Chapter 5

Summary, Conclusion and Recommendations

5.1 Summary

This study began by recognising that Asia had become an increasingly attractive portfolio investment destination, particularly following the 2008 global financial crisis. It highlighted the research gap that existed due to the lack of recent, up-to-date research on the Southeast Asian equity markets, especially research focusing on the ASEAN (Association of Southeast Asian Nations) stock markets as a bloc (particularly in view of plans for further ASEAN integration, with targets to be achieved by 2015; for the development of a joint electronic trading system; and the enormous economic potential of the ASEAN countries, which appears to have received limited recognition from investors).

A research problem was formulated (“Identify the factors affecting investors’ asset allocation decisions in the Southeast Asian equity markets”) and two objectives were stated (to determine factors affecting investors’ asset allocation decisions in the Southeast Asian equity markets, by means of the development of a multiple regression equation, and to make policy recommendations for investors wishing to invest in the Southeast Asian equity markets).

The scope of the study was outlined, whilst limitations were recognised. Two of the main limitations related to the lack of availability of data and the constraints imposed by the need to use multiple regression modelling as a statistical tool in order to provide the required empirical evidence for research of this nature.

Seven hypotheses, based on theory and the findings of other researchers, were developed for the expected relationships between independent variables and the dependent variable.

The Research Methodology section explained how multiple regression modelling using OLS estimation, sequential hypothesis testing and a panel data approach were to be used, with t-Statistics, P-values, adjusted R-squared, the F-test and the Durbin Watson statistic being employed to test the validity and accuracy of the estimated empirical model.

The results were encouraging in that the adjusted R-squared value of 0.9915 was high and the results of the F-test provided strong statistical evidence that the estimated equation was statistically

significant. Eleven individual explanatory variables were discovered to be significant and all explanatory variables (whether in current value or lagged form) were included in the equation, with the exception of the P/E ratio, thus indicating that the choice of variables was good. The DW statistic had a value of 2.0587, indicating that serial correlation was not present. Additionally, multicollinearity was not present either. Interpretations of the intercept value, and the coefficient values on the independent and dummy variables were given. An investment decision-rule was developed. The values of the coefficients were disappointingly low, thus failing to provide clearer direction to investors regarding how the indices could be expected to move in response to changes in the values of the explanatory variables. It was concluded that the results provided support for the Efficient Market Hypothesis.

The findings of the study and how they relate to the findings of other researchers were discussed at length in the section that evaluated the hypothesis testing results. In general, most of the findings supported theory, confirmed the hypotheses and were in accordance with the findings of other researchers. Anomalies were discussed and explanations posited for such 'unusual' findings.

5.2 Conclusion

The two objectives of this study were fulfilled. Firstly, factors were determined that affect investors' asset allocation decisions in the Southeast Asian equity markets. These factors were: the index value lagged 1 period; the index value lagged 2 periods; CPI lagged 1 period; CPI lagged 3 periods; the exchange rate; exchange rate risk; exchange rate risk lagged 2 periods; the short-term interest rate; market volatility lagged 3 periods; M2 money supply lagged 2 periods; and M2 money supply lagged 3 periods. Secondly, recommendations were made not only for investors, but also for policy makers and researchers.

Possibly the most significant implication of the findings of this research are that, due to the comparatively low coefficient values and the support thus provided for the Efficient Market Hypothesis, is the need for investors to focus on smaller capitalisation stocks.

5.3 Recommendations

Recommendations for Investors

This study has developed an equation that is correct *on average* for the five relevant Southeast Asian stock markets. (If separate equations had been developed for each country individually, then it would have been possible to make country-specific recommendations). It should therefore be stressed that the findings of this study have implications for the five Southeast Asian stock markets *together*. With this in mind, the recommendations that can be given are:

1. Investors should use the statistically significant equation(s) to obtain forecasts for stock market index values. They should be aware that values for the independent variables need to be 'plugged into' the equation in natural logarithmic form. As discussed earlier, the deterministic time trend needs to be adjusted for the month for which the forecast is required. The value of the time trend was 153 in September 2011, so, if, for example, a forecast is required for September 2012 (twelve periods into the future), then the value for the time trend that needs to be plugged into the equation would be 165. Also, as previously explained, the value for the dependent variable that the equation computes needs to be anti-logged in order to obtain the linear value of the market index. Finally, investors should follow the decision rule re-stated below:

If forecasted index value > current index value → BUY
If forecasted index value < current index value → SELL
If forecasted index value > current index value → HOLD

