Exchange Rate Pass-Through to Domestic Price in Indonesia

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Abstract

The purpose of this study was to analyze the exchange rate pass-through to domestic price in Indonesia. In addition, this study also aims to determine the effectiveness of monetary policy before and after Bank Indonesia implemented Inflation Targeting Framework (ITF) in 2005. This study uses a dynamic linear regression model which was built based on purchasing power parity theory. The variables used are the exchange rate of Rupiah against the U.S. dollar, Indonesia's consumer price index and consumer price indices USA. The period of study was divided over the period prior to Bank Indonesia implemented ITF (1990:01-2005:06), the period after the Bank of Indonesia implemented ITF (2005:07-2010:09) and the total period (1990:01-2010:09). The results show that the exchange rate of rupiah against the U.S. dollar and U.S. consumer price index effect Indonesia's consumer price index. Exchange Rate Pass-Thtrough (ERPT) were seen in the period before ITF implemented and the total period. Short-term ERPT coefficients ranged from 0.019 to 0.022 while the long run ERPT coefficients ranged from 0.025 to 0.029. These results tell us that (1) the exchange rate pass trouhgh in Indonesia is incomplete and (2) the monetary policy is more effective in stabilizing inflation in the period after the ITF implemented compared with the previous period.

Key Words: rupiah exchange rate, exchange rate pass trough, domestic price.

INTRODUCTION

Inflation is one of the macroeconomic problems that get a lot of attention from economists, mainly because of its impacts. Inflation resulting purchasing power of money decreases. The impact of the declining purchasing power of money is mainly felt by those fixed income and the group of workers whose their income increase less than the rate of inflation increases. At a very high level of inflation purchasing power dropped dramatically and increase the number of people under the poverty line, as happened in Indonesia in 1998. And if inflatin is chronic, public confidence in the domestic currency decreases. People are more trusting of foreign currency (eg U.S. dollars), as happened in Brazil and Israel.

As one of the major problems of macroeconomic, inflation studies have been carried out both theoretical and empirical aspects. From the theoretical side, the main cause of inflation derived from the demand and supply sides and inflation expectations

(Suseno and Astiyah, 2009). One of the factors that affect inflation from the supply side is the change in the exchange rate against foreign currencies.

Level of influence of change of foreign currencies to inflation depend on openness of economy, exchange rate system and embraced foreign exchange system. Open progressively an economy accompanied with freely floating exchange rate system hence is ever greater the influence of the exchange rate to inflation (Warjiyo, 2004:21). In such condition, exchange rate channel become one of the important channels in monetary policy transmission on economic activity and inflation (Warjiyo and of Solikin, 2003:45). Conducted research lately also indicate that exchange rate channel have important role in monetary policy transmission on economic activity (Mishkin 2006:618). Study about monetary policy transmission mechanism in Indonesia through exchange rate channel is relevant to be studied because Indonesia is adopting free foreign exchange system with free floating exchange rate since August 1997 as well as because the Indonesian economy increasingly open today.

Theoretically, a country that implement floating exchange rate will face a situation where the domestic exchange rate against foreign currencies will affect either directly or indirectly to the domestic price level. Partly purchased consumer goods, are imported goods so that when domestic currency fell against foreign currencies will impact directly to the price of goods in the country. Prices of goods in the country would immediately go up due to lower domestic currency. In addition, the indirect effect of the domestic currency changes occur through an increase in production costs of domestic industries that use imported raw materials.

The direct effect of the exchange rate on the domestic price level associated with the model of purchasing power parity (PPP), which assumes that there is a one-to-one between exchange rate changes with changes in domestic prices. If the exchange rate depreciated by 20 percent the price in the country will increase by 20 percent as well. Research conducted in various countries shows that a one-to-one is rejected, particularly in the short term. If the exchange rate changes are transmitted to domestic prices after a grace period the depreciation of the rupiah only a small effect on inflation.

The study exchange rate pass-through to inflation in Indonesia has been done by some researchers, among others by Rahmat (www.digilib.ui.id), Darwanto (2007), Achsani and Nababan (2008) and Ito and Sato (2007). The period of study of these researchers conducted prior to 2005 or prior to Bank Indonesia implemented Inflation Targeting Framework (ITF). Research on the ITF period require to be done to see how far the ITF is able to control inflation, including those derived from exchange rate volatility.

