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Pursuing Inflation Targeting Policy Framework in the Midst of Inflationary Pressures and Fiscal Constraint in Indonesia

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Abstract:

Pushing for a higher and a more robust growth while maintaining price stability within a target range of inflation continue to be core tasks for the macroeconomic policy management in Indonesia in recent years. Whilst inflation was successfully kept below the target of 7 percent at the end of 2007, the monthly year on year inflation has already gone above 10 percent by May 2008 and is expected to reach 11 percent by end of 2008. Fiscal policy continues to be relatively marginalized and lacks of stimulus, with a significant share of the current expenditure of the 2008 budget has to be allocated to finance subsidy and debt service. Our study investigates the commitment of the country to its inflation targeting (IT) policy in the midst of fiscal constraint and the urgent need to push for higher growth rate. It examines preliminary outcomes of the IT policy and highlights dilemmas and potential policy trade-offs.

JEL Classification: E31, E52, E62 and E63

Key Words: Inflation Targeting Policy; Expenditure Policy; Inflation; and Fiscal Constraint

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1. Motivation

The 10th aniversary of Soeharto's resignation saw the Indonesian economy retuned to a more robust growth rate. Speaking to lawmakers ahead of the country's Independence day, President Susilo Bambang Yudhoyono delivers its administration's growth target for 2009 at around 6.2 percent.[1] International reserve holding of the country was reported to be closed to US$60 billion in July 2008 or around 14 percent of GDP.

One of the key recent challenges to achieve these goals has been the volatilities of the commodity prices in the global market. Persistent inflationary pressure has continued to loom and shadow sound economic performance in the country, particularly between the last quarter of 2007 and the third quarter of 2008 (Figure 1). Largely driven by the rapid increases in food and energy prices, the rise in inflation has had a wide range of ramifications on the domestic economy. Last quarter of 2008, however, saw the softening of the commodity prices in the world market with the eventual full impacts should only be felt in the domestic economy by early 2009.

In this study, we are mainly interested in investigating potential havocs that the volatile domestic price level has on the management of key macroeconomic policies, namely fiscal and monetary policy in Indonesia. In particular, our study examines the challenges facing the implementation of the inflation targeting policy in the midst of inflationary pressure and fiscal constraint confronting the domestic economy.

This paper proceeds as follows. Next section discusses the implementation of the inflation targeting (IT) policy in the country. In this section, an empirical testing on the

[1] Indonesia celebrates its independence day on 17 of August.

monetary policy reaction function will be carried out to probe the nature and commitment of Bank Indonesia in pursuing its IT policy. A review of a number of preliminary performance indicators on the IT policy will be presented in Section three. In Section four, we turn our attention to what has arguably been considered as the most urgent challenges facing the emerging markets in Asia since 2007, including Indonesia, namely the unstable prices of key commodities at the world market and their impacts on the local inflation rate. We will analyze the consequence of the inflationary pressure on the implementation of the IT policy both from its direct or first round effect and also from the indirect or second round effect via the fiscal/budget front. A number of potential concerns and dilemmas facing the coordination of monetary and fiscal objectives in the near future will be discussed as well in this section. The conclusion section ends the paper.

2. Inflation Targeting (IT) Policy in Indonesia: Basic Features and Commitment

2.1 Brief Motivation and Basic Features of IT policy in Indonesia[2]

Following the new Central Bank Act, the UU No.23/1999 enacted on May 17, 1999 and as amended by Act No.3 of 2004, the ultimate goal of Bank Indonesia (BI) is to achieve and maintain the stability of rupiah (Article 7), which is reflected in the inflation rate and exchange rate. Nonetheless, BI had only officially launched its IT policy as its new monetary policy framework in July 2005 (Table 1). With the Central Bank Act of 1999, Bank Indonesia gained its independence, and with that Act it is answerable to the parliament. Furthermore, to enhance the transparency of its policy, a number of official publications and

[2] This section is largely adopted from Siregar and Goo (2008).

press reports are released on a regular basis to update various key economic indicators and most importantly to offer reviews and analyses on the latest inflation trends.

Among the reasons that prompt BI to move away from the past base money targeting framework to the current IT framework are:

i. the unstable relationships between base money, output, and as well as price level, especially due to the structural changes in the post-crisis period,
ii. the growing difficulties in controlling base money,
iii. the growing success of other IT countries in reining in inflation without increasing output volatility, and
iv. the need to strengthen the credibility of BI as the monetary authority.

Under the IT framework, the inflation target represents the overriding monetary objective set by the Indonesian government after the coordination with BI. The government has gradually increased the headline inflation target from 3-5% in 2000 to $9 \pm 1\%$ in 2003 before revising the headline inflation target downward to $5 \pm 1\%$ for 2008 (Table 1). The setting of these intermediate targets is consistent with the desire to achieve a medium to long-term inflation rate of 3% such that the country can remain competitive with its Asian neighbors.

In order to increase the effectiveness of monetary policy signals as well as to provide greater certainty to market players and the public, the BI rate is initially chosen as the signaling interest rate instrument for Bank Indonesia. The BI rate is determined during the quarterly or monthly Board of Governors' meeting in respond to the outlook for the achievement of the inflation target. The BI rate is used as a reference in the monetary control

operations[3] to ensure that the weighted average of 1-month Certificate of Bank Indonesia (SBI) rate formed in the Open Market Operations (OMOs) auctions remains at around the level of the BI rate. The 1-month SBI rate is then expected to influence interest rates on the interbank money market and longer-term interest rates. BI began issuing its own debt in the form of SBI to manage the money supply since 1984.

2.2 Monetary Policy Rule and Commitment to IT Framework

2.2.1 Monetary Policy Reaction Function

How committed has Bank Indonesia been in pursuing its IT policy? One way to address this question is by examining the monetary policy rule of the central bank during the pre- and the post-IT period. Taylor in his seminal 1993 paper proposes a very specific and simple monetary policy rule, where the central bank adjusts its key interest rate in a smooth manner responding to the changes in the expected inflation and output gap. His study and many others have argued that the domestic monetary policy does not systematically respond to external shocks.[4] Others however challenge the exclusion of the exchange rate in the optimal monetary policy rule. Svensson (2000) for instance argues the need to allow for the

[3] The monetary control operations take place through the use of the following instruments: (i) Open Market Operations (OMOs), (ii) standing facilities; (iii) foreign exchange market intervention, (iv) establishment of the minimum statutory reserve requirement, and (v) moral suasion. The most important monetary control instrument is the OMOs.

