

# The impact of the exchange rate policy change in thailand

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Measuring the dependence between financial markets are important for the risk management. The objective of this paper is to examine the dependence between the foreign exchange market and the stock market of four developing countries and one developed country in Asia: Malaysia, Indonesia, Thailand, the Philippines, and South Korea before and after the exchange rate regime changed in Thailand via copula. To examine the impact of the exchange rate policy change in Thailand, we choose countries that are likely to be more affected in comparison to the other countries that won't get affected as much. These four Asian countries are explicitly chosen as they maintain a close trade relationship and are situated close to Thailand. South Korea is selected to investigate the difference in the dependence structure in comparison to other developing countries in Asia.

Copula measures the dependence between financial markets by examining the joint tail distribution based on the extreme value. Tail dependence parameters estimate the probability of variables jointly moving to extremes based on the historical data. Risk-averse investors would look into the size of lower tail dependence to determine the likelihood of two financial markets crash together. A copula is a good risk management option and an excellent technical indicator of portfolio selection for risk-averse investors to understand the dependence structure between financial markets. Therefore, by recognizing the dependence structure between currency-stock markets, we understand the potential risk that is embedded in the comovement of the two different financial markets.

From the analysis of the dependence structure between stock-exchange markets, we are aiming to address:

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1. How to identify the dependence structure between the foreign exchange market and the stock market?
2. Do we observe tail dependence (extreme dependence)?
3. If positive tail dependence (either upper or lower) exists, is it symmetric or asymmetric?
4. Does tail dependence of stock-foreign exchange markets have similar characteristics during the period with fixed exchange rate policy and the period with float exchange rate policy in Thailand?

Solutions to these questions will minimize any associated risks by analyzing the dependence structure between two markets, and we will have a better understanding of the co-movement of stock-foreign exchange markets.

Thailand had a fixed exchange rate before July 2, 1997 (Chakrabarti and Roll (2002)). In the early 1990s, a lot of developing countries in Asia had a fixed exchange rate against the US dollar. Developing countries in the 1990s maintained a pegged exchange rate since they had achieved an economic development through the international trade. Developed countries invested in developing countries with a much lower cost of production than their home country and gained a profit by having less expenditure. In this way, developing countries were able to export goods at competitive prices. Due to foreign investment, developing countries were economically developed by capital inflow and liquidity in the financial market. In general, countries with pegged exchange rate should preserve a significant level of foreign currency reserves.

In the early 1990s, yuan devaluation occurred by the central bank of China where China managed to produce goods at a lower price by maintaining cheap manufacturing costs. In the case of Southeast Asia, the countries started losing price competition and cost of production to China. As a result, foreign investors began to invest in China and shifted investment from Southeast Asia. On July 2, 1997, the government of Thailand decided to change their exchange regime and accepted a floating exchange rate due to increasing foreign debt, and the inability to reserve high level of US dollars.

Duttagupta and Fernandez (2004) describe four requirements to have a successful shift in exchange regime from fixed to float: liquid foreign exchange market, credible foreign exchange policy, monetary policy framework, and regulation of exchange rate risk. With slumping currency, the government of Thailand failed to achieve the requirements, and the stock market devalued. Starting from Thailand, a lot of different Asian countries also faced the devaluation of a stock market when the Asian financial crisis began.

There is long literature that measures the dependence between financial market. This paper follows a similar concept to existing literature. However, this paper different from existing papers and contributes to the literature because of the following reasons. First, this paper utilizes different data period and countries. Second, this paper measures dependence between financial markets by estimating tail dependence parameter using arithmetic and elliptical copulas. Our empirical results indicate that we do not observe positive upper or lower tail dependence for a period before the exchange

rate policy change in Thailand. However, when the period shifted to a float exchange rate in Thailand, tail dependence for stock-exchange markets increased where we observed both symmetric and asymmetric tail dependence. The difference in tail dependence suggests an increase in uncertainty between stock-exchange markets and allows us to measure systematic risk embedded in the two financial markets closely.

Focuses on data from different time periods, and research that examines the extreme dependence of Asian countries before and after the exchange rate regime change in Thailand is not available.