

**UNIVERSITI TEKNOLOGI MARA**

**MODELING PRICE VOLATILITY OF  
SARAWAK PEPPER**

**JELANI BIN RAZALI**

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## 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.

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# TABLE OF CONTENTS

	<b>Page</b>
<b>CONFIRMATION BY PANEL OF EXAMINERS</b>	<b>ii</b>
<b>AUTHOR'S DECLARATION</b>	<b>iii</b>
<b>ABSTRACT</b>	<b>iv</b>
<b>ACKNOWLEDGEMENT</b>	<b>v</b>
<b>TABLE OF CONTENTS</b>	<b>vi</b>
<b>LIST OF GRAPHS</b>	<b>xiii</b>
<b>LIST OF TABLES</b>	<b>xiv</b>
<b>LIST OF FIGURES</b>	<b>xx</b>
<b>CHAPTER ONE: INTRODUCTION</b>	<b>1</b>
1.1 Introduction	1
1.2 Characteristics of the Pepper Industry	4
1.3 Malaysian Pepper Industry	5
1.4 Problem Statement	7
1.5 Rational of the Study	7
1.6 Research Questions	10
1.7 Research Objectives	11
1.8 Significance of the Study	11
1.9 Scope of the Study	12
1.10 Methodology	12
1.11 Comprehensive Analysis of Sarawak Pepper Price Volatility	13
1.12 Limitations of the Study	13
1.13 Conclusion	13
<b>CHAPTER TWO: BACKGROUND OF THE STUDY</b>	<b>15</b>
2.1 Introduction	15
2.2 Contributions of the Pepper Industry to the Malaysian Economy	15
2.3 World Pepper Production	16

2.4	Pepper Production Pattern in Major Producing Countries	17
2.5	World Pepper Export	21
2.6	Pepper Export Pattern of Major Producing Countries	22
2.7	World Pepper Consumption	26
2.7.1	Pepper Consumption in Producing Countries	26
2.7.2	Pepper Imports in Consuming Countries	27
2.7.3	Trend in Pepper Consumption	28
2.8	Export Earning from Pepper by Producing Countries	28
2.9	Malaysian Pepper Production and Export	29
2.10	Current Management of Agriculture Commodity Prices	31
2.11	Current Management of Pepper Markets	31
2.12	Conclusion	36
<b>CHAPTER THREE: LITERATURE REVIEW</b>		<b>38</b>
3.1	Introduction	38
3.2	Agricultural Price Volatility	38
3.2.1	Nature of the Volatility	39
3.2.2	Effect of Price Volatility	41
3.2.3	Factors Contributing to Agricultural Price Volatility	42
3.3	Commodity Price Behavior	43
3.3.1	Random Walk Behavior	44
3.3.2	Long Term Behavior	45
3.4	Historical Development of Methodology in Agricultural Forecasting	46
3.4.1	Short Term Forecast Using Judgmental Reporting	46
3.4.2	Short Term Forecast using Quantitative Analysis	47
3.4.3	Short Term Forecast Based on Producers' Intention	47
3.4.4	Single Equation Econometric Forecast	48
3.4.5	Sectorial Forecasting Model	49
3.4.6	Aggregate and Large Scale Econometric Forecasting Model	49
3.4.7	Informally Linked Forecasting Model	50
3.4.8	Formally Linked Forecasting Model	51
3.4.9	Time Series Forecasting Model	52
3.4.10	Random Walk Forecasting Model	54
3.4.11	Structural Forecasting Model	54