



## ANALYSIS OF INFLATION EFFECT AND INTEREST RATES FOR CURRENCY EXCHANGE RATE IN THAILAND

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### ABSTRACT

*This study attempted to examine the effect of inflation and interest rates on exchange rates in a country. Thailand was the object of this study. This study made use of secondary data collected from the central bank of Thailand. The data collected in this study focused on inflation and used CPI Headline, interest rate and Baht/USD exchange rate between 1979 and 2019 as parameters. To generate results and draw conclusion, hypothesis was tested by running linear regression in R Studio. Analysis results demonstrated influences of inflation and interest rate on Baht/USD exchange rate.*

**Keywords:** *Inflation, Interest Rates, Exchange Rates, Thailand, Macro*

### 1. INTRODUCTION

Upon completion of this Master program, researcher has gained deeper understanding of macroeconomic aspects which evidently influence the economic conditions of a country. In addition to macroeconomic factors in a country, macro factors in other countries also influence macroeconomic conditions in a country. Besides, in this modern era, international transactions has become possible, even easier. International transactions have engaged countries in both export and import activities. “Easier access to international trade and lower barriers in conducting it will increase volume and value of international trade” (Kartikaningtyas et al., 2014:1). A global currency is needed in conducting international trade, and therefore a country should make sure they convert their currency to the one accepted for trade throughout the world. The importance of exchange rates has drawn researcher’s attention to study factors affecting exchange rates in a country.

Based on the above information, researcher intended to prove the interconnections of the above aspects. Interest in this issue has encouraged researcher to examine the influence of inflation and interest rates on exchange rates of a country, or in this case, Thailand.

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## 2. LITERATURE REVIEW

### 2.1. Inflation

Inflation is one factors with great impacts on exchange currency. Inflation is a specific condition in which prices of goods and services rise over a given period of time and not momentarily. “Inflation is a process occurring when prices of goods increase continuously in general” (Nopirin, 2013:25). Boediono (2013:161) defined inflation as the tendency of all prices to rise generally and continuously. A rise in prices of one or two goods alone does not reflect inflation unless that rise spreads to or increase the prices of other goods. However, it should be noted that the rise should also be continuous.

Inflation in general tends to cause the value of a foreign currency to fall. Such tendency is caused by inflation effects that include: (i) inflation causes prices within a country to rise higher than those of other countries and therefore causes import to rise, (ii) inflation causes prices of exported goods to rise and therefore causes export to decrease.

Situation (i) leads to increase in demand for currency, and situation (ii) causes supply of currency to decrease, raising the price of the currency and causing prices of currency of the country where inflation takes place to decrease (Sadono Sukirno, 2013:402). This study collected inflation data in form of Thailand CPI Headline.

### 2.2 Interest Rate

Changes in Thai Baht to US Dollars exchange rate are influenced by many factors. One of them is the macroeconomic conditions of the country. Interest rate is one vital macro variable with impacts on exchange rate. According to Frederic S. Mishkin (2008:105) changes in domestic interest rates are common factors that influence exchange rates. When real domestic interest rate increases, domestic currency appreciates. Conversely, when interest rate in a country rises towards the expected inflation growth, domestic currency will depreciate.

Changes in interest rate also influence cash flow of a country and therefore affect demand and supply of exchange rate. “In general, the lower the interest rate is, the greater the intensity of the cash flow and the higher the economic growth will be. In contrast, higher interest rate will cause deterioration in economic growth” (Agus Sartono, 2001:42). This will cause changes in demand for foreign currencies (in this study: USD). Rising demand for USD will cause the dollar to appreciate and therefore depreciate domestic currency but, when the opposite occurs, domestic currency will appreciate.

### 2.3 Hypothesis

H1: Inflation influences exchange rates

H2: Interest rates influence exchange rates

## 3. RESEARCH METHOD

This study made use of secondary data of inflation using parameters including CPI Headline, a reference rate, and Baht/USD exchange rate between 1979 and 2019. All data were collected from the Bank of Thailand website ([www.bot.or.th](http://www.bot.or.th)) which then processed using linear regression in R Studio.

