

Chapter 1

Introduction

1.1 Introduction

The banking industry is important sectors for economic growth of a country as it is a crucial channel for bridging the gap between lenders and borrowers. The potential impact of changing interest rate on commercial banks has attracted attention from policy makers since commercial banks are generally highly leveraged and interest rate sensitivity may be an indicator of financial distress. Commercial banks are also potentially exposed to interest rate risk because of the mismatch between the maturity, or time to repricing of their assets and liabilities. Studying the effects of interest rate movement on bank stock return, therefore, could provide an important indicator of banking health and it is a topic of much interest to policy makers.

This study, therefore, examines only the asset price channel of monetary transmission mechanism in selected countries from the Southeast Asia region by using a model that allows for regime change over time.¹ In particular, the focus is on the relationship between changes in money market interest rate and stock price of commercial banks in Thailand. This study further compares the Thai results with other two developing countries, namely Indonesia and Malaysia in the Southeast Asia area. These two countries are selected because all of them are suffered as much as Thailand from the Asian financial crisis in 1997

In the literature, many previous studies find a negative relationship between changes in interest rate and firms' stock returns, while some report a positive relationship.² For the banking industry, Saunders and Yourougou (1990), Akella and Greenbaum (1992), Choi, Elyasiani and Kopecky (1992), Elyasiani and Mansur (1998), Oertmann, Rendu and Zimmermann (2000), and Fraser, Madura and Weigand (2002) find a significantly negative relationship between changes in interest rate and stock returns of commercial banks. However, several studies, including Booth, Officer and Henderson (1985) and Song (1994), report a positive relationship.³ The apparent difference of this relationship may be caused by an uncertainty about structural changes.⁴

¹ A comprehensive review of literature on the role of monetary policy, especially the relationship between real stock return, an inflation rate, and money growth, is provided by Sellin (2001). More details about the monetary transmission mechanism are also given by Mishkin (1995, 1996).

² For example, Kaul and Seyhun (1990), Beckers (1991), Choi and Jen (1991), Wei and Wong (1992), Erb, Harvey and Viskanta (1995), Domian, Gilster and Louton (1996), Lee and Ni (1996), Loflund and Nummelin (1997), Groenewold, O'Bourke and Thomas (1997), Gjerde and Saettem (1999), Aarstol (2000), Khil and Lee (2000), and Coetzec (2002) find a negative relationship between an inflation rate and firms' stock returns. On the other hand, Järvinen (1998), Barnes, Boyd and Smith (1999), Choudhry (2001), Crosby (2001), and Sourial (2001) report a positive relationship.

³ More details about the relationship between changes in interest rate and stock returns of commercial banks are provided in Chapter 2 (Section 2.4).

⁴ More details about uncertainties are given by Issing (2002).

To account for this uncertainty, this study argues that a better way to investigate the relationship between changes in interest rate and firms' stock return is to use an empirical model that allows for regime switching,⁵ where external forces to the model result in changes in fundamental relationships within the model. Many prior studies have also found that financial market conditions are generally characterised by regimes (see Fabozzi & Francis 1977, 1979; Chen 1982; Fama & French 1989; Kakes 1998; Ahrens 2002; Ang & Bekaert 2002a, 2002b; Granger & Silvapulle 2002; Kim, Morley & Piger 2002). In particular, several studies, including Kaul (1987) and Du (2006), point out that if central banks conducted a pro-cyclical monetary policy, the direct effect of policy changes would be a positive impact on an inflation rate and firms' stock returns, while a negatively direct effect would result when central banks performed a counter-cyclical monetary policy.⁶ As an example, in Kaul's (1990) study, there are two monetary policy regimes; one is a money supply regime while another one is an interest rate regime.⁷ The results show that under the interest rate regime, a negative relationship between an inflation rate and firms' stock returns is significantly stronger than that under the money supply regime. These results are also confirmed by Graham (1996).

