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Bangun Widoyoko, State University of Malang, Malang, Indonesia
F. Danardana Murwani, State University of Malang, Malang, Indonesia
Ely Siswanto, State University of Malang, Malang, Indonesia

THE ISSUE OF FORWARD RATE DETERMINATION: INTEREST RATE AND INFLATION OPPORTUNITIES AFFECT THE EXCHANGE RATE (RMB / IDR)

Introduction. *This study aimed to examine the effect of the interest rate, inflation in the RMB exchange rate to Rupiah. Inflation and interest rates are variable that is often used in the determination of the forward exchange rate. We have chosen inflation because it is related to PPP (purchasing power parity) theory and has chosen interest rate because it is related to the theory of IFE (International Fisher Effect).*

Purpose. *This research purposes to determine the level of significance of influence and opportunities of interest rate and inflation on the exchange rate. To know opportunities with influential variables are expected to provide insight on businesses in the determination of the forward exchange rate.*

Method. *The analysis in this study has used logistic regression analysis with time series data. Data that has been taken is the exchange rate, interest rate, inflation in 2007-2017. Research is already taking a sample of 132 data.*

Results*. Research has shown that inflation and interest rates are equally affecting the exchange rate. By odds ratio known inflation opportunity to influence the exchange rate is greater than the interest rate. Opportunities inflation affects the exchange rate due to the large Indonesian trade relations and China is strong, the argument based on the theory of PPP.*

Conclusions. *From this research we know do that inflation and interest rates affect the exchange rate so that changes in inflation and interest rates can be used as a tool in determining the exchange rate forward.*

Keywords: *exchange rate, inflation, PPP, IFE, the interest rate, the forward exchange rate.*

Бангун Відойоко, Державний університет (м. Маланг), Індонезія
Ф. Данардана Мурвані, Державний університет (м. Маланг), Індонезія
Елі Сісванто, Державний університет (м. Маланг), Індонезія

ПРОБЛЕМА ВИЗНАЧЕННЯ ФОРВАРДНОГО КУРСУ: ВПЛИВ ВІДСОТКОВОЇ СТАВКИ І ІНФЛЯЦІЇ НА ОБМІННИЙ КУРС (КИТАЙСЬКИЙ ЮАНЬ / ІНДОНЕЗІЙСЬКА РУПІЯ)

Це дослідження має на меті вивчити вплив процентної ставки та інфляції на обмінний курс юанів на рупію. Інфляція та процентні ставки є змінними, які часто використовуються при визначенні форвардного курсу. Ми обрали інфляцію, оскільки вона пов'язана з теорією PPP (паритет купівельної спроможності) і процентну ставку, оскільки вона пов'язана з теорією IFE (міжнародний ефект Фішера).

Це дослідження має на меті визначити рівень значимості впливу і можливостей відсоткової ставки та інфляції на обмінний курс. Для того, щоб знати можливості впливу змінних величин, треба забезпечити розуміння їх впливу на бізнес у визначенні форвардного валютного курсу.

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Метод. У цьому дослідженні використано логістичний регресійний аналіз з даними динамічних рядів. Дані, які було використано – обмінний курс, процентна ставка, інфляція в 2007-2017 роках. Було досліджено зразки 132 даних.

Результати. Дослідження показало, що інфляція та процентні ставки однаково впливають на обмінний курс. За коефіцієнтом співвідношення інфляція має можливості впливати на обмінний курс більше, ніж процентна ставка. Вплив інфляції на обмінний курс, зумовлений тісними торговельними відносинами Індонезії і Китаю, заснованими на теорії PPP (паритет купівельної спроможності).

Висновки. З цього дослідження ми знаємо, що інфляція та процентні ставки впливають на обмінний курс так, що зміни інфляції та процентних ставок можуть бути використані як інструмент для визначення обмінного курсу.

Ключові слова: *обмінний курс, інфляція, PPP (паритет купівельної спроможності), IFE (міжнародний ефект Фішера), процентна ставка, безготівковий курс.*

Introduction. Trade between Indonesia and China established a strong, it can be seen from the number of Chinese products are marketed in Indonesia. In trade from China to Indonesia or Indonesia to China is very important to know the exchange rate, because it can affect the profit or loss in trading transactions. So both the State adopts a free-floating exchange rate that ranges change.

Exchange rate changes slowly or quickly could pose risks or exposures that can be experienced by the company. There are 3 types of exposures arising from changes in the exchange rate that transaction exposure, translation exposure, the exposure operation [3, p. 275]. To determine the appropriate hedging actions and hedging appropriate financing need to know the magnitude of the forward exchange rate. Therefore, knowledge about the exchange rate for SMEs and for companies engaged in business with an international scope to be important to learn, so that research in the field of exchange rate changes is important.