LITERATURE REVIEW AND RESEARCH HYPOTHESES

Literature Review

Purchasing power parity (PPP) is built based on the law of one price. If we let in Indonesian goods price index P and the price index of goods in the United States P * then absolute PPP predicts that the price of homogeneous goods in Indonesia and the United States will be the same after considering the prevailing exchange rate. If let's say the Rupiah exchange rate against the U.S. dollar (Rupiah/U.S dollar) is an ER then, absolute purchasing power parity can be expressed by (Levich, 1998: 101-102):

$$P = ER \times P^*$$

The implications of the law of one price are two of the same goods at home and abroad, the price should be the same. If this law do not or not yet gone into effect, through the arbitration process, the goods price will be the same again.

In order to apply absolute PPP treated assumptions: (a) the type of goods and services consumed in the two countries should be equal, (b) type of a perfect capital market (no transport costs, no taxes, and the certainty), (c) the price of goods statistics and services consumed in both countries should be available.

Relative purchasing power parity can be expressed as:

$$gP = gE + gP^* + gE \times gP^*$$

In the above equation, gP, gE and gP* each declared the percentage change in domestic prices, the percentage changes in the exchange rate and the percentage change in price abroad. Based on the above equation, if the price abroad rose 20 percent and the rupiah has depreciated by 10 per cent then the domestic price will rise by 32 percent. Under condition of domestic and world economy is relatively stable and changes in the exchange rate and price changes abroad is relatively small then (gE x gP *) can be ignored so that the relative purchasing power parity formula becomes:

$$gP = gE + gP^*$$

The above equation states that the change in domestic prices caused by changes in exchange rate and price changes abroad. The above equation predicts that the effort to stabilize domestic inflation appears more difficult when the exchange rate volatility.

Empirical studies in different countries show that the exchange rate has a weak influence on consumer prices. The low level of exchange rate pass-through is found in countries which have low inflation rates such as in developed countries. In developing countries where inflation is usually high, exchange rate pass-through is relatively higher (Devereux and Yetmen, 2008). Research conducted Baillu and Fuji (2004) using panel data from 11 industrialized countries for the years 1977-2001 shows that exchange rate pass through tend to decrease with the shift to a low-inflation environment resulting from changes in the monetary policy regime. Research conducted by Chami et. al (2008) using monthly data (2000:01-2005:06) find that the direct effect (immediate impact) depreciation on inflation is highly significant with a coefficient estimate of 0.37. Long-term effect of depreciation on inflation is higher, namely 0.47.

Empirical studies of exchange rate pass-through in the case of Indonesia have been carried out among others by Rahmat (www.digilib.ui.id), Darwanto (2007), and Achsani and Nababan (2008), and Ito and Sato (2007).

Rahmat using data January 1993-December 2003 and VAR models found that: (1) the effect of exchange rate depreciation to inflation, as measured by the Consumer Price Index, is not greater than the Wholesales Price Index during the observation period, (2) changes in the exchange rate regime of managed float to free floating shows that the exchange rate pass through on inflation became higher, (3) in the period of the implementation of inflation targeting framework, the effects of exchange rate depreciation to inflation has decreased very significantly.

Darwanto study aims to determine the response received by the economy due to exchange rate shocks, reflected in the variable responses of inflation, output growth and the growth of the current account. The variables used are the growth of the real exchange rate, inflation, output growth and the growth of the current account. The type of data used is quarterly data 1983:1-2005:4. The method of analysis used is VAR and its properties (impulse response function and variance decomposition). The results showed that there is a causal relationship between the growth rate of exchange rate with the growth of output and inflation. The empirical results show that real depreciation of rupiah is responded with a contraction of output growth. Surprises growth in the real exchange rate responsed positively by the inflation. The growth of exchange rate does not responded strongly by the growth of the current account of Indonesia.

Ito and Sato analyzes the domestic price response to changes in the exchange rate at the time the crisis hit the countries of East Asia (including Indonesia) and Latin America. The method of analysis used is the VAR model and the data used for Indonesia is

monthly data 1998:01-2005:08. In general, research results show that the rate of Exchange Rate Pass Through higher in Latin American Countries and Turkey compared with East Asian countries, except Indonesia. The response of the CPI to exchange rate shocks in Indonesia, Mexico, Turkey and Argentina are relatively high. Transmission shock of the imported goods price index or the index to trade on the consumer price index rather high in Indonesia, Mexico and Turkey. In particular for the case of Indonesia, the elasticity of exchange rate pass through (ERPT) to eighteen months worth 1.17 to the price index of imported goods, 0.57 to the wholesale price index and 0.41 for the consumer price index.

