Chapter 7

Conclusion and Suggestions

This study presents the conclusions drawn in the three case studies as well as suggestions for the Thailand government, farmers, and investors.

7.1 Conclusion

In the first case study, the VARMA-GARCH and VARMA-AGARCH models revealed spillovers between the volatilities of the rubber price returns and the four exchange rate returns in the model, namely, the Thai baht, Chinese yuan, Euro, and the Malaysian ringgit. Table 4 indicates that China, Malaysia, and Europe are the top three markets that import Thai rubber. The currencies of these regions can therefore affect Thai rubber prices. Furthermore, trade volume is a significant factor in setting the international price of rubber.

In the second case study, as Thailand is the world's top rubber producer and exporter, sources of price changes must be identified to ensure that the country remains competitive in this market. Changes in both climatic factors and the volatilities in the exchange rate and crude oil markets are related to the fluctuation of Thai rubber price returns.

In using the VARMA-GARCH and VARMA-AGARCH models to compare the dollar index and oil prices, the coefficients of the volatility of dollar index returns were significant in both models, whereas only the coefficient of the volatility of oil

index returns was significant in the VARMA-AGARCH model. Thus, the volatility of dollar index returns produces a stronger effect on Thai rubber price returns.

Based on these results, climatic factors and fluctuations in the exchange rate and crude oil markets significantly affect the Thai rubber price returns in the world market. Therefore, forecasting the future returns from exporting Thai rubber requires considerations of the volatilities in the aforementioned markets and climatic conditions.

With regards to analysis, no single method could completely describe the dependencies and interrelatedness of the various asset markets. In this case study, the Copula-based GARCH model better explains climate data compared with the VARMA-GARCH and VARMA-AGARCH models.

In the third case study, the results imply that the rubber futures returns in AFET follow those in TOCOM and in SICOM, as well as the crude oil and the gas oil futures returns in TOCOM. Stronger relationships are observed between AFET and the two other rubber futures markets as they trade the same product. The price volatility of synthetic rubber is close to that of crude oil, indicating stronger relationships between AFET and CRUDE. The multivariate Copula model demonstrates that all variables in this study affect the rubber futures returns in AFET. The coefficients are positive in the multivariate Copula, Gaussian dependence, and in the student-t dependence structures in bivariate Copula. This means that the volatility of futures return in AFET follows the aforementioned four types of futures returns in SICOM and TOCOM. As AFET is a new futures market, the volatility of its futures prices follows those of the established SICOM and TOCOM.

7.2 Suggestions

Based on the above conclusions of the three case studies, we propose that the Thailand government establish agricultural policies suitable to rubber farmers. Table 4 reveals the top two importers of Thai rubber as China and Malaysia; as such, the exchange rate volatilities in these two export countries affect the volatility of Thai rubber prices. Second, we propose that the financial institutions support the hedge mutual funds that could be invested in rubber futures in AFET, following the volatility of rubber futures of TOCOM and SICOM, as well as the crude oil and the gas oil futures of TOCOM. In this manner, the government could gather funds from farmers for investment in the futures market of each of the aforementioned commodities. Sufficient funds would enable Thai farmers to better hedge their investments in the futures market. Conversely, as the prices of both synthetic and natural rubber are affected by oil prices, we could conclude that the price of synthetic rubber affects that of natural rubber and would be useful knowledge for natural rubber farmers. Third, climate change similarly affects the price of rubber, and such information could aid both the farmers in setting rubber pricing and the Office of the Rubber Replanting Aid Fund could in establishing policies for the rubber spot market.