[4] For instance, refer to Corbo, et.al (2001), Mishkin and Schdmit-Hebbel (2001), Clarida (2001) and Trehan and Wu (2007). Therefore, exchange rate variable should not explicitly be included in the reaction function of the monetary authority. The arguments are two folds. First , the exchange rate should already play an indirect role through inflation and output variable. Second, adding exchange rate into the policy rule will only place considerably more volatility to monetary policy (Taylor, 2001).

indirect and direct exchange rate transmission channel in the optimal monetary policy reaction function.

For our study, there are a number of compelling reasons to explicitly account for the role of the exchange rate variable in the monetary policy reaction function. To start with, external shocks are transmitted largely through exchange rate movements in small open economies, such as Indonesia. More importantly, Bank Indonesia had officially and unofficially adopted rigid exchange rate policy regimes in the past. Hence, by including the exchange rate variable, we can examine whether the monetary authority in Indonesia continued to place a significant weight on the exchange rate variable during the IT-period.

To test the monetary policy reaction function of Bank Indonesia, we modified an approach introduced by Clarida, Gali and Gertler (1998), henceforth refer to as the CGG approach that can be generally defined as:[5]

$$\Delta r_t = \omega + \sum_i^n \rho_i \Delta r_{t-1-i} + \sum_i^n \delta_i E_{t-i} \pi_{t+1-i} + \sum_i^n \phi_i (E_{t-i} y_{t+1-i} - y^*) + \sum_i^n \zeta_i \Delta q_{t-1-i} + \varepsilon_t \qquad (1)$$

Where: Δr_t is the interest rate adjustment or change; $E_t \pi_{t+1}$ and $E_t y_{t+1}$ are expected inflation and output for period $(t+1)$, respectively, conditioned on information set available at time (t); (y^*) is the potential output; (q_{t-i}) denotes the lagged real effective exchange rate. (Δ) is a measure of monthly periodical change or fluctuation. The rise in (Δq) implies a depreciation of the local currency. δ, ϕ and ζ are the parameters determining the central

[5] The CGG approach is often referred to as an augmented version of Taylor rule with forward looking expectation on inflation, output and exchange rate gaps (refer to Taylor (2001) and Chadha, Sarno and Valente (2004)).

bank's response to expected inflation, expected output gap and exchange rate volatility, respectively.

Equation 1 indicates that key central bank interest rate will be determined by the past levels of interest rate adjustment and exchange rate volatility, and the past and present level of expected inflation rate and expected output gap. Based on the significance and the size of the estimate coefficients of ρ, δ, ϕ and ζ, we can analyze the relative weights of these key economic indicators on the monetary policy rule of the country. Theoretically, we would expect δ, ϕ and ζ to be all positive. The rise in the inflation expectation should lead to the tightening of the monetary policy. Similarly, rising expected output gap $(E_{t-i} y_{t+1-i} - y^*)$ should result in stronger inflationary pressure, and therefore requires tighter monetary policy stance. Lastly, the rise in (Δq) should trigger stronger imported inflation and warrants an upward adjustment in the key interest rate.

2.2.2 Markov-Switching Approach

To compare and contrast the experiences and the shifts in the policy rules under the pre- and post-IT periods, past studies, in general, separated the sample observations into two sets, the pre- and the post-IT periods based on the pre-determined starting dates of the IT policy. This approach however would lead to potential problem with the degree of freedom. For the case of Indonesia in particular, we will have only a very small number of observations to carry out any testing for the post-crisis period as the country only officially adopted the IT policy in July 2005.

To avoid the above shortcomings, we will employ the Markov-Switching (MS) regression procedure on Equation 1. The MS-VAR does not require us to break the

observations into two sample sets as it is designed to pick out changes in the generating mechanism of a series. In our case, the changes in the central banks' operating rule will almost for sure affect the stochastic process of the short-term interest rate in Equation 1. Furthermore, the dynamic of the interest rate may change from the period of stability to that of volatility.[6]

In short, there are several advantages of adopting the MS-VAR approach to test Equation 1.

- The MS approach allows the coefficient estimates to change over time (time variant) in response to possible switches in the policy. Thus, the shifts in the parameter estimates of the key variables should reveal any changes in the policy commitments and the priorities of the monetary authority during the pre-IT and the post-IT periods.
- The test results disclose the type of regimes (low (stable) and high (volatile) regimes) that the IT period falls under, and allow us to analyze whether the implementation of the IT only occurs under one particular regime. The period of stable regime is the one with smaller standard error.
- The IT policy is credible *if and only if* the role of expected inflation is significant under both stable and volatile regimes. That is to say for the policy to be credible, the central bank must be committed to address expected inflationary pressure under *both* stable and less conducive economic environment.[7]

Prior to conducting the MS-VAR testing, the expected output gap $(E_t y_{t+1} - y^*)$ and

[6] The Markov-switching VAR framework is essentially extending Hamilton's (1989) Markov-switching regime framework to the Vector Autoregressive (VAR) systems (see Krolzig, 1997; Valente, 2003). Our study considers three types of MS-VAR models that allows for either regime shifts in intercept term, variance-covariance matrix or autoregressive terms.

[7] This way we can ensure to some extent that the commitment to rein in inflationary expectation and the lower inflation rate are not simply due to the economic environment/condition.

the expected inflation $(E_t \pi_{t+1})$ variables in Equation 1 have to be estimated. Following Valente (2003), the expected rate of inflation can be obtained using a preliminary signal extraction procedure. This process would extract the unobservable expected rate of inflation from the observed rate of inflation by applying the law of iterated projections following the Kalman filter technique.

