Chapter 1

Introduction

Statement of the problem

Many countries have more international trades because of liberalization. Liberalization is used in the sense of removal of control on access to internationally traded goods and foreign exchange rate. Each countries can communicate comfortably , especially in the economic system. Nowadays , international trade is more important to international monetary system . There is a relationship between the exchange rates as each country has its own currency which is different from these of other countries. There are many international currencies in the world financial system such as US dollar , Deutsche-mark , Japanese Yen, being used widely in international trade. Meanwhile the exchange rate movement is effective for international and domestic economic system. They may increase the costs and uncertainties of trade and induce economic agents to directly reduce their international transactions. This, in turn, can have implications in the long run for trade flows, going beyond the impact of fluctuating rate on the behavior of economic agents and on the government's policy . The government policy is important as it determines the equilibrium exchange rate which in turn becomes significant in making international monetary and trade more efficient. Although approaches to the exchange rate determination, for example, the monetary approach and the portfolio approach, vary greatly, they use the macroeconomic variables.

Political and economic situations, at present are normally translated and transmitted rapidly through the advanced information technology. Such unanticipated events known as "news" or "surprises" are more effective in determining the exchange rate particularly in the flexible exchange rate regime.

At present time, most countries have switched to the flexible rate regime which is controlled by the demand and supply in the international market. Thailand also switched to the flexible rate regime on July 2, 1997. The exchange rate fluctuates more intensely, affected by the expectation in the future economic and political situations and unanticipated changes in the future events technically called "news". The impact of news must be carefully analyzed in order to estimate the determination of exchange rate.

Objectives of the study

1) To analyze the efficiency of the foreign exchange market by examining the relationship between spot and forward exchange rate. The hypothesis is such that if the foreign exchange market is efficient, then the forward rate will be a good proxy for the spot rate.

2) To find out and test whether the deviations in actual and expected interest differentials, which reflect the news, are significant in determining the spot exchange rate.

3) To analyze and prove the existence and the pattern of the long run relationship between the exchange rate and the price level by examining the pattern of deviations from purchasing power parities.

Scope of the study

To analyze the exchange rate determination under the framework of the role of news derived from unanticipated situations . Both spot and forward rates used in 1- month forward rates are Thai Baht per US dollar world market exchange rates . Domestic interest rates refer to the BOT interbank middle rate , and foreign interest rates are US Federal Fund effective middle rates . All data were collected from July 2 , 1997 to February 18 , 1998 on a daily basis (five days per week) . During such period, Thailand had the flexible exchange rate regime. It must be mentioned in passing that this study analyzes the long run relationship between the exchange rate and the price level by collecting the data on monthly basis of the spot rate and consumer price indices (Thai and United states) from January 1994 to November 1997.

Review of literature

This section indicates the empirical studies of exchange rate determination which studied under the purchasing power parity and interest rate parity. In the foregoing studies, the exchange rate is determined by the expected factors and the unexpected factors of which the latter are effective in flexible exchange rate regime.

● The expected factors refer to fundamental economic factors which influence the exchange rate. These variables include money supply growth, interest rates, and income, among others. Of the foregoing studies on the fundamental economic factors, Wisaweisuan (1996)[1] examines such factors and found that they can influence changes in the exchange rate for Thailand. The study is conducted by cointegration and error correction model technique in order to consider short-run and long-run relationship along with the monetary model in which the key variables are differential in real income,money supply, price level and interest rate. The data are time series data from April 1984 to January 1993. The empirical results found that the variables in economic sector - national income (Y_t) and economic growth rate (ΔY_t) - are more effective to the exchange rate determination than money supply (m_t and Δm_t) but those coefficient estimators are not statistically significant.

The interest change (ΔI) has t-statistically significant specification on yen against US dollar exchange rate case but not on baht against dollar which results from Thai's control interest rate by many rules until 1992. This model would well with countries having unintervened market mechanism. This is not the case for Thailand. Under the above model, significance of Thai Baht against foreign exchange will be inconclusive.

