UNIVERSITI TEKNOLOGI MARA

MODELING PRICE VOLATILITY OF SARAWAK PEPPER

JELANI BIN RAZALI

Thesis submitted in fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Economics)

Faculty of Business Management

January 2018

ABSTRACT

Agriculture commodity price has a history of high degree of volatility, which posed continuing economic problems for commodity dependent countries. The global fluctuation in the pepper price brings uncertainty in the income of the farmers involved. The pepper price volatility causes uncertainty to producers causing a mismatch between supply and demand. Price fluctuation encourages unhealthy speculation among exporters and importers causing market inefficiency. The above problem motivates the study in this area so that some solution can be obtained to resolve the problem encountered by the pepper producers. This thesis, studies the price volatility of Sarawak pepper price at Kuching and New York spot market from 1977 to 2013 with the main objectives of selecting the best fit model to model Sarawak price series at Kuching and New York spot markets and finally to determine the most accurate model used to forecast the pepper price series. This study analyses the pepper price volatility which is vital to understand the trend in the price cycle both at the domestic and international markets so that a well-planned and strategic marketing policy can be formulated to reduce the risks in the industry that will benefit the producers especially the small pepper farmers in the long run. ARIMA (1,1,1) model is a good model to model Sarawak black and white pepper at Kuching and New York spot markets. Unfortunately, this model failed to fulfill the white noise assumption which point to a higher order model to model all the four Sarawak pepper price series. The best fit model to capture the asymmetry effect and volatility persistence of Sarawak pepper price series black and white pepper at Kuching and New York spot market is the GARCH (1,1) model. The finding shows that positive shocks increase the volatility more than the negative shocks. This indicates that positive shocks have asymmetric effect on the volatility of Sarawak black and white pepper price at Kuching and New York spot market. In addition, the positive shocks have high degree of persistence on the volatility of Sarawak black pepper prices at Kuching and New York spot markets. This information is vital to sellers and producers in their marketing strategy and long term planning. The most accurate model to forecast Sarawak black pepper price at Kuching market is the GARCH (1,1) model while EGARCH model is the most accurate model to forecast Sarawak white pepper at Kuching spot market and Sarawak black and white pepper price at New York spot market. This thesis also analyses the effect of structural shock on all four Sarawak pepper price series. Based on the findings, it shows that structural shock influences the best fit model to accommodate the structural shocks brought in by the entry of new producers in the market. In addition, all four Sarawak pepper price series are found to have seasonal effect based on Seasonal ARIMA model. Based on these findings, traders and producers should take into account the seasonal influence on the price volatility in their marketing strategy. The release of stock from the different origin will influence the pepper price in the market.

ACKNOWLEDGEMENT

Firstly, I wish to thank Allah S.W.T for giving me the opportunity to embark on my PhD and for completing this long and challenging journey successfully. I am greatly indebted to my diligent supervisors Assoc. Prof. Dr. Rosita Binti Haji Suhaimi, Assoc. Prof. Dr. Rasidah Binti Mahdi and Dr. Abdul Jabbar Abdullah who have patiently guided me and provide excellent comments, suggestions and modifications to this thesis. No words can express my thanks to them and only Allah S.W.T will reward them in the hereafter.

I also would like to express my gratitude to my family who have given me support throughout my study. Finally, this thesis is dedicated to the loving memory of my late father and mother for their vision and determination to educate me. This piece of victory is dedicated to both of you. Alhamdulillah.

TABLE OF CONTENTS