To estimate the expected output gap variable, we adopt two stages of estimation:

- The Hodrick and Prescott (1997) filtering approach is employed to obtain a smooth estimate of the long-run trend component of the industrial production (IP) index as proxy for output. The gap between the actual IP index and its long-run trend component would give us the proxy of the actual output gap at time (t).
- Next, we employ the Kalman filtering technique, as described earlier, to estimate the expected output gap $(E_t y_{t+1} - y^*)$.

For the sake of brevity, the estimates for the expected inflation and the output gap will not be reported.

2.2.3 Commitment to Inflation Targeting Framework in Indonesia

In its various official reports, Bank Indonesia has indicated its commitment to implement *flexible* IT, rather than *strict* IT policy approach. We consider the implementation of the IT policy to be *strict,* if the following conditions are satisfied:

a) Following Svensson (2000), the coefficient estimates of all key factors (inflationary expectation, exchange rate volatility and output gap) must be significant and theoretically consistent during both stable and volatile periods.

b) The coefficient estimate for the expected inflation is relatively larger than the coefficient estimates for the other two economic variables (exchange rate volatility and output gap) and should have the most significant t-statistics.

If however only condition (a) is met, then we have the case of *flexible* IT regime. Furthermore, following Bernanke and Mishkin (2007), an IT *framework* is when there is a

discretionary space for the monetary authority to place the largest and most significant weight to other factors, such as output stability, rather than to price stability. In an extreme case where an IT country places a significant weight only on inflation variable, then this country, according to literature, is following IT *rule* rather than *framework*. Lastly, if none of the above conditions is met, then IT policy has not been enforced.

Applying the markov-switching approach to the monetary policy reaction function (Equation 1) discussed earlier, the test results demonstrate that a mixed strategy has actually been adopted by the monetary authority in Indonesia (Tables 2 and 3).[8] During the stable period of the IT era, Bank Indonesia adopted an IT *rule* where the adjustments in the Bank Indonesia's policy were directed solely to keep inflation expectation in check. During the turbulent period however, Bank Indonesia shifted its policy course to a *framework*, where in addition to expected inflation, output gap has also been considered as a target of its policy rate adjustments.

In short, the test results posted in Tables 2 and 3 confirm that Bank Indonesia has been committed to the IT policy. Next, we turn to review a number of preliminary performance indicators of the IT policy in the country.

3 Preliminary Performance Indicator

3.1 Pre and Post-IT Headline Inflation

[8] The test results posted in Tables 2 and 3 are borrowed from an early work that the author has done with Siwei Goo (Siregar and Goo (2008)).

Containing the headline inflation within the target range continues to be a taxing task for Bank Indonesia (Table 1 and Figure 1). From July 2005 (the official date of the IT policy) to May 2008, the monthly year on year headline rates were less than the maximum IT target ranges only from October 2006 to December 2007 (Figure 2). The much-needed move by the government to reduce subsidy on different gasoline products in March 2005 contributed significantly to the jump in the inflation rate starting August 2005.[9] A period of stern tightening of the monetary policy, with one month certificate bank Indonesia (SBI) hovering well above 12 percent for about 8 consecutive months, had successfully brought back the headline rate below the target range only in October 2006.

However, it remains to be seen whether Bank Indonesia will have a higher success rate in achieving its inflation target in the future. Comparing the average monthly year on year inflation during three years before $(t-3)$ the adoption of the IT policy to the average inflation rate for three years post-IT period $(t+3)$, we find the rate for the pre-IT period at around 7.4 percent is clearly well below the post-IT number of 10.2 percent. During the five months of 2008, the monthly year on year headline inflation rates were averaging around to 2.5 percent above the IT maximum target range.

3.2 Pass-through Effects

Another commonly used indicator to assess the performance of the IT policy is the pass-through rate ---measuring the impact of exchange rate fluctuation on local inflation.

[9] The prices of gasoline products were raised by an average of 30 percent in March 2005 and by another 88 percent in October 2005.

Taylor (2000) argues that the extent of a pass-through decline is highly influenced by the strong commitment of the monetary authority toward price stability. Supporting Taylor's claim, Gagnon and Ihrig (2004) tested a sample of advanced nations and found that the decline in the pass-through has been related to the changes in the monetary policy procedures, and in particular, to the adoption of inflation targeting. To test the impact of the IT policy on the pass-through effects, we adopt the following empirical model introduced by Edwards (2006) [10]:

$$\Delta \log P_t = \beta_0 + \sum_{i=1}^{n} \beta_{1i} \Delta \log E_{t-i} + \sum_{i=1}^{n} \beta_{2i} \log \Delta P_{t-i}^{*} + \sum_{i=1}^{n} \beta_{3i} \log \Delta P_{t-i} + \sum_{i=1}^{n} \beta_{4i} \left(\Delta \log E_{t-i} * DIT \right) +$$

$$\sum \beta_{5i} \left(\Delta \log P_{t-i} * DIT \right) + \varepsilon_t \qquad (2)$$

Where:

- P_t is a domestic price index. The rate of change of the CPI is a proxy for the inflation rate.
- E_t is the nominal effective exchange rate (an increase implies a nominal depreciation of the local currency).
- P_t^* is a world price index. The change of this index captures the rate of world inflation. The US consumer price index is going to be adopted here as a proxy.
- DIT is a dummy variable for Inflation Targeting regime. It is equal to zero before the adoption of the inflation target in the country, and equals to one otherwise.

Several fundamental assessments can be derived from the regression outcomes on Equation 2:

[10] This model is the variant of the models introduced by Campa and Goldberg (2002) and Gagnon and Ihrig (2004).

- The first one is the pre-IT short-run pass through, captured by $\sum \beta_1$. We would expect $\sum \beta_1$ to be equal or greater than zero, i.e. a depreciation of the nominal effective exchange rate $(\Delta \log E > 0)$ would lead to a rise in the inflation $(\Delta \log P > 0)$, and vice versa.

- The second one is the post-IT short run pass-through $\left(\sum \beta_1 + \sum \beta_4\right)$. If $\left(\sum \beta_4 < 0\right)$, the pass through effect for the post-IT period is lower than that of the pre-IT. Hence, we find evidence to support Taylor (2000) that a more inflationary-focused policy such as IT should reduce pass through.