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[1] Nitinant Wisaweisuan, "Exchange Rate Forecasting Model," Thammasat Economics Journal, 1 (March 1996) : 43-57

Humphey (1977)[2], having tested a simple static equilibrium model of exchange rate determination and assumed a regime of freely floating rates, stated that the exchange rate - US dollar/UK and US dollar/Italy - are determined by basic factors underlying the demands for and supplies of those national money stocks, relative real incomes and relative nominal interest rates. The latter reflect relative expectations regarding national inflationary prospects. The data were collected from January 1973 to February 1976 on a quarterly basis. Of those three groups, the first capture purely monetary influences on the exchange rate while the second and the third capture real and expectational influences, respectively. The empirical results found that 87 percent of variation of both US dollar/UK and US dollar/Italy is explained by variations in the money stock, real income and interest rate variables. Moreover, the model predicted that a country will experience currency depreciation when its relative money stock rises, which its relative real income falls, and which its relative inflationary expectations rise. However, the model will cause some problems if the data do not nicely fit the model, will assuming then the exchange rates be permitted to float freely while allowing the government to intervene with the foreign exchange markets from time to time in order to achieve a managed float.. This model, in short, may not be a completely accurate description of the existing exchange rate regimes.

In the next empirical study, Augchaprasert (1994)[3] analyzed the measurement of equilibrium exchange rate for baht, based on the purchasing

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[2] Thomas M. Humphey, "Factors Determinating Exchange Rates : A Simple Model and Empirical Tests," in The Monetary approach to international adjustment, eds. Bluford H. Putnam amd D. Sykes Wilford (1977)

[3] Sriharaj Augchaprasert, "The equilibrium exchange rate for baht and Thailand's effective exchange rate determination," (Master's Thesis, Faculty of Economics, Kasetsart University, 1994)

power parity theory. The nominal effective exchange rate index for baht was adjusted in order to get the real effective exchange rate index for baht which can be used to indicate the equilibrium exchange rate for baht. Moreover, the study also analyzed the economic factors affecting Thailand's effective exchange rate. The data were collected from January1982 through April 1991. The results showed that from1982 to 1984 (third quarter) the real effective exchange rate index was over 100, which means that the baht was overvalued. However, as a result of the improvement of Thailand's exchange rate system the value of baht was adjusted to equilibrium in the fourth quarter of 1984 by pegging the baht to a basket of currencies and the baht devaluation. Subsequently , during the period between 1985 and 1991, the real effective exchange rate was under 100, which indicated that the baht was undervalued. On the economic factors that affect Thailand's effective exchange rate during the period covered by this study, the changes in Thailand's money supply and real GNP relative to other countries, Thailand's effective exchange rate in the previous quarter, and the government policy all had significant positive influences on the variation of the country's effective exchange rate. Lastly, the study also indicated that the value of baht was a major factor that supportsThailand to increase the export rapidly. However, the country had to face large trade deficits as a result of the rapid increase in imports of capital goods, raw materials and fuel to be used in the production of exporting goods. In addition, the government policy and exchange rate in the previous period were the major factors determining Thailand's exchange rate in the present period.

In another empirical study by Vanitcharearnthum (1988)[4], a model capable of explaining exchange rate determination for Thailand under the framework of monetary approach was developed. This model was also extended to encompass the speculative attacks on the baht. The observation of the variables corresponding to the theory during the period of fixed exchange rate regime 1980-1984 was employed and the data were collected on a monthly basis.