Selection of inflation and interest rates as independent variables as inflation and interest rates may affect the exchange rate. The influence of inflation on the currency exchange rate supported the theory of PPP (purchasing power parity), the difference in interest rates is supported by the interest rate parity theory and international fisher effect [3, p.203].

Literature. Research about the currency exchange rate is influenced by inflation have been carried out as research by Taylor [10] who claimed that the inflation effect on the real exchange rate of 20 developed by the period 1870-1990. Likewise, a study conducted by Chowdhury [2] who try to examine the developing countries, namely Bangladesh, reveals that inflation affects the real exchange rate in that country. From these two studies can be known inflation effect on the real exchange rate.

Meanwhile, Rime [9] tried to examine new things that the exchange rate daily nominal with the independent variable is the CPI (customer price index), the GDP (gross domestic product), Trade balance. The study yielded the same result that the CPI, in this case, represents the inflation effect on the daily exchange rate. However, the different results obtained by Baharumshah [1] which examines the influence of PPP in Southeast Asia against the currencies of developed countries proves that the PPP does not necessarily apply in the exchange rate, but still fit for use in forecasting the exchange rate.

From the above research contained some controversies neighbor PPP to the exchange rate effect. The controversy began to get a response from Iyke study [5] to study Zambia and Lesotho exchange rates against the United States found that the enactment of the PPP is affected by the level of trade is done, the stronger the trade that exists between countries is getting stronger enactment of the PPP.

Research of the effect of the interest rate on the exchange rate made by Mauleon [7] found that the exchange rate is affected by the interest rate. But the differing results obtained from studies [11] that examines China's exchange rate against the USA found that is not always the exchange rate is influenced by the interest rate but only for a specific period only. According to research Molick [8], the effect of interest rate changes on the exchange rate based on the period is due to the interest rate does not necessarily affect the cash flow circulating.

Purpose. From the previous research that has been presented that the level of influential inflation and interest rates on the exchange rate so that the results vary more research is needed to examine the effect of the different countries. Therefore, this study aims to examine the degree of influence of inflation and interest rates on the exchange rate as well as figure out the probability of influential.

Hypothesis.

H1: inflation a significant effect on the exchange rate Rupiah-Yuan.

The hypothesis we set Based on previous studies belong Rime [9] which reveal that inflation based on the CPI significant effect on the exchange rate. The basis for determining the hypothesis is also supported by the findings belong to Iyke [5] that inflation will affect the countries that have strong trade ties, such as Indonesia and China have strong trade ties.

H2: the interest rate significantly influence the exchange rate Rupiah-Yuan.

The hypothesis we set based on research Iyke [5] states that there is a strong influence of the exchange rate with the interest rate. The study reinforced the IMF claim stating that the interest rate can influence the exchange rate.

Method.

Data. For the data of this study, we use the secondary data. These data, we take from several websites, such as on sites bi.go.id for Indonesian interest rate and free sites for Chinese interest rates, investing the site (for data exchange per month), and the site inflation.eu (to the inflation data from the two countries). The data we collect from each site is

monthly data with a span of January 2007 until December 2017. The time span along it, we decided to look at the effects of inflation and the interest rate on the exchange rate of the litas governance regime. That way we can see the effect of inflation and exchange rate regardless of the political conditions in both countries. From these data retrieval n = 132.

Inflation data processing we do by looking for value ratio. The ratio of the value we get from the results of a comparison of inflation in Indonesia with China's inflation. The method we do is based on the theory of PPP contained in Madura [6, p.214; p.216]. As for the model equations in the inflation, the process is:

$$R = ((1 + Id) : (1 + If)) - 1 \qquad (1)$$

Note:　　　R is the rate of China;

Id is inflation in Indonesia;

If is the inflation of China.

Similarly, the inflation data, the data we do the processing rate by looking for value ratio. Values obtained ratio is a comparative value interest rate in Indonesia with China interest rate. The method we do with the basic theory of IFE. The IFE equation model obtained from Madura [6, p.227) is:

$$ef = \frac{(1 + Id)}{(1 + If)} - 1 \qquad (2)$$

Note:　　　ef – Chinese exchange rate, interest rate Indonesia

Id = If – the interest rate abroad.

For the redirection of data exchange in a way, we did the binary encoding. The encoding we do with calculating the difference between the spot exchange rate at the previous exchange rate. If the difference is negative worth it shows the rupiah strengthened, and we give the code 0, while the difference is positive indicates otherwise, and we give the code 1.