- The third one is the pre-IT long-run pass through, estimated as $\left(\frac{\sum \beta_1}{1-\sum \beta_3}\right)$. Similar to the short-run pre-IT pass through, we would expect the long-run pre-IT pass through to be positive.

- The next one is the long-run pass through estimates for the post-IT period, $\left(\frac{\sum \beta_1 + \sum \beta_4}{1-\left(\sum \beta_3 + \sum \beta_5\right)}\right)$.

- $\left(\frac{\sum \beta_1}{1-\sum \beta_3}\right) > \left(\frac{\sum \beta_1 + \sum \beta_4}{1-\left(\sum \beta_3 + \sum \beta_5\right)}\right)$ implies that the adoption of the IT policy has reduced the long-run pass through effects.

- $\sum \beta_5 > 0$ suggests that inflation inertia has risen in the local economy. The rise (fall) in inflation inertia may contribute as well to the rise (fall) in the long-run pass through during the post-IT as compared to the pre-IT period.

We apply the Autoregressive Distributed Lags (ARDL) testing on Equation 2, with the general to specific approach of Hendry (1976). Our data sets cover the period from January 1990 to May 2008, extending the observation set of Siregar and Goo (2008) which stops only up to June 2007. In contrast to the result of Siregar and Goo (2008), our test result suggests that the IT policy has not had any significant impact to the pass-through effect

(Table 4).[11] The estimate coefficient for $\left(\sum \beta_4\right)$ is found to be insignificant. This finding seems to support the general trend of the headline inflation discussed before. Headline inflation has not been abating in the post-IT period and the IT policy has not been able to reduce the pass-through impacts in the local economy.

The test result however shows that the adoption of IT policy in the country has suppressed inflation inertia, albeit on very moderately. The estimate coefficient of $\left(\sum \beta_5\right)$ is reported to be -0.002, suggesting a drop in the inflation inertia due to IT policy, albeit only mildly compare to the coefficient estimate of inflation inertia, as captured by $\sum \beta_3$, at around 0.848 (=1.073-0.148-0.077). In summary, the preliminary outcomes of the IT policy in Indonesia have not been encouraging. However future testing, with significantly more observation sets, is clearly warranted to generate more conclusive and robust results.

4. Present Challenges to the Implementation of the IT policy

4.1 Inflationary Pressure: Is it purely a supply side?

The conventional wisdom advocates that the effectiveness of the monetary policy depends to some extent on the source and nature of the economic shocks that the economy is facing. In particular, many argue that monetary policy is a demand management tool, and therefore it is less suitable in dealing with supply shocks. This entails further investigation on the sources of the recent rise of inflation in Indonesia. If indeed, the driver of the rising

[11] It is important to acknowledge that due to the relatively short post-IT period, the test results on the pass-through effect may not be robust at all.

inflationary pressure has largely been from the supply side, then we could argue that the less than encouraging outcomes of the IT policy discussed earlier should be largely expected.

Looking at its composition, there are evidences of both dominant demand and supply shocks contributing to the recent surge of the headline inflation in the country. Figure 3 compares and contrasts the headline inflation against its two dominant drivers during its recent surges. The monthly headline inflation from January 2006 to May 2008 has in average been at around 0.6 percent, significantly lower than the average monthly increase in the food price at around 1.1 percent, and was closely matched by monthly rise in the HWEGF (housing, water, electricity, gas and fuel) price indices at 0.5 percent for the same period.[12] The strong inflationary pressures for both components of the headline inflation have largely been blamed on the supply shortages of the food and energy commodities in the world market, starting in 2005 and picking up a much more rapid phase in 2007. This phenomena provides grounds to claim that monetary policy will not be the appropriate tool to address the recent inflationary pressures.

However, we would argue that the supply side shocks do not fully explain the double-digit inflation in recent months in Indonesia. The rapid growth of commercial bank credits, especially during the first half of 2008, substantiates the contribution of the demand side factor on the overall price increase (Table 5). It is also important to note that the relatively high share of the consumption usage of the credits, both in 2007 and 2008 ---confirming a robust demand side of the economy. The role of the demand shock in recent months has also

[12] Food price is given around 0.36 weight, the largest one, in the overall consumer price index (CPI) basket of goods.

been captured by the gap between the core and headline inflations (Figure 4). During the first three quarters of 2006, the monthly year-on-year headline inflation was averaging at least 6 percent higher than that of the core inflation, reflecting the supply shock due to oil price and the cut in the fuel subsidy in March and October 2005.[13] This is not true however since 2007, where the annualized monthly core inflation moved closely with the headline and narrowed the gap between them to around 0.5 percent.

4.2 Falling Behind the Curve

There have also been debates over the tendency for many central banks in this region, including Bank Indonesia, to fall behind the curve in its policy decisions to rein in inflationary expectation in recent years. As discussed earlier, one of the key features of the IT policy is the forward looking strategy of the central bank. An increase in the policy rate of Bank Indonesia is highly recommended under the presence of rising expected inflation, and thus avoiding the negative real interest rate (nominal – expected inflation). The negative real interest rates are therefore often considered as evidence of monetary policy "falling behind the curve" (ADB (2008a)).

Figures 1 and 2 demonstrate that the headline inflation rates were successfully kept under the IT maximum target when the policy rates (the one month central bank certificate (SBI)) were held well above the headline inflation. In contrast, the inflation rate was higher than the target range when the SBI rate was kept significantly below the headline inflation rate (contributing to the negative real rate). In fact, Bank Indonesia continued to lower the

[13] Core inflation is headline inflation excluding the volatile prices of food and feul products.

policy rate in 2007, and the last cut of 25 basis point was in December 2007 when the headline inflation had started to increase (Figure 2).

One plausible explanation for the strategy of keeping low real interest rate can be extracted by extending the markov-switching test results of the monetary policy reaction function posted in Tables 2 and 3. As discussed, balancing the need to support economic growth (the output gap variable) and addressing inflationary pressure (the expected inflation variable) has been the stragety of Bank Indonesia during relatively more volatile period in both global and domestic economies up to mid-2007. We assume that this IT *framework* strategy is being continously pursued during the recent episode of sub-prime crisis in 2007-2008. Raising the policy rate at a modest phase should help keep the cost of investment moderate, but in the presence of strong inflationary pressure a modest hike in the policy rate may not be sufficient to keep real interest rate in a positive range, and thus is unlikely to be adequate to dampen the price surge. Consequently, the local currency may experience depreciating pressure, and thus resulting in higher imported inflation (higher pass-throughs).