The above decision-rule does require some qualifications. Firstly, the magnitude of difference between the forecasted value and the current value needs to be considered. It may, for example, not be worth buying a stock (or stocks) if the forecasted value is only marginally higher than the current value. Trading costs, for example, may be greater than the potential gains that could be made. Also, it should be clarified *what* exactly should an investor buy, sell or hold. The decision rule is dealing with index values. Thus, the investor could buy, sell or hold an index-tracking exchange traded fund. Alternatively, an investor who is 'stock-picking', evaluating individual stocks, and deciding whether to buy, sell or hold them, should, obviously, consider other factors specific to the stock(s) that he or she is evaluating, and not just how the market index is likely to move. They should, however, have a good understanding of how the market index is likely to move. This is because all stocks, to some degree, move in synchronisation with the market index, as reflected in the value of a stock's beta. Thus, if the stock market index rises, it can be expected that, *in general, most* stocks will also rise to some extent (every stock is affected by *systematic* factors, which are factors that affect all stocks in a market, in contrast to *unsystematic* factors that are specific to each stock).

2. Investors, if they wish to gain insight into how the five relevant stock markets indices are likely to move, should be aware of the interpretations of the values of the coefficients on the independent variables in the significant equation. These interpretations have been explained in detail in section 4.5 Implications of the Empirical Model. In particular, they should be aware of the *directions* of the relationships. They should closely monitor trends in the directions of these independent variables, in addition to forecasts of these variables. For example, knowing that the exchange rate (*measured as home currency per unit of USD*) has a positive correlation with the stock market index, investors should anticipate that an exchange rate that is trending 'upwards' or forecasted to be 'increasing' (actually depreciating according to the definition used in this study), is likely to be accompanied by increases in the value of the market index. Specifically, investors should monitor and, where appropriate and possible, attempt to forecast:

- the market index lagged one period, because, holding all the other explanatory variables constant, an increase in the logged value of the market index lagged one period by 1% should lead to an increase in the index by 1.09%.
- the market index lagged two periods, because, holding all the other explanatory variables constant, an increase in the logged value of the market index lagged two periods by 1% should lead to a decrease in the index by 0.1519%.
- the Consumer Price Index lagged one period, because, holding all the other explanatory variables constant, an increase in the logged value of CPI lagged one period by 1% should lead to an increase in the index by 0.2466%.
- the Consumer Price Index lagged three periods, because, holding all the other explanatory variables constant, an increase in the logged value of CPI lagged three periods by 1% should lead to a decrease in the index by 0.2222%.
- the exchange rate, because, holding all the other explanatory variables constant, an increase in the logged value of the exchange rate by 1% should lead to an increase in the by 0.2504%.
- exchange rate risk, because, holding all the other explanatory variables constant, an increase in the logged value of exchange rate risk by 1% should lead to a decrease in the index by 0.0329%.
- exchange rate risk lagged two periods, because, holding all the other explanatory variables constant, an increase in the logged value of exchange rate risk lagged two periods by 1% should lead to an increase in the index by 0.0291%.

- the short-term interest rate, because, holding all the other explanatory variables constant, an increase in the logged value of the short-term interest rate by 1% should lead to a decrease in the index by 0.0168%.
 - market volatility lagged three periods, because, holding all the other explanatory variables constant, an increase in the logged value of market volatility lagged three periods by 1% should lead to a decrease in the index by 0.0269%.
 - money supply lagged two periods, because, holding all the other explanatory variables constant, an increase in the logged value of money supply lagged two periods by 1% should lead to an increase in the index by 0.3329%.
 - money supply lagged three periods, because, holding all the other explanatory variables constant, an increase in the logged value of money supply lagged three periods by 1% should lead to a decrease in the index by 0.3327%.
3. Investors should pay close attention to, and monitor, all of the fourteen factors highlighted in the literature review (including other macro-economic variables that have not been used in the multiple regression model, such as GDP figures and industrial production measures). They should attempt to understand how these factors are likely to affect stock market index values. The reason for this recommendation is that it was not possible to include many of the fourteen factors (including many useful economic indicators) in the multiple regression model, as explained in the Limitations of the Study section. Additionally, the multiple regression modelling procedure is extremely stringent and sifts out variables that do not show strong statistically significant relationships with the dependent variable. Nevertheless a whole multitude of factors do observably affect stock markets. Thus, as a key component of this third recommendation, investors should read (or watch or listen to) daily market reports in the financial media which frequently state how the stock market index in a particular market moved on that day and, most importantly, why it moved in the way it did. This is relevant both for investors who attempt to track indices (for example, by buying index-tracking Exchange Traded Funds), and also for investors who are 'stock picking' and investing in specific stocks.
4. Investors should consider smaller capitalisation stocks that either do not form part of the relevant market index, or that have relatively low weightings in the market index. This is because they will have a greater chance of finding under-valued stocks in this segment. To explain, as mentioned previously, the findings of this research do provide some support for the Efficient Market Hypothesis (EMH). The equation shows that, when considered together as a group, the coefficients on the independent variables are extremely low. The stock market indices do not rise and fall *significantly* in response to changes in the values of the