This study proposes to use the Markov switching model (hereafter called the MS model) for taking into account the impact of regime switch on the relationship between changes in money market interest rate and stock price of commercial banks.⁸ The model imposes fewer hypotheses on the statistical distribution of variables and enables a simultaneous estimation of changes in dependent and independent variables, with the regime in which an economy is located at each point in time being defined endogenously. This model also has several advantages, including endogenising structural breaks and encompassing the autoregressive conditional heteroskedasticity models. It is further capable of allowing for asymmetric adjustment and regime switching simultaneously. In addition, some studies, including Hamilton and Susmel (1994), Humala (2005), and Sarno and Valente (2005), have shown that the MS model, which allows for shifts in intercept terms, autoregressive parameters, and variance-covariance matrices, outperforms several alternative models in forecasting performance.

⁵ Regimes may be defined as bearish, normal, and bullish market conditions or up- and down-cycle of interest rates or monetary policy. Zampolli (2006), for example, suggests that a bubble regime could be defined as a period that leads the exchange rate to differ from fundamentals. Chen and Chan (1989) also report that up- and down-ward changes in interest rate could be classified as regimes. In Andolfatto and Gomme's (2003) study, high and low growth rate of money could be viewed as regimes.

⁶ The pro-cyclical monetary policy is the policy that supports an economy during the expansion or recession in business activities. On the other hand, the counter-cyclical monetary policy is the policy that does oppositely to the pro-cyclical monetary policy.

⁷ The money supply regime refers to a period in which central banks perform a policy to control money supply growth rate, while the interest rate regime refers to the period when central banks conduct a monetary policy to control an interest rate movement.

⁸ This model has been proven to be useful in modelling a range of economic time series ranging from the asset pricing model (see Cecchetti, Lam & Mark 1990; Kazemi 1992; Duffie & Singleton 1993; Kijima & Uchida 2005), the business cycle (see Hamilton 1989; Goodwin 1993; Diebold & Rudebusch 1996; Filardo & Gordon 1998; Bodman & Crosby 2000; Kontolemis 2001; Clements & Krolzig 2003; Moolman 2004), the exchange rate (see Engle & Hamilton 1990; Kaminsky 1993; Engle 1994; van Norden 1996; Vigfusson 1997; Bollen, Gray & Whaley 2000), the short-term interest rate (see Hamilton 1988; Sola & Driffill 1994; Gray 1996; Bekaert, Hodrick & Marshall 2001; Smith 2002; Evans 2003; Clarida et al. 2004; Awirothananon & Cheung 2006; Clarida et al. 2006), and the stock market (see Hamilton & Lin 1996; Schaller & Norden 1997; Kim, Morley & Nelson 2004; Zijian 2004; Guidolin & Timmermann 2007).

1.2 Objectives of the study

This study proceeds in two steps. First, this study seeks to explain the noticeable differences in the relationship between changes in money market interest rate and commercial banks' stock price in the finance literature. As noted, many previous studies find a negative relationship, while a positive relationship is reported in some prior studies. This difference may be caused by an uncertainty about structural changes. This study, therefore, will apply a model that identifies regime shifts endogenously, the MS model. This model could be considered as a general tool for identifying changes in uncertainty about monetary policy. The results will thus provide some explanations for the apparent differences in this relationship in terms of regime switching.

Second, this study measures the magnitude with which stock price of commercial banks responds to changes in monetary policy. The results will provide further evidence on this issue with recent data (from September 1993 to March 2010) that spans a period when the money market interest rate varied substantially. The strengths and weaknesses of the Thai monetary policy are also measured to look into any improvement that can be done to enhance the Thai economy. To do this, the results of Thailand will be compared with those of developing countries: Indonesia and Malaysia. This result will extend understanding of the effectiveness and efficiency of monetary policy under different regimes.

1.3 Contributions of the study

First, previous studies examine the degree of pass-through from the money market interest rate to stock price of financial institutions using a single linear model. Their conclusion about this relationship between changes in money market interest rate and stock price of commercial banks differed. Many prior studies, for example, find a negative relationship while a positive relationship is reported in some. The apparently conflicted responses may be caused by an uncertainty about monetary policy. This study, hence, argues that this relationship could be characterised by different regimes. The effect of regime shifts is empirically explored to understand the behaviour of money market interest rate and stock price of commercial banks, especially in developing countries in the Southeast Asia region.