This balancing task to support growth and contain inflation unfortunately will likely to be a more challenging one in the near future. In September 2008, Bank Indonesia raised its key policy rate by 25 basis point to 9.25 percent. This policy move is taken in response to persistent inflationary pressure domestically. From January to August 2008, the headline inflation reached 9.5 percent, significantly higher than 6.5 percent for the same period in 2007. However, this policy faced numerous criticisms, questioning its appropriateness in the midst of the forecasted softening of the economic growth due to the global economic slowdown, initially triggered by the sub-prime crisis in the United States.

4.3 Potential Fiscal Dominance Concern

The experience of Brazil in 2002-2003 demonstrates the importance of sound fiscal position for the effective implementation of the inflation targeting policy in a country. Givazzi (2003) reviews the events taken place in Brazil in early 2000s and shows that the rise in the credit risk was the center of the mechanism through which the local central bank temporarily lost its control of the inflation. The high risk premium was driven by the high public debt level at around 60 percent of GDP, and predominantly short-term and US-dollar denominated.[14] Under this poor fiscal condition, a rise in the interest rate to deal with inflation could instead lead to the weakening of the local currency, and thus trigerring an even stronger inflationary pressure. In short, monetary policy becomes an ineffective policy tool.

Turning to the case of Indonesia, the primary fiscal concern in this country during the past one year has been with the cost of subsidy in the central government's budget, in particular with the energy subsidy (Tables 6 and 7). The rise of crude oil price in the global market is expected to balloon the fiscal cost of subsidy from less than 4 percent of GDP in 2007 to around 7 percent of GDP in 2008. Already more than 50 percent of the current expenditure of the central government budget has been allocated for mandatory spending, i.e. for debt service (or interest payment) and subsidy in 2007, this number is expected to rise by another 50 percent in 2008. Even more alarming, the funding allocated to subsidy alone has

[14] The EMBI index for Brazil (measuring the difference between the yield of a dollar-denominated bond issued by the Brazilian government and a correponding one issued by the US Treasury) was as high as 700 basis point in February 2002.

more than tripled the spending on much needed development outlays/ capital spending by the end of 2007 (Table 6).

Despite a number of pragmatic policy moves to reduce energy subsidies since 2005, the levels of subsidies in Indonesia remain among the highest in the region.[15] The prices of key fuel commodities in Indonesia, such as gasoline and diesel, were the lowest in the region (Figures 5 and 6). It has been estimated that the average price of diesel and gasoline in Indonesia was hovering around 60 cents per liter in June 2008, compared to over 80 cents in China and Malaysia, $1 in India, $1.2 in Thailand, $1.5 in Singapore and $1.8 in Korea during the same period.

Facing the likelihood that the fiscal cost of subsidy continue to be high in the near future, it is likely, as officially projected by the Ministry of Finance for 2008 and 2009 budget, that the overall budget deficit for these two years would likely to remain at above 1.0 percent of GDP, meeting the commitment to maintain an overall fiscal deficit at less than 2 percent of GDP. If we go by the experiences of the past few years, one of the primary sources of funding for the central government budget has been the issuance of government bonds (Table 6). The reliance on the bond financing further emphasizes the urgency to manage domestic price stability in Indonesia. Failure to anchor inflation leads to a higher credit risk premium, and therefore a rise in the expected yield for future bonds issued by the government and private firms in the country. In short, this implies more costly financing of the fiscal deficit, as recent events have shown.

[15] The latest cut in fuel subsidies was a 29 percent increase in fuel prices in late May 2008.

In early September 2008, the Ministry of Finance (MOF) had to scrap its rupiah bond auction due to the high yield that investors asked. The MOF had hoped to raise around Rp3 trillion (or around US$321 million at that time) from the auction of zero coupon and fixed rate bonds. The government offered around 9.5 – 10.5 percent yields, but investors were asking for 13.5 percent. The high asking bond yield reflects the rising credit risk as shown by the Emerging Market Bond Index (EMBI) (Table 8).[16] A failure to raise money from the domestic bond may force the government to sell foreign currency debt, which they did twice already during the first half of 2008. This however would expose the budget to volatile foreign exchange market, and thus possibly to an even more costly of deficit financing. In turn, the weaker budget could lead to a depreciation pressure in rupiah and thus a further climb in inflationary pressure.

5. Concluding Remarks

As with the implementation of the inflation targeting policy in the other parts of the world, Bank Indonesia sees the IT policy as an integral part of its effort to strengthen its policy credibility. Borrowing the test results of Siregar and Goo (2008) on the monetary policy reaction function (Equation 1), there are evidences of the IT policy being fully pursued in the country. However, our study demonstrates that the outcomes of the IT policy remain marginal to say the least.

[16] As reported in Aglionby and Oakley (2008). The JP Morgan Emerging Market Bond Index (EMBI) for early September 2008 has also indicated a spread of around 330 basis point between the yield of the emerging market bond and that of the US treasury bond.

Furthermore, we also highlighted potential challenges facing the effectiveness of the IT policy in the near future. The volatile prices of key commodities, such as fuel and food, remain one of the key challenges for the policy makers in the world, including in Indonesia. It poses challenges for Bank Indonesia as the swings in the prices of these commodities will adversely impact domestic economy directly, or known as the first round effect, through the uncertainty in the general price level. In addition, it will have secondary effects as well, such as through the expenditure side of the central government budget.

As much as the macroeconomic policies can help stabilize and promote economic growth in the domestic economy, the recent experiences of the Indonesian economy illustrates the need to go beyond the management of the macroeconomic policy. Balancing the objective of keeping inflation moderate and generating quality economic growth requires structural reforms in many sectors of the economy to accompany adjustments in both monetary and fiscal policies. One of the primary objectives of these reforms is to boost investment by improving the overall investment climate in the local economy. This is an issue that is not covered in this paper, but it has been highlighted by a number of recent works such as Siregar and Gunawan (2008) and OECD(2008).

