

TABLE OF CONTENT

COVER	
THESIS SUPERVISOR APPROVAL	ii
THESIS EXAMINER APPROVAL	iii
DEDICATION PAGE	iv
MOTTO	v
ACKNOWLEDGEMENT	vi
ABSTRACT	vii
TABLE OF CONTENT	viii
LIST OF TABLE	x
LIST OF FIGURE	xi
CHAPTER I INTRODUCTION	
1.1 Background	1
1.2 Problem Formulation	2
1.3 Scope of Research	2
1.4 Objective of Research	3
1.5 Significance of Research	3
1.6 Systematic Writing of Thesis	3
CHAPTER II LITERATURE REVIEW	
2.1 Previous research	5
2.2 Probability Theory	
2.2.1 Probability and Random Variable	8
2.2.2 Conditional Expectation	10
2.2.3 Expected Value and Variance	11
2.3 Time Series Analysis	11
2.4 Stochastic Process	12
2.5 Markov Chain	14
2.6 Hidden Markov Model	
2.5.1 Characteristic of HMM	18
2.5.2 Main issues using HMM	18
2.7 Percentage Error	23
CHAPTER III RESEARCH METHODOLOGY	
3.1 Research Object	24
3.2 Hidden Markov Model	
3.2.1 HMM Model	24
3.2.2 Notation	30
3.3 Data Requirement	31
3.4 Data Collecting Method	31

3.5	Data Analysis	31
3.6	Tools Analysis	32
3.7	Frame of Research	32
CHAPTER IV DATA COLLECTING AND PROCESSING		
4.1	Data Collecting	34
4.2	Data Processing	40
CHAPTER V DISCUSSION		
CHAPTER VI CONCLUSION AND SUGGESTION		
6.1	Conclusion	53
6.2	Suggestion	54
REFERENCES		
APPENDICES		



LIST OF TABLE

Table 2.1	Probability Sample Space	11
Table 4.1	Dimensions of Casting Bar	40
Table 4.2	Dimensions of Minted Bar	40
Table 4.3	Gold and Indonesian Crude Price in year 2008-2010	42
Table 4.4	State for Each Month	45
Table 4.5	State Transition	46
Table 4.6	Simulation Result of A-C1- σ_1	48
Table 4.7	Simulation Result of A-C1- σ_2	49
Table 4.8	Simulation Result of A-C2- σ_1	51
Table 4.9	Simulation Result of A-C2- σ_2	53



LIST OF FIGURE

Figure 2.1	Example of State Transition	19
Figure 2.2	Re-estimating Transition Probabilities	24
Figure 3.1	Hidden markov Model	29
Figure 3.2	Research Flowchart	37
Figure 4.1	Actual gold Graph	43
Figure 4.2	Indonesian Crude Graph	44
Figure 4.3	Actual vs Simulation of A-C1- σ_1	49
Figure 4.4	Actual vs Simulation of A-C1- σ_2	51
Figure 4.5	Actual vs Simulation of A-C2- σ_1	53
Figure 4.6	Actual vs Simulation of A-C2- σ_2	54