Research Hypotheses

By remembering that each model using different variables, then to formulate research hypotheses, the exchange rate pass through model to be used needs to be determined first. In this study, the model used is purchasing power parity. Based on theory and previous empirical research, research hypotheses can be derived as follows:

1. Hypothesis 1: The Rupiah exchange rate against US dollar has positive and significant impact on the consumer price index of Indonesia
2. Hypothesis 2: the foreign price index have a positive and significant impact on the consumer price index of Indonesia
3. Hypothesis 3. Degree of exchange rate pass through in Indonesia is not complete
4. Hypothesis 4: ERPT in the period after the crisis is lower than ERPT in the period of crisis

METHODOLOGY

Types and Sources of Data

The data used are monthly data, January 1990 - September 2010. Indonesia's consumer price index data obtained from Indonesian Economic and Monetary Statistics of Bank Indonesia, the data of the Rupiah against the U.S. dollar gained from the Indonesian Financial Statistics of Bank Indonesia and USA consumer price index is obtained from the U.S. Department of Labor, Bureau of Labor Statistics, Washington DC.

Empirical Model

Model of exchange rate pass through Chaudari and Khan (2002) and Chami et.al (2008) is used to analyze the effect of exchange rate on inflation in this study. The model in question is:

$$\Delta \text{CPI IND}_t = \alpha + \sum_{i=1}^{n} \beta_i \Delta \text{CPI IND}_{t-i} + \sum_{i=0}^{n} \gamma_i \Delta \text{ER}_{t-i} + \sum_{i=0}^{n} \delta_i \Delta \text{CPI USA}_{t-i} + \varepsilon_t$$

CPI IND and CPI USA are the consumer price index of Indonesia and USA respectively base year 2007 and the ER is the exchange rate of the rupiah against the U.S. dollar in the Jakarta market. The data of first difference is used to ensure that the data of the variables used was stationary, so that the regression results are not spurious regression. The equation above allows us to analyze the effect of short-term and long-term of the rupiah exchange rate on the price level. The coefficient of γ0 is interpreted as a short-term coefficient pass through, which indicates the effect of the depreciation of the rupiah on inflation directly. The coefficient of the long-term pass-through can be calculated with the following formula:

$$\lambda = \frac{\sum_{i=0}^{n} \gamma_i \Delta \log \text{ER}_{t-i}}{1 - \sum_{i=1}^{n} \beta_i \Delta \log \text{CPI IND}_{t-i}}$$

The ratio λ is interpreted as a long-term effect of depreciation on inflation.

THE RESULT OF THE STUDY

Stationary Test of Data

Stationary test results shown in Table 1. Stationary test is done for three different periods, namely before the Bank Indonesia implemented the policy of Inflation Targeting Framework (ITF) (1990:01-2005:06), after Bank Indonesia to implement ITF (2005:07-2010:09) and the entire study period (1990:01-2010:09). Based on the stationary test, the data at the level generally not stationary, except for the variable CPI USAt. all data have been stationary at the first difference at the alpha 1 percent. Based on the results of this test, all of the variables used in the study belong to I (1), except CPI USAt. CPI USAt is I (0)

for the period (1990:01-2005:06) and period (1990:01-2010:09) while for the period (2005:07-2010:09) this variable is I (1) .

Table 1

The Result of Stationary Test of Research Data, 1990:01-2010:09

Variables	Level		First Difference	
	Number of lags	ADF-t-Stat	Number of lags	ADF-t-Stat
ERt				
1990:01-2005:06	0	-0,970168 (-3,465585)	0	-12,31130* (-3,46585)
2005:07-2010:09	0	-2,074424 (-3,538362)	0	-7,313895* (-3,538362)
1990:01-2010:09	0	1,399284 (-3,456514	0	-14,25814* (-2,456514)
CPI INDt				
1990:01-2005:06	1	-2,012448 (-4,008154)	0	-5,810572* (3,4465585)
2005:07-2010:09	0	-2,872214 (-4.110440)	0	-7,463434* (3.538362)
1990:01-2010:09	1	-1,461771 (-3,995340)	0	-10,151973* (3.456514)
IHK USAt				
1990:01-2005:06	3	-5,002468* (-4,008154)	1	-9,844973* (3,465585)
2005:07-2010:09	1	-2,967207 (-3,l538362)	0	-4,519948* (3,538362)
1990:01-2010:09	1	-4,670646* (-3.995340)	0	-4.519948* (3.538362)

Note: The figures in brackets are the t-statistics at 1% alpha. Determining the optimum lag is based on automatic selection by the program Eview,based on SIC criteria. All variables are expressed in logarithms.

