Chapter 1

Introduction

1.1 Background and Rationale

Just a few years ago, the economy in Thailand was booming. Thai government promulgated the friendly new investment regulations and Japanese plowed more capital into Thailand than it had in the previous 20 years (Spaeth, 1997). From 1986 to 1989, the flow of foreign money rose by 400% and GDP growth in 1988 was 13.6%. And that was just the beginning. In the early 1990s foreign mutual funds discovered Asian stock markets. Thailand in 1993 Thai government set up the Bangkok International Banking Facility (BIBF), through which companies and banks could borrow money from abroad conveniently. There was no risk because the baht was pegged largely to the U.S. dollar, as were many Asian currencies. Foreign bankers were more than eager to lend. About $50 billion in loans poured into Thailand between 1993 and 1996 and private sector borrowing leapt from 39% of Thailand's Gross Domestic Product (GDP) to 123%. An economy with that kind of money coming in as direct investments, stock market played and easy loans could only grow, and Thailand's GDP grew 8.1% a year for that period.

But problems were looming. Kadlec (1997) said that many Asia banks and finance companies had loaned too much money, using inflated property values as collateral. In Thailand many banks had loaned more money than they had on deposit, and some 20% of the nation's lending was done by especially aggressive, largely unregulated non-bank financial companies. Most of these were set for extinction, drowned by bad loans and high interest rates. The economy in Thailand headed for a slowdown, then a recession, in short order.

Thailand's bubble economy finally burst in 1997, the Thai baht currency was coming under harsh attack several times, the strongest in May. This forced the bank of Thailand to spend a large amount of international reserves in an attempt to defend the Thai baht, but to no avail. On 2nd July 1997, the authorities changed the exchange rate regime from a basket system to a managed float. The crisis broke out in mid-1997 in

Thailand and spread widely across the region and the globe, and the market confidence in the baht and the Thai economy in general was greatly damaged.

The economic restructuring program needed to be strong and comprehensive. During the first year of Prime Minister Chuan Leekpai's government, Thailand introduced a series of measures, with support from the IMF, the World Bank, the Asian Development Bank and bilateral sources, to overcome its currency and financial crisis, and to build a basic fundamental for the resumption of confidence in the economic reform program despite the deteriorating external conditions (Nimmanaheaminda, 1999). A report from the economic stimulus package of the Thai government said that the combined currency and financial crisis in mid-1997 caused the GDP in 1998 to contract by 8 percent, affecting all segments of society. Many businesses experienced severe difficulties as result of the sharp contraction in demand and an increase in their debt obligations. Non-performing loans increased sharply. The resulting instability among financial institutions affected credit inter-mediation to the real sector. Private investment declined steadily, and unemployment increased. Shrinking incomes, coupled with the increased costs caused by the decline in the value of the baht, led to widespread social ills.

In designing and implementing its policies, the Thai government has now taken a systematic approach to resolving the economic crisis to allow the economy to recover in a sustainable manner. In the initial stages, the government emphasized stimulating the economy and addressing social ills while ensuring that macroeconomic stability was maintained. The fiscal and monetary stances were gradually relaxed in accordance with prevailing economic and market conditions. The government sourced funds at attractive terms from various sources to bolster domestic liquidity and address social ills. The government has been heavily involved in restructuring the financial sector and facilitating debt restructuring. It has also taken measures to encourage real corporate restructuring to increase competitiveness and enhance exports (SE Asia Standard Time, 1999).

The economic crisis has had a great effect on the stock exchange of Thailand (SET). The benchmark composite SET index dropped from a boom-time high of 1,700 in 1994 to a low of 481.92 toward the end of December 1999, the worst since the darkest

days of the Thai-induced Asian financial crisis. This phenomenon has been occurring all over the world.

There are other factors that cause prices throughout Thailand to change over time. One of the factors is volatility. This study examines the volatility of stock prices, which can be described by using a predictive model. While such models have more general application, we focus on banking shares because banks constitute a very important financial institute for the people and for the country's development. Banking is an indicator that can describe health of the economy in Thailand. In addition, the information obtained can be used to make decisions for investment.

1.2 Objectives, Research Hypotheses and Scope of Study

Objectives:

(a) To describe the variation of banking shares in the stock market.

(b) To develop an appropriate statistical model for describing the stochastic volatility of banking shares.

Research hypotheses:

(a) An appropriate statistical model can be used to describe the stochastic volatility of banking shares.

(b) Based on the correlation among banking share price returns, it is possible to construct a portfolio that will eliminate risks associated with economic downturns that occurred in Thailand.

The scope of study is the analysis of data showing the variation in prices of the selected banking shares in Thailand from 4 January 1994 to 30 December 1999. Data comprise the closing price on each trading day from the following six banks and one financial institution:

Bank of Ayudhya (BAY)

Bangkok Bank (BBL)

Bank of Asia (BOA)

Industrial Finance Corporation of Thailand (IFCT)

Krung Thai Bank (KTB)

Siam Commercial Bank (SCB)

Thai Farmers Bank (TFB)

These banks were selected because they are large financial institutes in Thailand and their share price data are available from ABN Amro Asia Securities Public Co.Ltd.

These data are used to develop a statistical model for describing the stochastic volatility of banking index.

1.3 Definitions (CNBC.com-Financial Glossary)

Returns: Indicates the total percentage gain of a fund over that time period.

Closing Price: The last trading price of a stock when the market closes.

Portfolio: A collection of securities held by an investor.

Security: A financial instrument that indicates the holder owns a share or shares of a company (stock) or has loaned money to a company or government organization (bond).

Share: An investment that represents part ownership of a company or a mutual fund.