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Table 1:
Implementation and Design of Inflation Targeting Framework

Country	Date Introduced	Target Price Index	Inflation Target Level	Target Horizon	Policy/ Official Interest Rate	Target Set By	Escape Clauses	Accountability of Target Misses	Publication and Transparency
Indonesia	May 1999[a]	CPI	2000: 3 – 5% 2001: 4 – 6% 2002: 9 – 10% 2003: 9% (± 1%) 2004: 5.5 % (± 1%) 2005: 6% (± 1%) 2006: 8% (± 1%) 2007: 6% (± 1%) 2008: 5% (± 1%)	Indefinite	1-month SBI (Certificate of Bank Indonesia) rate	Government in consultation with Central Bank (CB)	None	None, but the House of Representatives can request progress report at any time.	Periodically publications of: ▪ Weekly Report ▪ Monthly Indonesian Financial and Economic Statistics ▪ Monthly Review of Monetary Policy ▪ Quarterly Monetary and Economic Progress ▪ Quarterly Report on Monetary Policy Progress ▪ Annual Report

Note:

a) Indonesia adopted inflation targeting policy formally in July 2005.

Sources: Compiled by author from the Bank Indonesia website and Siregar and Goo (2008).

Table 2: the MS-VAR Test Results

	Indonesia (Headline) **MSIAH(2,2)** (Jan 1998 – May 2007)	
	Regime 1	**Regime 2**
Constant	-0.004 (-0.976)	-0.028 (-1.887)*
Δr_{t-1}	1.256 (13.999)***	0.170 (0.910)
Δr_{t-2}	-0.368 (-3.899)***	-0.189 (-1.255)
Δr_{t-3}	----	----
Δq_{t-1}	-0.107 (-0.809)	0.403 (1.501)
Δq_{t-2}	0.118 (0.988)	-0.090 (-0.387)
Δq_{t-3}	----	----
$E_{t-1}\pi_t$	1.299 (1.909)*	2.204 (2.289)**
$E_{t-2}\pi_{t-1}$	-1.065 (-1.809)*	-1.953 (-2.066)**
$E_{t-3}\pi_{t-2}$	----	----
$E_{t-1}y_t - y^*$	0.013 (0.171)	1.011 (2.618)**
$E_{t-2}y_{t-1} - y^*$	0.035 (0.528)	-1.509 (-4.006)***
$E_{t-3}y_{t-2} - y^*$	**----**	**----**
Std Error	0.013	0.024

Note:
The numbers inside ( ) are the t-statistics. ***, **, and * denote significance at 1%, 5% and 10% respectively. T-test critical values: at 1% = 2.66; at 5%=2.00 and at 10% =1.67.

Source: Siregar and Goo (2008).

Table 3: MS-VAR Stable and Volatile Regimes

	Indonesia
Regime 1: Stable Period	1998:12-2000:6 2000:8 – 2005:9 2005:12-2006:3 2006:6-2007:5
Regime 2: Volatile Period	1998:1 – 1998:11 2000:7 – 2000:7 2005:10 – 2005:11 2006:4 – 2006:5

Source: Siregar and Goo (2008).

Table 4: Pass-through Effects

	Jan 1990 – May 2008
Constant	0.001 (2.611)***
$\Delta \log E_{t-1}$ (β_{11})	0.056 (5.409)***
$\Delta \log E_{t-2}$ (β_{12})	-0.025 (-2.184)**
$\Delta \log E_{t-3}$ (β_{13})	---
$\Delta \log E_{t-4}$ (β_{14})	0.018 (2.439)**
$\Delta \log P^*_{t-1}$ (β_{21})	---
$\Delta \log P^*_{t-2}$ (β_{22})	-0.379 (-2.846)***
$\Delta \log P^*_{t-3}$ (β_{23})	---
$\Delta \log P^*_{t-4}$ (β_{24})	0.279 (2.108)**
$\Delta \log P_{t-1}$ (β_{31})	1.073 (17.354)***
$\Delta \log P_{t-2}$ (β_{32})	-0.148 (-2.055)**
$\Delta \log P_{t-3}$ (β_{33})	---
$\Delta \log P_{t-4}$ (β_{34})	-0.077 (-2.305)**
$\Delta \log E_{t-1} * DIT$ (β_{41})	---
$\Delta \log E_{t-2} * DIT$ (β_{42})	---
$\Delta \log E_{t-3} * DIT$ (β_{43})	---
$\Delta \log E_{t-4} * DIT$ (β_{44})	---
$\Delta \log P_{t-1} * DIT$ (β_{51})	---
$\Delta \log P_{t-2} * DIT$ (β_{52})	---
$\Delta \log P_{t-3} * DIT$ (β_{53})	-0.002 (-6.187)***
$\Delta \log P_{t-4} * DIT$ (β_{54})	---
Adj R-squared	0.973
D-W Statistics	1.922
Prob (LM-test)	
Prob (F-stat)	0.000

Note:--- implies not significant, hence excluded from the final test; ( ) t-statistics; */10% significant; **/5% significant; ***/1% significant.

Table 5: Commercial Bank Credits and Allocations, 2004-2008

	Share in June 08 (%)	(% YoY Growth)				
		2004	2005	2006	2007	Jun-2008
By Sectors:						
a. Agriculture	5.49	33.20	13.29	22.70	24.23	28.78
b. Mining	2.68	52.74	1.85	76.50	82.35	54.03
c. Masnufacturing	21.33	16.63	18.16	7.52	11.72	25.69
d. Trade	22.06	31.78	20.78	21.09	32.80	32.38
e. Service	23.22	21.01	25.11	16.82	34.77	44.80
By Type of Banks						
a. State Banks	36.18	25.36	15.32	12.97	23.41	30.84
b. Regional Dev Banks	7.83	27.56	20.57	24.61	28.52	31.04
c. Private National Banks	45.97	28.26	31.37	13.53	29.15	36.37
d. Foreign & Joint Banks	14.87	23.42	33.15	14.10	24.83	33.32
By Type of Usage						
a. Investment	18.56	23.91	13.35	12.39	23.44	29.85
b. Working Capital	52.75	23.39	22.78	17.58	28.34	35.79
c. Consumption	28.69	34.70	36.73	9.39	34.88	31.79
Total Bank Credit		26.40	24.59	14.13	26.42	33.58