Determination of Optimum Number of Lag

Stasionery test of variables data showed that not all data is stationary at level, but they are stationery at first difference. Therefore, first difference data of variables is used and the regression model used in this study become valid. To determine the amount of lag used in the regression model, AIC (Akaike information criterion) and SC (Schwarz criterion)are used. The results of the determination of lag can be seen in Table 2.

Table 2
Determination of Optimum Number of Lag

Number of lag	1990:01-2005:06		2005:07-2010:09		1990:01-2010:09	
	Akaike info criterion	Schwarz criterion	Akaike info criterion	Schwarz criterion	Akaike info criterion	Schwarz criterion
0	-5,583686	-5,531658	-5,928135	-5,826081	-5,666851	-5,624472
1	-6,737130	-6,632686	-5,926179	-5,722071	-6,311065	-6,226062
2	-6,759020	-6,601767	-6,207990	-5,901828	-6,431330	-6,303457
3	-6,824657	-6,614199	-6,135075	-5,692841	-6,416007	-6,245015
4	-6,842094	-6,578027	-6,125014	-5,614743	-6,429691	-6,215328
5	-6,876734	-6,558652	-6,071029	-5,458705	-6,467482	-6,209494
6	-6,935507	-6,562995	-6,057980	-5,343602	-6,461391	-6,159521
7	-6,961398	-6,534039	-6,085631	-5,269199	-6,486430	-6,140420
8	-7,005637	-6,523006	-6,047272	-5,128785	-6,489238	-6,098825
9	-7,053151	-6,514821	-5,960171	-4,939630	-6,486202	-6,051122
10	-7,040538	-6,446072	-6,005717	-4,883122	-6,49563	-6,015639
11	-7,090825	-6,439783	-6,026349	-4,801701	-6,522348	-5,997131
12	-7,089977	-6,381913	-6,016389	-4,689686	-6,515724	-5,945031

In the period prior to the application of ITF (1990:01-2005:06), the amount of lag used is 11 by AIC and 1 by SC. Taking into account that F-Stat at lag 1 (F-Stat = 84.12839) is much larger than F-Stat at lag 11 (F-Stat = 24.14325), the optimum amount of lag chosen is 1 based on SC. In the period of application of ITF (1990:07-2010:09), the optimal lag number is 2 by AIC and SC. For the whole period (1990:01-2010:09), the optimal lag number is 2 by SC and 11 based on AIC. However, taking into account the value of F-stat on lag 2 (F-stat = 38.45541) which is greater than the value of F-stat at lag 11 (F-Stat = 13.03427) then the number of the selected optimal lag is 2 by SC.

The Result of the Study

The results of the study are presented in three models based on the distribution of the sample of study. Model A for the period 1990:01-2005:06, model B for the period 2005:07-2010:09 and model C for the period 1990:01-2010:09. In general, the results of this study show that all of the change of explanatory variables used affect the consumer price index in Indonesia. Changes in the consumer price index of Indonesia a month ago has positive and significant effect on current changes in the consumer price index of Indonesia at 5 percent alpha on models A and B, while the change in the consumer price index of Indonesia one and two months ago has positive and significant effect on current change in the consumer price index in Indonesia at alpha 1 percent.

The USA consumer price index change does not affect the change in the consumer price index of Indonesia on the model A. This is due to the price level is relatively stable in the period 1990:01-2005:06 in the USA. Changes in the consumer price index of USA only visible effect on the change in the consumer price index of Indonesia when the shocks of the global financial crisis in the United States in 2008. In models B and C, changes in the consumer price index of Indonesia is influenced positively and significantly on consumer price index of USA with 1 month lag at he alpha 5 percent.

