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Analysis of Exchange Rate and Inflation in Indonesia Under Floating Exchange Rate System

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Abstract

Changes in the exchange rate system in Indonesia from a fixed exchange rate system to a floating exchange rate system have caused the exchange rate in Indonesia to fluctuate very easily. This study aims to analyze the effect of the exchange rate on inflation or what is known as the exchange rate pass through. This study used monthly data from January 2016 to December 2021. The data in this study were obtained from the world bank and Bank Indonesia. This study used a multiple linear regression model. The dependent variable is inflation, while the independent variable is the exchange rate. This study also uses a control variable to prevent biased results. The control variables are the Wholesale Price Index, the number of shares traded and the amount of money in circulation or money supply. The results of the study found that the exchange rate did not affect inflation in Indonesia. Meanwhile, for the control variable, the same results were found in the variable money supply, which also did not significantly affect inflation. Different results were found in the wholesale price index and the number of shares traded which significantly affected inflation respectively. The conclusion shows that when Indonesia adopts a floating exchange rate system, exchange rate changes are not significant in influencing inflation.

Keywords: Exchange rate, inflation, floating system

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INTRODUCTION

Domestic price stability is a key element that needs to be considered in the design of monetary policy and the fact that exchange rate changes affect inflation rates makes understanding the exchange rate pass-through (ERPT) mechanism an interesting topic for monetary policy makers, especially in a small open economy like Indonesia. In addition, in developing economies where the interest rate channel is weak, the exchange rate channel plays an important role in influencing monetary shocks to output and prices (Patnaik et al., 2011) (Harding & Pagan, 2002) (R. Bhattacharya & Jain, 2020)(P. S. Bhattacharya & Thomakos, 2008)

The monetary transmission mechanism is defined as the influence of monetary policy on other economic variables besides economic growth and inflation. This mechanism occurs in several ways. One of the most important transmission channels is the exchange rate where changes in this variable can occur due to international trade. Monetary policy transmission through the exchange rate channel works in two stages.

First, the exchange rate will have a direct effect on the price of imported goods. Second, the exchange rate will affect producer prices and consumer prices in the market. How effective the exchange rate channel used by Bank Indonesia is to achieve its ultimate policy objective, namely inflation stability, will depend on the degree of ERPT pr exchange rate pass through. So ERPT is an important factor in determining the policy implications of Bank Indonesia.

Most of the studies exploring how exchange rates affect import prices and find that the relationship is incomplete, whereas the pass through for consumer prices is complete (Hahn, 2003). Another finding was found by (Guillermo Peón & Rodríguez Brindis, 2014) and stated that the ERPT was almost complete and the depreciation of the exchange rate was the most determining factor in changes in the price of imported goods. Pass through is said to be incomplete when the change to the price level is less or disproportionate to changes in the exchange rate.

However, Pass-through is said to be complete, when the price changes caused by changes in exchange rates are the same, the latter is known as the zero pass through where no change in the exchange rate will not affect changes in domestic prices. An incomplete ERPT means good news for households and firms because the depreciation of the exchange rate will not affect the price of the goods they will buy too much. Usually in the short term, complete exchange rate pass through to price occurs more frequently, whereas in the long term incomplete exchange rate pass through occurs more frequently (Yanamandra, 2015).

The issue of ERPT is important for several reasons. First, ERPT has an influence on real variables such as imports, exports and investment (Égert & Macdonald, 2009) (Obstfeld & Rogoff, 2013) (Obstfeld & Rogoff, 2013). Second, exchange rate stability will affect price stability (Jiang & Kim, 2013). (Buyandelger, 2015) states that a lower ERPT degree will cause the price of imported goods to increase less than a country that has a high ERPT degree. Third, the issue of ERPT makes policy makers feel aware of the policy steps that should be taken to keep inflation stable because the exchange rate is one of the important variables in the channels of the monetary transmission mechanism.

The influence of ERPT on inflation is caused by several factors. One of them is the exchange rate system. (Jiménez-Rodríguez & Morales-Zumaquero, 2016) states that a country that uses a floating exchange rate system, the relationship between exchange rates and inflation will be looser. In addition, countries that use a targeted inflation framework are proven to reduce the influence of the ERPT to the inflation rate. The same result was found in a survey conducted by the Bank for International Settlements, 10 out of 15 central banks in emerging markets found ERPT to decline because they adopted an inflation targeting framework (Mihaljek & Klau, 2006).

The inflation targeting framework is also closely related to the credibility of the central bank. A credible central bank is proven to be a good strategy in reducing the effect of pass through on inflation (de Mendonça & Tiberto, 2017) (Gagnon & Ihrig, 2004)(Schmidt-Hebbel & Tapia, 2002) (Taylor, 2000). A central bank that credible will announce the target or goal to be achieved.

