

CONTENTS

CHAPTER 1: INTRODUCTION

- 1.1 Introduction
- 1.2 Review of previous work
- 1.3 Models for stock indices and Stock prices
 - 1.3.1 Continuous random walk: transition to Brownian motion model
 - 1.3.2 Brownian motion
 - 1.3.3 Ito's Lemma
 - 1.3.4 Generalization of Ito's Lemma
 - 1.3.5 Brownian motion with drift
 - 1.3.7 Multidimensional Ito's Lemma
- 1.4 Black- Scholes equation
- 1.5 Objectives of the present investigation
- 1.6 References

CHAPTER 2: METHODS FOR DATA CHARACTERIZATION

- 2.1 Introduction
- 2.2 Methods of Characterization
 - 2.2.1 Sampling
 - 2.2.2 Stationarity
 - 2.2.3 Artifact
 - 2.2.4 Time domain analysis
 - 2.2.5 Frequency domain analysis
 - 2.2.6 Time spectrum analysis
 - 2.2.7 Power law

2.2.8 Detrended fluctuation analysis

2.2.9 Multifractal analysis

2.2.10 Entropy analysis

2.2.10.1 Approximate Entropy

2.2.10.2 Sample and multiscale entropy

2.3 References

CHAPTER-3: DETRENDED FLUCTUATION ANALYSIS OF FINANCIAL TIME SERIES

3.1 Introduction :

3.2 Result of Analysis

3.3 Discussion:

3.4 References

CHAPTER 4: LYAPUNOV EXPONENT

4.1 Introduction

4.2 Results

4.3 Discussion

4.4 References

CHAPTER 5: ENTROPY APPROACH TO DATA ANALYSIS

5.1 Introduction:

5.1.1 Sample Entropy

5.2. Method for the calculation of Sample Entropy

5.3 Multi-Scale Entropy Analysis

5.4 Data Analysis

5.5 Discussion

5.6 References:

CHAPTER 6: PRINCIPAL COMPONENT ANALYSIS

6.1 Introduction:

6.2 Results of Data Analysis:

6.3 Discussion:

6.4 References

CHAPTER 7: CONCLUSION

7.1 Conclusion

7.2 Future Directions