Table 3

Estimated Exchange Rate Pass-Through

Variable	Model A (1990:01-2005:06)		Model B (2005:07-2010:09)		Model C (1990:01-2010:09)	
	Coefficient	t-Stat	Coefficient	t-Stat	Coefficient	t-Stat
Konstanta	0,003955	3,832070*	0,002639	1,422382	0,002486	2,641899*
ΔCPI INDt-1	0,661533	15,89635*	0,089838	0,762692	0,316595	5,248161*
ΔCPI INDt-2			0,254476	2,221256**	0,265383	4,824938*
ΔERt	0,019185	3,041443*	0,041604	1,216184	0,022012	3,106473*
ΔERt-1	0,065641	10,46425*	-0,009625	-0,284809	0,065067	9,030152*
ΔERt-2			0,148588	4,419790*	0,034868	4,365891*
ΔCPI USAt	-0,350638	-1,349077	-0,1004945	-0,308837	-0,044133	-0,221449
ΔCPI USAt-1	-0,335833	-1,317461	1,086255	3,046514*	0,500646	2,286569 **
ΔCPI USAt-2			0,087850	0,285304	-0,308574	-1,570740
R2	0,701489		0,379172		0,563818	
R2-Adjusted	0,693150		0,287198		0,549156	
F-Stat	84,12839*		4,122582*		38,45541*	
Pass-Through:						
Short-Run	0,019185		0,041604		0,022012	
Long-Run	0,250618		0,275386		0,291724	

Note: dependent variable is ΔIHKt. Signs *** and ** and * denote significant at alpha 10%, 5% and 1% respectively.

Based on the short-run coefficient of Rupiah exchange rate pass-through, the rupiah exchange rate has a direct influence on inflation in the period before the ITF but not in the period after Bank Indonesia implemented to the ITF framework. No sightings of the direct influence of the upiah exchange rate on inflation in the period after the ITF may be caused by two things. First, although the dollar has depreciated a bit high when the global financial crisis of 2008, but the average exchange rate relatively stable in this period. Second, the stability of the rupiah, which occurred in this period, can not be

separated from Bank Indonesia proper response in addressing the Rupiah exchange rate fluctuations.

In the short term, the depreciation of Rupiah the exchange rate by 1 percentage point would increase the inflation rate by 0.019 percent for the period 1990:01-2005:06 and 0.022 percent in the overall period of study (1990:01 - 2005:09). In the long term, generally in the observation period, changes in the Rupiah exchange rate by 1 percent impact on changes in inflation by 0.3 per cent.

CONCLUSIONS AND POLICY IMPLICATIONS

Conclusions

This study aims to analyze the impact of changes in exchange rate on domestic prices in the period before (1990:01-2005:06) and after implementation of Inflation Targeting Framework (ITF) by Bank Indonesia (2005:07-2010:09. The results of study show that:

1. The Rupiahexchange rate against the U.S. dollar, the consumer price index in the United States
2. as a proxy variable of the foreign price and lag periods of Indonesia's consumer price index significantly influence the current consumer price index. The last period of Indonesia's consumer price index and the Rupiah exchange rate against the U.S. dollar has a positive effect on the current consumer price index. The last period of the consumer price index in the United States has a positive effect on the current consumer price index of Indonesia especially in the period after the adoption of ITF and the total period (1990:01-2010:09).
3. The Rupiah exchange rate against the U.S. dollar has a direct impact on Indonesia's consumer price index in the period before the ITF is applied and the total period. The direct effect of the exchange rate of consumer prices index of Indonesia was not seen in the period after the ITF. No sightings of direct influence significantly of the Rupiah exchange rate on prices in the period after the implementation of the ITF indicates that monetary policy after the ITF effective in suppressing inflation.
4. The short term coefficient of Rupiah exchange rate pass-through was 0.019 before the period of Inflation Targeting Framework and 0.022 for the total period. The coefficient of the long-term exchange rate pass-through was

0.25 for the period prior to the ITF, 0.27 for ITF period and 0.29 in the total period. It means that Rupiah exchange rate pass-through on inflation is not a complete.

Policy Implications

Based on the results of this study, policy implications that can be drawn are:

1. By considering that the exchange rate has a direct impact on the domestic price index then the active of monetary policy of the Bank Indonesia needs to be done in order to minimize and shorten the effects of changes in exchange rate on domestic prices.
2. By considering that the influence of the Rupiah exchange rate on domestic price is influencedby the ability of Bank Indonesia to stabilize the Rupiah, Bank Indonesia needs to improve its ability to stabilize the rupiah. To that end, the amount of international reserves of Bank Indonesia must be reasonably available to conduct market intervency (when necessary) and take a quick and precise strategy when the dollar instability.