Data collected are as follows:

Year	Interest Rate (%)	Inflation (CPI Headline)	Exchange Rate (Baht/USD)
1979	9	24.5	20.42
1980	12	29.3	20.48
1981	13	33.1	21.82

1982	12.5	34.8	23
1983	12.5	36.1	23
1984	12.5	36.4	23.64
1985	11	37.3	27.16
1986	7.25	38	26.3
1987	7.25	38.9	25.74
1988	9.5	40.4	25.29
1989	9.5	42.6	25.7
1990	15.5	45.1	25.59
1991	10.5	47.7	25.52
1992	8.5	49.6	25.4
1993	7	51.3	25.32
1994	10.25	53.9	25.15
1995	11	57	24.92
1996	9.25	60.3	25.34
1997	13	63.7	31.37
1998	6	68.8	41.37
1999	4.25	69	37.84
2000	3.5	70.1	40.16
2001	3	71.2	44.48
2002	2	71.7	43
2003	1	73	41.53
2004	1	75.1	40.27
2005	3.5	78.4	40.27
2006	5	82.1	37.93
2007	2.38	83.9	34.56
2008	2	88.5	33.36
2009	1	87.7	34.34
2010	1.7	90.63	31.73
2011	3	94.08	30.49
2012	2.5	96.91	31.08
2013	2.35	99.03	30.73
2014	1.75	100.91	32.48
2015	1.5	100	34.25
2016	1.5	100.19	35.3
2017 r	1.5	100.85	33.94
2018 r	1.5	101.93	32.31
2019 p	1.65	102.59	31.49

### 3.1 The Influence of Interest Rate on Exchange Rate

Call:

$\text{lm}(\text{formula} = \text{Regresi\_Data}\$`Exchange Rate` \sim \text{Regresi\_Data}\$`Interest Rate`, \text{data} = \text{Regresi\_Data})$

Residuals:

Min 1Q Median 3Q Max  
-7.304 -3.372 -1.450 3.639 10.306

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	37.7443	1.2187	30.971	< 2e-16 ***
Regresi_Data\$`Interest Rate`	-1.1134	0.1596	-6.974	2.32e-08 ***

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Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 4.54 on 39 degrees of freedom  
Multiple R-squared: 0.555, Adjusted R-squared: 0.5436  
F-statistic: 48.64 on 1 and 39 DF, p-value: 2.323e-08

### 3.2 The Influence of Inflation on Exchange Rate (with Log in Both Variables)

Call:

lm(formula = log(Regresi\_Data\$`Exchange Rate`) ~ log(Regresi\_Data\$Inflation),  
data = Regresi\_Data)

Residuals:

Min 1Q Median 3Q Max  
-0.16990 -0.10132 -0.03936 0.05630 0.33143

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	1.76304	0.22731	7.756	2.01e-09 ***
log(Regresi_Data\$Inflation)	0.39868	0.05491	7.261	9.41e-09 ***

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Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

Residual standard error: 0.1435 on 39 degrees of freedom  
Multiple R-squared: 0.5748, Adjusted R-squared: 0.5639  
F-statistic: 52.72 on 1 and 39 DF, p-value: 9.415e-09

## 4. CONCLUSION

### 4.1 The Impact of Inflation on Exchange Rate

Simple regression analysis run in R Studio resulted:

1. A regression equation of Exchange Rate = 1.76304 + 0.39838 Inflation. The equation implies that every point increase in inflation will rise exchange rate as much as 0.39838. However, without inflation, the value of exchange rate remains at 1.76304.
2. A p-value of 9.41E-09 and therefore p-value < 0.01 indicating the impact of inflation on exchange rate with confidence level of 100% as suggested by the \*\*\* sign.
3. A multiple R-squared value of 0.5748. The number suggests that inflation variable accounts for 57.48% of the variation in exchange rate variable; meanwhile, the rest 42.72% is attributed to other variables.

Inflation positively influences exchange rates. It suggests that when inflation increases, exchange rates will rise and therefore domestic currency depreciates. This has been in line with the theory proposed by Sadono Sukirno and, at the same time, H1 was accepted.

#### 4.2 The Impact of Interest Rate on Exchange Rate

Results of simple regression analysis run in R Studio suggest that interest rate negatively influences Baht/USD exchange rate. Results can be elaborated as follows:

1. A regression equation of Exchange Rate =  $37.7443 - 1.1134$  Interest Rate. The equation implies that every point increase in interest rate will decrease exchange rate as much as 1.1134. However, with the absence of interest rate, the value of exchange rate remains at 37.7443.
2. A p-value of 2.323E-08 and therefore p-value < 0.01 indicating the impact of interest rate on exchange rate with confidence level of 100% as suggested by the \*\*\* sign.
3. A multiple R-squared of 0.555. The number suggests that interest rate variable accounts for 55.5% of the variation in exchange rate variable while the rest 44.5% is attributed to other variables.

It is evident that interest rate and exchange rate demonstrate a negative correlation. It implies that when interest rate is higher, exchange rate decreases, causing domestic currency to appreciate. This finding is in line with the theory proposed by Frederic S. Mishkin and H2 of this study was accepted.

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