Source: Bank Indonesia & CEIC database**.**

Table 6: Budget Operations of Central Government, 2000-2007
(in % of GDP)

	2000	2005	2006	2007
I. Revenue & Grants	**14.8**	**17.8**	**19.1**	**17.9**
Tax	8.3	12.5	12.2	12.4
II. Expenditure	**15.9**	**18.3**	**20.1**	**19.1**
1. Current	**11.7**	**10.7**	**10.2**	**11.1**
a. Interest Payment	3.6	2.1	2.4	2.0
b. Subsidies	4.5	4.3	3.2	3.8
2. Development Outlays	**1.9**	**2.2**	**3.1**	**1.6**
3. Intergovernmental Transfers	**2.4**	**5.4**	**6.8**	**6.4**
III. Overall Balance	**-1.2**	**-0.5**	**-1.0**	**-1.2**
IV. Financing				
1. Domestic Sources	**0.4**	**0.8**	**1.7**	**1.8**
a. Bank	**-0.9**	**-0.1**	**0.6**	**0.4**
b. Non-bank	**1.4**	**0.9**	**1.1**	**1.5**
- Recovery of bank assets	1.4	0.2	0.1	0.1
- Bond issuances	0.0	0.8	1.1	1.4
2. Foreign Sources	**0.7**	**-0.4**	**-0.8**	**-0.6**
Note: Gross Debt	**83.8**	**45.5**	**39.2**	**35.0**

Source: Ministry of Finance

Table 7: Subsidy

	2005		2006		2007		2008	
	Realized*	**% of GDP**	**Realized***	**% of GDP**	**Realized***	**% of GDP**	**Projected***	**% of GDP**
1. Energy Subsidy	**104.4**	**3.8**	**94.6**	**2.8**	**116.9**	**3.0**	**268.7**	**5.7**
a. Fuel Subsidy	95.6	3.4	64.2	1.9	83.8	2.1	180.3	3.9
b. Electrical Subsidy	8.9	0.3	30.4	0.9	33.1	0.8	88.4	1.9
2. Non-Energy Subsidy	**16.3**	**0.6**	**12.8**	**0.4**	**33.3**	**0.8**	**59.1**	**1.3**
a. Food Subsidy	6.4	0.2	5.3	0.2	6.6	0.2	12.0	0.3
b. Ferilizer Subsidy	2.5	0.1	3.2	0.1	6.3	0.2	15.2	0.3
3. Total	**120.8**	**4.3**	**107.4**	**3.2**	**150.2**	**3.8**	**327.8**	**7.0**

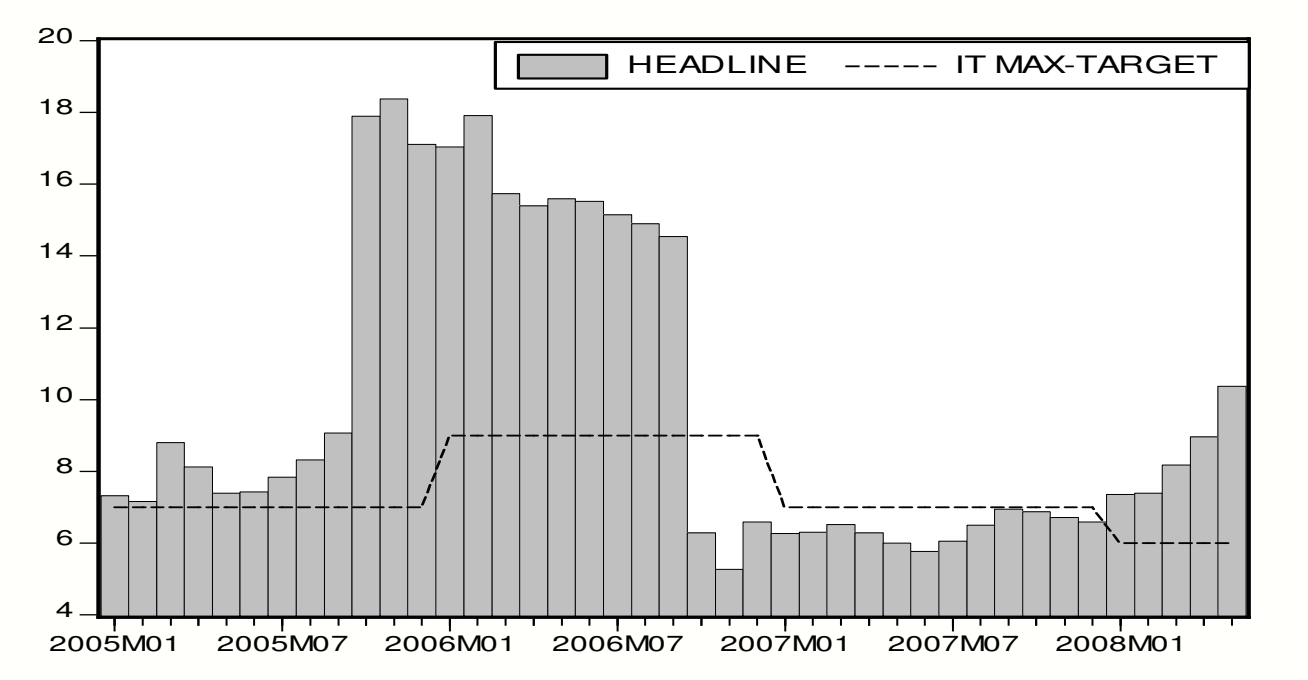
Note: */ in trillion of rupiah
Source: Ministry of Finance

Table 8: Emerging Market Bond Index (EMBI)

Date	EMBI*	South Korea	Malaysia	Philippines	Indonesia	Hong Kong
Jan-07	182	66	71	136	128	45
May-07	166	57	69	114	101	50
Jul-07	236	95	100	203	166	54
Nov-07	270	102	111	202	224	72
Mar-08	333	206	154	279	326	178