independent variables. For example, the stock market indices do not increase greatly in value as a result of a decrease in short-term interest rates. The expected movements are extremely small. The implications for investors are that, *at least with regards to economic information*, they should expect the five relevant Southeast Asian stock markets to be efficient, *when they are investing in stocks that form part of the indices used as the dependent variable in this study*. If investors hope to find under-valued stocks then they need to consider stocks that are not included in the stock market indices. These would be smaller stocks with comparatively low market capitalisations.

5. As explained in the next section, the findings of this study highlight the need for research to be carried out focusing on each stock market individually. Thus, a final recommendation is that investors should be aware of possible future research that attempts to deal with each of the relevant stock markets individually, rather than as a group which is what was done in this research study.

Recommendations for Policy Makers in the Five Southeast Asian Countries

1. Adopt sound macro-economic policy and be aware of how their actions may affect the performance of their stock markets according to the fourteen factors listed in the Literature Review section of this study, and the statistically significant explanatory variables..
2. Invest in marketing to raise the profile of the ASEAN stock markets, and also to raise the profile of smaller capitalisation stocks.
3. Implement and enforce stricter regulations to improve transparency and disclosure levels, particularly as this relates to smaller capitalisation stocks. It should be made considerably easier for investors to obtain necessary information from the Investor Relations departments of smaller-capitalisation listed companies (and preferably in an 'international' language, such as English, not just the home country language). Investor Relations departments of all listed companies, whether large-cap or small-cap, should be audited to ensure they meet high quality standards. Investors will not invest in these companies if they cannot obtain the information they need. A further consequence of this is that equity markets will cease to be an attractive option for Small and Medium Sized Enterprises seeking to obtain capital.
4. Make it easier for investors outside of ASEAN to invest in the ASEAN markets by promoting and marketing securities companies that offer the capabilities of investing in all five markets

simultaneously. This is considerably easier for investors than being forced to attempt to open brokerage accounts in five separate countries.

Recommendations for Further Study

Three main recommendations can be made with regards to possible future studies of these five Southeast Asian equity markets:

1. This study was rather unique in that it adopted a panel data approach (which is a correct approach to use when data have both cross-sectional and time-series dimensions). It looked at factors affecting all five stock markets together, not in isolation. It could certainly be argued that different countries' equity markets will react differently to certain variables. In this study, stock market indices were used as dependent variables. Stock market indices are constructed differently but, crudely-speaking, are generally made up of the largest stocks by market capitalisation listed on the relevant equity market. The sectoral composition of these indices will therefore vary by country. The Malaysian stock market, for example, may have an unusually high proportion of palm oil stocks. In the past the Thai stock market was criticised by foreign investors for having a disproportionately high concentration of banking and property stocks. To the extent that companies in different industries will react differently to certain factors, so will the corresponding stock market index. A stock market index dominated by property or auto stocks, for example, may be highly sensitive to interest rates and the business cycle, whereas an index with a high proportion of consumer staples stocks would not be expected to be so sensitive to interest rates or the business cycle. Obviously, there are many other reasons why different countries' stock market indices will react differently to certain factors. Thus, the first recommendation for further study is that each of the five stock markets should be studied separately, with no panel data approach being adopted, and with equations being developed for each country's stock market.
2. Attempts could be made to incorporate other potentially significant explanatory variables: one would be a monthly measure of political risk (if it is possible to find one), since it would *appear* that the Thailand's SET index, for example, has reacted in response to changing levels of political risk over recent years. Also, some of the main factors that appear to move stock markets are frequently *external* to the country concerned (obvious examples from 2011 would include the tsunami in Japan in March, Standard & Poor's downgrade of the US AAA credit rating in August, and Eurozone sovereign debt problems). If some means could be found of

quantitatively measuring such external factors then such variables would be interesting to include in a repeat study.

3. Finally, the sample period was from January 2000 to September 2011, and, therefore, included the 2008 US subprime crisis which had a devastating effect on stock markets globally. It is possible (indeed maybe probable) that a structural break occurred around this period. In other words, OLS regression estimates a line of best fit that is correct *on average* over the entire sample period. Structural breaks, however, can have the effect of causing coefficient values to change such that the coefficient values after the break occurred are different to those from before. There are means of testing for the presence of a structural break, such as the use of Chow breakpoint tests. Thus, the third and final recommendation would be to test for the presence of a structural break around the 2008 US subprime crisis period.