Future research

The research in this study focused on the impact of exchange rate changes on domestic prices before and after the ITF implemented by Bank Indonesia. This study has limitations because it can not show other factors affecting domestic prices. Therefore, a more extensive study to determine the cause CPI inflation needs to be done.

Influence of macroeconomic changes believed to be affecting core inflation than the CPI inflation. Therefore, further research can be conducted to see the effect of exchange rate changes on core inflation.

REFERENCES

Achsani, Noor Azam dan Nababan, Henry Frenky. (2008). "Dampak Perubahan Kurs (Pass Through Effect) terhadap Tujuh Kelompok Indeks Harga Konsumen di Indonesia". Jurnal Ekonomi dan Pembangunan Indonesia. Volume IX No.01:1-15.

Ca'Zorzi, M, Hahn, E and Sanches, M. (2007). Exchange Rate Pass-Through in Emerging Markets. Working Paper Series No. 739.

(www.ecb.int/pub./pdfscpwps/ecbwp739.pdf)

Chami, S, Elekdag, S, Schneider, T and Ben Ltaifa, N. (2008). "Can a Rule-Based Monetary Policy Framework Work in a Developing Country? The Case of Yemen". The Developing Economics, XLVI-1: 75-99.

Choudhri, E. and Mohsin S. Khan.2002. "he Exchange Rate and consumer Price in Pakistan: Is the Rupee Devaltuation Inflationary?" The Pakistan Developmetn Review, Summer

Devereux, M.B. and Yetmen, J. 2008. Price Adjustment and Exchange Rate Pass-Through. (www.sef.hku/~jYetmen/pdffiles/Passthrough5.pdf)

Devereux, M.B. and Yetmen, J. Price-Setting and Exchange Rate Pass-Through: Theory and Evidence.(http://www.bankofcanada.ca/wp-content/uploads/2010/08/Devereux_Yetman-v3.pdf)

Levich, R.M. (1998). International Financfial Market. Singapore: Mc.Graw-Hill International Editions.

Nababan, Hendry Frank. (2006). Efek Perubahan Kurs (Pass-Through Effect) terhadap Tujuh Kelompok Indeks Harga Konsumen di Indonesia. Skripsi. Bogor: Departemen Ilmu Ekonomi, Fakultas Ekonomi dan Manajemen, Institut Pertanian Bogor. (http://docs.google.com/viewer?a=v&q=vache:4PZjxowxKXEJ:iirc.ipb.ac.id/jspui/bitstream/123456789/10311/3/H06hfn.pdf)

Mishkin, Frederic S. (2006).The Economics of Money, Banking and Financial Market. Seventh Edition. Boston: Pearson Education Inc.

Darmanto. (2007). Kejutan Pertumbuhan Nilai tukar Riil terhadap Inflasi, Pertumbuhan Output, dan Pertumbuhan Neraca Transaksi berjalan di Indonesia, 1983.1-2005.4. Tesis S2,Program Studi Ilmu ekonomi. Yogyakarta: Sekolah Pascasarjana Universitas Gadjah Mada.(http://docs.goole.com/viewera=v&q=cache:QY1B6gvuKKJ:prints.undip.ac.id/622/1/tesis_arwan.pdf+damp).

Rahmat. Analisis Exchange Rate Pass Through terhadap Inflasi: Implikasi Perubahan Rezim Nilai Tukar dan Inflation Targeting Framework di Indonesia. Tesis S2-UI.(www.digilib.ui.id//opac/themes/libriz/detail.jsp?id=88271&lokasi=lokal)

Ito, T and Sato, K. (2007). Exchange Rate Pass Through and domestic Inflation: A comparition of East Asia and Latin American Countries. RIETI Discussion Paper Series 07-E-040:1-43. (www.rieti.go.jp/publications/dp/07e040.pdf)

Suseno dan Astiyah, S. (2009). Inflasi. Seri Kebanksentralan No. 22. PPSK-BI: Jakarta.

Warjiyo, Perry. (2004). Mekanisme Transmisi kebijakan Moneter di Indonesia. Seri Kebanksentralan No. 11. PPSK-BI: Jakarta.

Warjiyo, Perry dan Solikin. (2003). Kebijakan Moneter di Indonesia. Seri Kebanksentralan No. 6. PPSK-BI: Jakarta.