The existence of public trust in central banks that they will try to achieve their goals will help them to make decisions in the market. So the positive effect of central bank credibility on exchange rate pass-through depends on the commitment of the monetary authority to anchor inflation expectations. (de Mendonça & Tiberto, 2017).

These findings are supported by oleh (Ha et al., 2020) who found that the increase in inflation was more significant in EMDEs than in developed countries and the fact that countries that incorporate a flexible exchange rate regime and a credible inflation target will make it easier for central banks to stabilize inflation from the presence of an external shock.

When the central bank adopts an inflation targeting policy, it will announce its inflation target every month. He acted aggressively to stabilize inflation and keep inflation around the predetermined target. Inflation targeting policy involves four main elements: (1) the central bank's commitment to price stability as the main goal of monetary policy; (2) announcement of the inflation target to the public; (3) increasing communication with the public regarding the plans and objectives of the Central Bank, and (4) increasing the accountability of the central bank to achieve these objectives.

To make it easier for the central bank to use the inflation target, a central bank must also use independent governance, which means that there should be no interference from other parties in making policies.(Jašová et al., 2019) found that the pass-through ratio in countries where the policies of monetary policy makers cannot be influenced and intervened by the government will tend to decrease.

However, different things are found in several countries where transparency from the Central Bank has succeeded in reducing the effect of exchange rate pass through on consumer prices(López-Villavicencio & Mignon, 2017). In addition, the ratio of exchange rate pass through tends to be lower in countries that using a floating exchange rate system (Coricelli et al., 2011); (Mayen et al., 2010). Meanwhile (López-Villavicencio & Mignon, 2017) finds that ERPT will be low in a country that uses inflation targeting as a tool to control inflation even though the central bank in that country is not independent. In fact (Chou, 2019) also shows that the ERPT response is not significant to inflation.

Monetary economists research more on the pass-through ratio in developing countries than in developed countries because the effect of the Exchange Rate on inflation in developing countries is greater than in developed countries (G. a Calvo & Reinhart, 2000) (G. A. Calvo & Reinhart, 2002)(Choudhri & Hakura, 2006). In this regard, low ERPT degrees are more common in developed countries, which have lower inflation rates than developing countries, which often have less stable inflation rates (G. A. Calvo

& Reinhart, 2002). So this research wants to see the effect of the exchange rate on inflation or what is known as the exchange rate pass through in developing countries like Indonesia.

RESEARCH METHODS

This study aims to analyze the effect of the exchange rate on inflation or what is known as the exchange rate pass through in Indonesia. This study uses monthly data from January 2016 to December 2021. The data in this study were obtained through a literature study from data that has been published by the World Bank and Bank Indonesia.

The time span in this study was carried out when the Indonesian state used a floating exchange rate system. This study uses a multiple linear regression model. The dependent variable is inflation, while the independent variable in this study is the exchange rate. This study also uses a control variable to prevent biased results. The control variables are the Wholesale Price Index, the number of shares traded and the money supply.

$$Y = \beta 0 + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \mu i$$

Where Y is inflation, which is defined as the consumer price index, X1 is the real exchange rate, X2 is the wholesale price index or transaction price between traders, X3 is the number of shares that are actively traded, and X4 is the amount of money in circulation consisting of M1 and M2.

RESULTS AND DISCUSSION

The exchange rate system has played an important role in maintaining price stability or inflation (Koku et al., 2016). In general, there are two exchange rate systems that have been used in Indonesia. The first is a fixed exchange rate system, this exchange rate system was used in Indonesia during the 1945-1998 period. In this exchange rate system, a foreign currency is determined by the government.

Meanwhile, the second exchange rate system is referred to as a floating exchange rate system. This exchange rate system has been used in Indonesia since 1998-present. In this exchange rate system, the value of a foreign currency is determined by the demand for and supply on the exchange rate market. (Koku et al., 2016) found that exchange rate changes affect inflation, so the government must consider the costs and benefits when changing a fixed exchange rate system to a floating exchange rate system.

This study wants to see the effect of exchange rate changes on inflation in Indonesia. The dependent variable in this study is the exchange rate, while the independent variable is inflation. This study also uses control variables, namely the Wholesale Price Index, the number of shares traded and the money supply. Theoretically, in a floating exchange rate system, the depreciation of the exchange rate will cause the price of domestic goods to become more expensive, which will cause inflation.