During the period of this study, Thailand had experienced in three types of devaluation. By applying the monetary model of exchange rate determination with the rational expectation model, time and magnitude of devaluation can be predicted with reasonable accuracy under specific assumptions. The observation conformed to the theory as well as the probability of devaluation peaked to 53 percent in July 1981 but this model did not anticipate the devaluation to be occured in November 1984, during which, the country's reserve was well above the critical level which meaning that the rational speculative agents were unaware of the currency adjustment in the corresponding period. Hence, the devaluation in November 1984 can be regarded as unanticipated by the standards of rational expectation model. In sum, the effect of variables determining exchange rate at any particular time is determined by the expected future values of its determinants, namely, real income, money supply and rate of inflation, under the law of one price which holds in the form of purchasing power parity and interest rate parity.

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[4] Vimut Vanitcharearnthum, "Exchange rate determination and Speculative attracks on the baht: 1980-1984," (Master's Thesis, English Language Program, Faculty of Economics, Thammasat University, 1988)

● The aforementioned studies indicated the expected factors fundamental in the economic system to determine the exchange rate, the next cases interested in the exchange rate determination which is determined by the unexpected factors. In this case, they are known as "news" or "surprises".

Referring to Frenkel (1981)[5], this case analyzed the efficiency of the foreign-exchange market and the volatility of exchange rates by examining the relationship between spot and forward exchange rates seemingly emerging from the experience of the 1970s. This case examines three exchange rates : the dollar/pound, the dollar/franc, and the dollar/DM. The data were collected on a monthly basis from June 1973 to July 1979. The model was estimated by applying the OLS procedure as well as by using an instrumental variable (IVAR) estimation method. From the result, the use of the forward rate as proxy for expectations did not introduce a significant error in variable bias, and thus, the use of the OLS estimation procedure seemed appropriate. The high volatility of exchange rates (spot and forward rate) reflected the characteristic of the relative price of monies and other assets that were traded in organized exchange. The exchange rates depended on expectations concerning the future course of events and adjust rapidly in response to new information.

Furthermore, this case analyzed the relationship between exchange rates and interest rates by studying the distinction between anticipated and unanticipated changes in rates of interest since the modern approach to exchange rate determination implies that exchange rates are strongly

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[5] Jacob A. Frenkel, "Flexible exchange rates, prices and the role of news : Lessons from the 1970s," Journal of political economy 89 (1981).

influenced by "news", which by definition is unanticipated. This model used two-stage least-squares to estimate in three exchange rates. From the study, the coefficients on the innovations are all positive and are significant for the dollar/pound and dollar/franc exchange rates.

The last section analyzed the relationship between exchange rates and prices by examining the patterns of deviations from purchasing power parities with the long-run relationship. In order to examine the patterns of the deviations, the autocorrelation functions, the partial autocorrelation functions of these deviations for the wholesale, and the cost-of-living price indices have been computed. The results indicate that these differences are serially uncorrelated and imply that the deviations follow a random-walk process.

In their research study, Lyons, Ito and Melvin (1997)[6] focused on the existence of private information in Tokyo Foreign exchange market over the lunch-hour. The Yen/Dollar and Mark/Dollar rate were estimated . They found that lunch volatility rose along with the opening of trade. The pattern of volatility flattened U-Shape if private information was revealed by trades. It was concluded then that private information, not only induces trades that affect price during trading hours but also serves as the main source of high trading-time volatility on Tokyo Foreign exchange market.

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[6] Richard K. Lyons, Takatoshi Ito and Michael T. Melvin, "Is There Private Information in the FX Market? : The Tokyo Experiment," University of California at Berkeley working paper (January 1997)

Organization of the study

This thesis is organized into six chapters. The first is the introductory chapter which includes the statement of the problem, the objectives, the scope, review of literature, and organization of the study. The second chapter provides the nature of the exchange rate in Thailand and also provides the data sources and description. An analysis of the exchange rate determination is in chapter 3. The chapter 4 illustrates the methodology used in this study. The model is primarily based on the Frenkel's model. The fifth chapter contains the empirical results of the study. Conclusion, policy implication and suggestion for further studies are given in chapter 6. All data are represented in the appendix.