Second, data from developed countries are generally employed by many previous studies and the study period is between the period following World War II and the pre-financial crisis in Asia. This study thus focuses on the Southeast Asia region and covers the period from September 1993 to March 2010. It includes some major events that could affect the monetary policy. These events consist of the Asian financial crisis in July 1997, the collapse of dot com business in 2000, the September 11 attack in 2001, Thailand's full payment of the IMF loan in 2003, the implementation of capital adequacy requirement for commercial banks under the Basel Accord,⁹ and the Thai political crisis in 2006. In

⁹ The basis of the Basel Accord of 1988 is a consistent standard that applies for determining minimum capital requirements across internationally commercial banks. These capital requirements are structured to make regulatory capital sensitive to differences in risk profiles across commercial banks (Bank for International Settlements 1999).

addition, only few studies, including Awirothananon (2008) and Awirothananon and Cheung (2008a), have examined the relationship between changes in money market interest rate and commercial banks' stock price in the developing countries context. They, however, do not compare the results with other developing countries in the Southeast Asia region. The comparison results may thus provide important information about the response of commercial banks' stock price toward different monetary policies during the major events for developing countries in the Southeast Asia area.

Lastly, this study could help to understand and give some insights into a relationship between changes in interest rate and bank stock return in the Southeast Asia countries, especially Thailand. It also improves knowledge in the finance area and some finance lecturer could use these results to teach students in some courses such as "Financial Management" or "Investment Management".

1.4 Definition of terms

In this study, there are some terms those have to be defined as follow:

Money market interest rate is the inter-bank rate (or the inter-bank rate: IB).

Bank return is the commercial bank stock index return (hereafter called Index).

Developing countries in the Southeast Asia region are Indonesia, Malaysia, and Thailand since all of them are suffered from the Asian financial crisis in 1997. In this study does not include Philippines since a required data are not available.

1.5 Preview of the study

This study investigates the pass-through from the IB to the Index for the period of September 1993 to March 2010 using monthly data in three developing countries in the Southeast Asia region. These countries are Indonesia, Malaysia, and Thailand. First, unit root test (the ADF test) is employed to determine whether all data are stationary or not. Schwarz (1978) information criteria (hereafter called SIC) value is then used as a guideline for determining the numbers of regimes and variables as well as selecting the suitable specification of MS model to be used in this study.

An analysis of three developing countries is conducted. The ADF test suggests that most variables in the level form are stationary, except for the IB of Malaysia and Thailand. These two IB variables are stationary in the first difference form (ΔIB). The SIC value suggests the MS model with two regimes: normal and volatile market conditions. The results suggest that the IB impact on the Index in relation to market conditions can be as summarised in Table 1.1. In Thailand, for example, the Index and changes in IB have a positive relationship in normal market conditions while during volatile market conditions the relationship is negative. In addition, Indonesia and Malaysia have only a negative relationship during both market conditions. No relationships, however, are significant; this indicates that changes in IB could not create any impact on the Index during both normal and volatile market conditions.

Table 1.1: The brief results

This table summarises the results of three developing countries in the Southeast Asia region. These countries are Indonesia, Malaysia, and Thailand. They can be divided into two characteristics: direction of responses and magnitude of responses. The study period is from September 1993 to March 2010.

Characteristics of responses	Countries	Market conditions	
		Normal	Volatile
Direction of response	Indonesia	Negative	Negative
	Malaysia	Negative	Negative
	Thailand	Positive	Negative
Magnitude of response	Indonesia	Zero	Zero
	Malaysia	Zero	Zero
	Thailand	Zero	Zero

1.6 The structure of the study

The structure of the remaining chapters in this study is as:

Chapter Two provides an overview of country classification as well as a brief of economic background for Thailand and other developing countries (Indonesia and Malaysia). A literature review of the relationship between the Index and unexpected changes in interest rate is also discussed. This chapter further outlines the theoretical framework and provides an overview of interest rate risk management in financial institutions.

Chapter Three outlines research methodology and discusses key variables in this study. This chapter also addresses the model selection criterion and the estimation of a relationship between changes in IB and the Index. It further includes a discussion of the data source used in the analysis as well as a hypothesis formulation.

Chapter Four presents the empirical results of analysed data of Thailand and other two developing countries in the Southeast Asia region. The descriptive statistics for all variables and the results from unit root test, model selection, and the MS model are presented. Comparison results among three developing countries are also discussed.

Chapter Five concludes the study with a summary of the findings as well as some recommendations for further study.