Model Analysis. Models present study; we used logistic regression models contained in Gujarati [4, p.557]. The model included as well as all independent variables that affect the dependent variable. As for the method we choose because this method can identify

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opportunities influential as inflation, interest rates on the exchange rate. As our analysis models as below:

$$Li = (\frac{p_i}{1-p_i}) = \beta_o + \beta_1 X_1 + \beta_2 X_2 \qquad (3)$$

Note: Y – the dependent variable worth 1 so not written into the equation;

X$_1$ – Independent variable inflation;

X$_2$ – Independent variable interest rate;

β_O – constant;

β_1, β_2 – coefficient of each variable.

Result. In Table 1 shows the p-value of fit test, p-value for the inflation of 0007 while the p-value for an interest rate of 0.00324, Both of these variables has a p-value less than 0.05 so that it can be said both variables significantly influence the exchange rate. In addition, the value of z value of the t-test results helped reinforce the fit test results, the z value figures show more than 1.96 to inflation and less than 1.96 for the interest rate. It showed that the attachment of independent variables with the dependent high. From these findings, it is known H1 and H2 are accepted..

Table 1 **Logistic Analysis results**

	estimate	Std.Error	z value	p-value	Odd's ratio
(Intercept)	3.3709	1.1267	2,992 *	0.00277 **	29.1058806
Ratio inflation	0.2913	0108	2697 *	0007 **	1.3381617
interest rate ratio	-2.8024	0952	-2944 *	0.00324 **	0.06066435

*Note: *, ** Significant code p-value <0.05, white adjusted standard error, n=132.*

So for the chances of influential trend variables with other variables can be seen from the odds ratios appear in Table 1. The odds ratio of inflation1.338161, it is clear that every 1338.161of inflation which is already affecting the exchange rate in every 1000 yet. While the odds ratio value of the interest rate is 0.06066435, these values show there is 60.66435 interest rates have affected the exchange rate compared to 1000 have not affected the exchange rate. So for the chances of inflation in influencing the exchange rate 22.05844124 fold greater than the interest rate.

Based on the findings of this research note that inflation is a very significant influence and have a strong attachment to the nominal exchange rate. This is consistent with the theory of PPP Madura [6, p.214; p.216], which states that inflation will affect the exchange rate between the two countries caused by the high demand for the products of high inflation country to country low inflation, boosting demand for currencies of countries with low inflation high. Applicability of PPP in Indonesia is probably caused by strong trade between Indonesia and China, it is in line with the findings Iyke [5] that the PPP theory applies to the two countries that have strong trade ties. But in

addition to the strong problem of trade between countries, forecasting the exchange rate with reference PPP should also consider the costs of trade, as expressed by Eitman [3, p.180] purchasing power parity does not always apply because they have to consider the costs of the customs of each country that caused the price difference is not much different. So forecasting future exchange rates with the theory of purchasing power parity is usually done with the terms established strong trade relations between the countries with the light of international trade barriers.

Our research also proves that the theory of IFE effective as against the exchange rate between Indonesia and China, but it should be noted that the IFE's own theory applies in certain periods such as research Molick [8]. IFE's own theory applies relative, bleak as described by Madura [6, p.223; p.224] applies his theory of the relativity IFE result of the behavior of investors who do not always follow the flow of the movement of interest rates to invest. Therefore, forecasting forward exchange rate with the IFE must consider the factors that affect the other investors in making policy.

Conclusion. From has this study, it can be seen that inflation and interest rates affect the

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exchange rate, with the chance of an effect likely in inflation by the odds ratio. The study also reinforces previous studies that support the effect of inflation and the interest rate on the currency exchange rate. Also, strengthen IFE and PPP applies his theory on the currency exchange rate of the renminbi / Yuan against the rupiah.

With the research we've done, it is known that the conditions of inflation and interest rate conditions of the two countries can also become a factor in the determination of the forward exchange rate for SMEs and other businesses in Indonesia which are engaged in trade between Indonesia and China, or vice versa. However, the forward exchange rate determination by reviewing the inflationary conditions must also consider the conditions of international trade policy made by the state. In addition to international trade policy also takes into consideration the cost of transportation that helped influence. While the determination of the forward exchange rate with the interest rate

of the data review should take into account other factors that drive policy for investors in putting money.

Research Limitations. Inflation examined in this study only CPI inflation-based approach (customer price index), while others have not been so having the negative impact on the accuracy of the results of research in describing the probability of the true effect of inflation. No inclusions of interest rate indicator in this study have an impact on the interest rate does not image opportunities to influence the exchange rate as well. This study only examined the effects of inflation and interest rates in the exchange rate without taking into account other macroeconomic variables and government policies that participate affect the exchange rate. Though these variables are interrelated with each other, so that the bias caused by the variable is not measurable with clear, as well as their impact on the accuracy of the research is not yet known.

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