The same thing applies if a country uses a fixed exchange rate system and the government makes a policy of devaluing its exchange rate. However, the effect on inflation will be more fluctuating when a country uses a floating exchange rate system. This study used the linear regression method and the results found that the exchange rate did not affect inflation in Indonesia with a significant value of 0.161 during January 2016-December 2021 when the Indonesian used a floating exchange rate system. Meanwhile, for the control variable, the same results were found in the variable of money supply, which also did not significantly affect inflation with a value of 0.865. Different results were found in the wholesale price index and number of shares traded which significantly affected inflation with values of 0.000 and 0.005 respectively.

Table 1. Estimating Results of the effect of the exchange rates on Inflation

Inflation	Coeff	Std error	T	P>|t|	95%	Interval
Exchange Rate	0,0002083	0,0001428	1,46	1,61	_0,0000907	0,0005072
Wholesale Price Index	0,5041604	0,1071968	4,70	0,000	0,279795	0,7285259
Number of shares traded	4,52e-07	1,42e2-07	3,17	0,005	1,542-07	7,50e-07
Money Supply	6,82e-08	3,70e-07	0,18	0,856	-7,06e-07	8,43e-07
_cons	49,19029	8,518399	5,77	0,000	31,36108	67,0195

Source : Data Processed, 2023

The results of this study are supported by research found by Rana (1983) showing that the changes in exchange rates do not affect the inflation rate.(Adler et al., 2020) also found the same result that changes in the exchange rate do not affect the value of inflation. Siaw Frimpong stated that the low effect of the exchange rate on inflation was due to monetary policy intervention by the central bank. When the central bank implements transparency in making decisions followed by strict policies it will cause the effect of the exchange rate on inflation to decrease.

There are several policies from the Central Bank that will lower the effect of the exchange rate on inflation. (de Mendonça & Tiberto, 2017) stated that the credibility of the Central bank would cause the effect of the exchange rate on inflation to be lower. Credibility causes the public to have confidence in the central bank in terms of taking policies related to inflation and will make decisions based on the directions taken by the central bank.

In addition, the implementation of a targeted inflation framework known as the inflation targeting framework has also contributed to the low effect of the exchange rate on inflation. The Inflation Targeting Framework is a monetary policy framework in which the Central Bank makes an inflation rate anchor as the value that the Central Bank wants to achieve.

Indonesia has used the concept of inflation targeting framework since 2005. This fact also supports the results of this study that countries using the ITP framework mean that the exchange rate will not significantly affect inflation. (López-Villavicencio & Mignon, 2017) shows that the adoption of an inflation target or the transparency of monetary policy decisions reduces exchange rate changes to consumer prices.

Another policy is through intervention in the foreign exchange market itself. Selling foreign exchange to maintain the value of the domestic currency suppresses inflation, and vice versa buying foreign currency can cause inflation to increase (Monacelli, 2021). However, different research results were found by (Koku et al., 2016). They found that changes in the exchange rate have a significant effect on inflation, especially in countries that adopt a floating exchange rate system. In a floating exchange rate system, exchange rate fluctuations can have an impact on aggregate demand and aggregate supply.

In supply side, exchange rate depreciation can affect inflation through imported goods so that consumers have to buy at higher prices. The impact will be worse if a country is a recipient of international prices such as developing countries. In addition, the indirect effect of the depreciation of the exchange rate on inflation can be seen from the prices of intermediate goods imported by producers as inputs.

The weakening of the exchange rate will cause input prices to be more expensive, thereby contributing to higher production costs, so that the final effect will be for producers to increase the selling price of goods to consumers. The results of the same research were found by (Ayubu, 2013). He found that there is a strong correlation and a two-way relationship between inflation and the exchange rate.

That is, the depreciation of the nominal exchange rate will affect inflation and inflation will result in a depreciation of the nominal exchange rate, especially in developing countries because developing countries have a higher vulnerability to exchange rate shocks compared to developed countries.(Mihaljek & Klau, 2006) (Kamin & Klau, 2003) empirically also found that the relationship between inflation and the real exchange rate in industrialized countries is more significant and higher.

CONCLUSION

This study aims to analyze the effect of the exchange rate on inflation or what is known as the exchange rate pass through in Indonesia. Using multiple linear regression estimates, this study found that the exchange rate did not affect inflation in Indonesia with a significant value of 0.161 during January 2016-December 2021 when the Indonesian used a floating exchange rate system. Meanwhile, for the control variable, the same results were found in the variable of money supply, which also did not significantly affect inflation with a value of 0.865.

Different results were found in the large trading price index variable and the number of shares traded which significantly affected inflation with values of 0.000 and 0.005 respectively. The results of the study show that the exchange rate did not affect inflation in that year, but empirically and theoretically the influence of exchange rate movements is still significant on domestic prices. (Frimpong & Adam, 2010) stated that it was the monetary policy intervention from the central bank that caused the reduction of the effect of the exchange rate on inflation.

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