Stock: An investment that represents part ownership of a company. There are two different types of stock: common and preferred. Common stocks provide voting rights but no guarantee of dividend payments. Preferred stocks provide no voting rights but have a set, guaranteed dividend payment. Also called shares.

Bank and Financial Institute comprise Bank of Ayudhya (BAY), Bangkok Bank (BBL)Bank of Asia (BOA), Industrial Finance Corporation of Thailand (IFCT), Krung Thai Bank (KTB), Siam Commercial Bank (SCB), Thai Farmers Bank (TFB)

Banking Share reffered to share of bank and institute in this study.

1.4 Literature Review

Much statistical research in share price modeling has relied on complex time series models. For example, Kwok (1995) studied stock returns and inflation using a new test of competing hypotheses by employing an unrestricted co-integrating Value-at-Risk (VAR) model to test the dynamic implications of three competing explanations for the negative stock return-inflation relationship. The test results also made use of

recent advances in testing for Granger-causality due to Toda and Phillips (1994). One implication is that Granger-causality testing using the newly recommended procedures results in a different interpretation of the links between monetary policy and stock returns. It was found that Geske and Roll's theory (1983) was the only one that was not rejected by the sample of quarterly data from 1960 to 1992, although the results were not entirely inconsistent with Fama's proxy hypothesis (1981, 1990). Only Benderly and Zwich's hypothesis (1985) was clearly rejected by the data. The results also provide stylized facts about the dynamic linkages among key macroeconomic variables.

Lee (1995) investigated the response of stock prices to dividend shocks in a bivariate model of stock prices and price-dividend spreads. The dividend process is modeled as the sum of a permanent component and a temporary component. By using the stock price valuation (present value) model, the two components are related to stock prices. The stock market responds significantly not only to permanent shocks to dividends, but also to temporary shocks to dividends. Furthermore, initial responses of stock prices to the temporary shocks were as strong as those to the permanent shocks. As a result, substantial variation in stock prices was due to the temporary shocks. This finding provides empirical support for the imperfect information hypothesis that emphasizes the failure of investors to clearly distinguish between the two components of dividends, and also suggests that observed mean-reverting behaviour of stock returns should be explained by incorporating a significant temporary component into stock prices. The price-dividend spreads are primarily accounted for by the temporary shocks to dividends, and respond strongly to them, suggesting that, in response to the temporary shocks to dividends, stock prices respond excessively relative to dividends.

Puttonen (1995) studied international transmission of volatility between stock and stock index future markets. This study examined the short run dependence between the stock index (cash) markets in Finland and Sweden and the Finnish index future markets. Using an autoregressive conditionally heterosckedastic (ARCH) model, a strong leading relation in return volatility is shown to occur from the Finnish cash and future markets to the Swedish stock market. This is in sharp contrast to prior results

on the inter-market return dependencies between these countries and suggests a more symmetric pattern of information flow to these markets.

Karolyi and Gagnon (1997) studied the information, trading volume and international stock market co-movements by using intra-day prices for the S&P 500 and Nikkei stock average and aggregate trading volume for the New York and Tokyo stock exchanges. They showed how short-run co-movements between national stock market returns vary over time in a way related to the trading volume and liquidity in those markets. The analysis was framed in the context of the equilibrium models of trading developed by Campbell, Grossman and Wang (1993) and Blume, Easley and O'Hara (1994) which predicted that trading volume acts as signal of the information content of a given price move. While there exists significant short-run dependence in returns and volatility between Japan and the U.S., these return "spillovers" are sensitive to interactions with trading volume in both markets. The cross-market effects with volume are revealed in both close-to-open and open-to-close returns and often exhibit non-linearities that are not predicted by theory.

Patelis (1997) examined stock return predictability and the role of monetary policy. The author examined whether shifts in the stance of monetary policy can account for the observed predictability in excess stock returns. Using long-horizon regressions and short-horizon vector autoregressions, the research concludes that monetary policy variables were significant predictors of future returns, though they could not fully account for observed stock return predictability. The author undertook variance decompositions to investigate how monetary policy affects the individual components of excess returns (risk-free discount rates, risk premia, or cash flows).

Saohin (1995) studied the model and the size of the appropriate time series in which security prices in the Stock Exchange of Thailand are forecasted; and the correlation between security prices and SET Index. The time series involved in the study were the daily closing prices of these securities from May 3, 1994 to March 6, 1995. These time series were divided into three different sizes including the small size of 35 days, medium size of 75 days and the large size of 200 days Three methods of statistical forecasting are used: double moving average method, double exponential smoothing method, and Box and Jenkins method. A comparison of the three forecasting methods

was made by mean square error. The study revealed that it is not necessary to use a large time series in forecasting security prices. The double moving average method is appropriate for the small time series, which can give more accurate forecasts of security prices than the double exponential smoothing method or the Box and Jenkins method. The only exception is the securities of Tanayong Public Company Limited, where the large time series have to be used with the Box and Jenkins method to forecast its security prices more accurately.

Jirattiviwat (1999) examined the currency exchange rates of Japanese yen, the British pound sterling, and German deutsche mark, in terms of the US dollar, data from 3rd January 1986 to 12th April 1994, using time series analysis and stochastic volatility models. It was found the currencies relative to the US dollar, the volatility for each currency tended to follow the same pattern. Based on a simulation study, the estimated standard deviation and kurtosis coefficients of the exchange rate returns were close to those for the data, while the estimated skewness cofficients were less than those of the data. However, the simulated volatility series resembled those based on the data. The time series analysis of the volatility of the real and simulated data, showed that the volatility of the exchange rate returns is not constant, with unpredictable currency exchange rate returns. More general statistical tests are needed to test for constant volatility, skewness, and kurtosis.