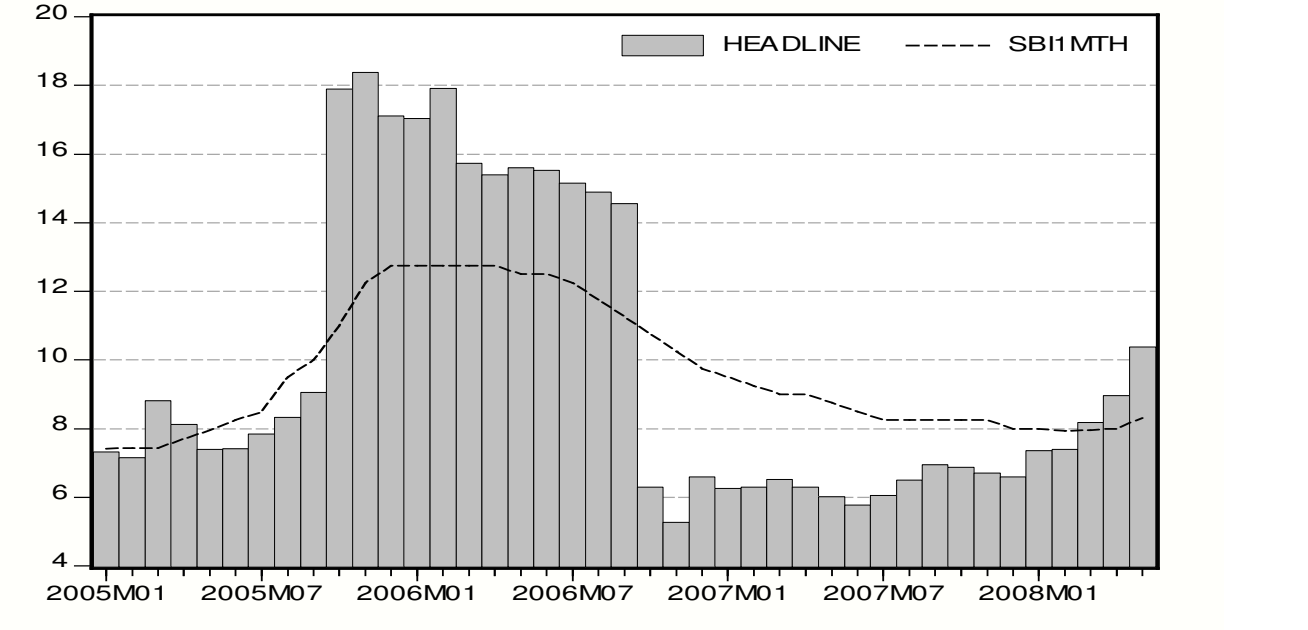
Note: *The Emerging Market Bond Index (EMBI) captures the spread between the yield of the emerging market bond and that of the US treasury bond.
Source: Korea Center for International Finance and Eichengreen and Park (2008)

Figure 1: Monthly Year-on-Year Headline Inflation and Maximium IT Target (in %)



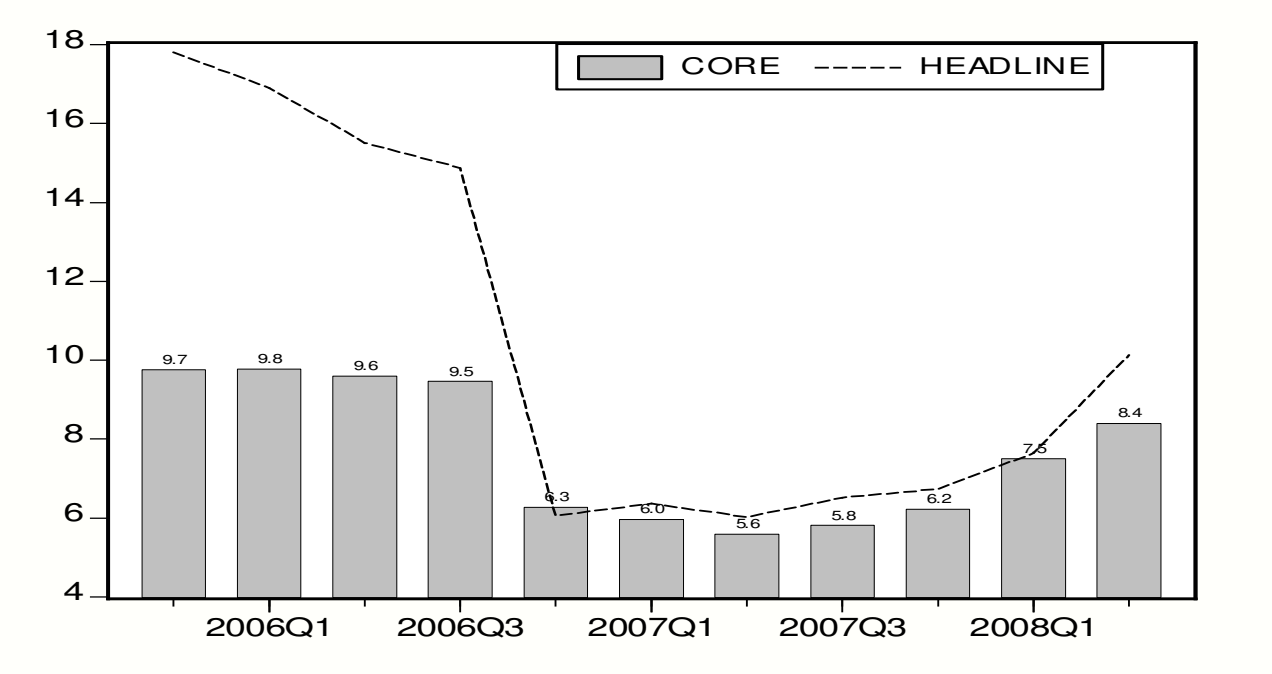
Source: Bank Indonesia Data Base

Figure 2: Monthly Year-on-Year Headline Inflation and 1-month SBI rate (in %)



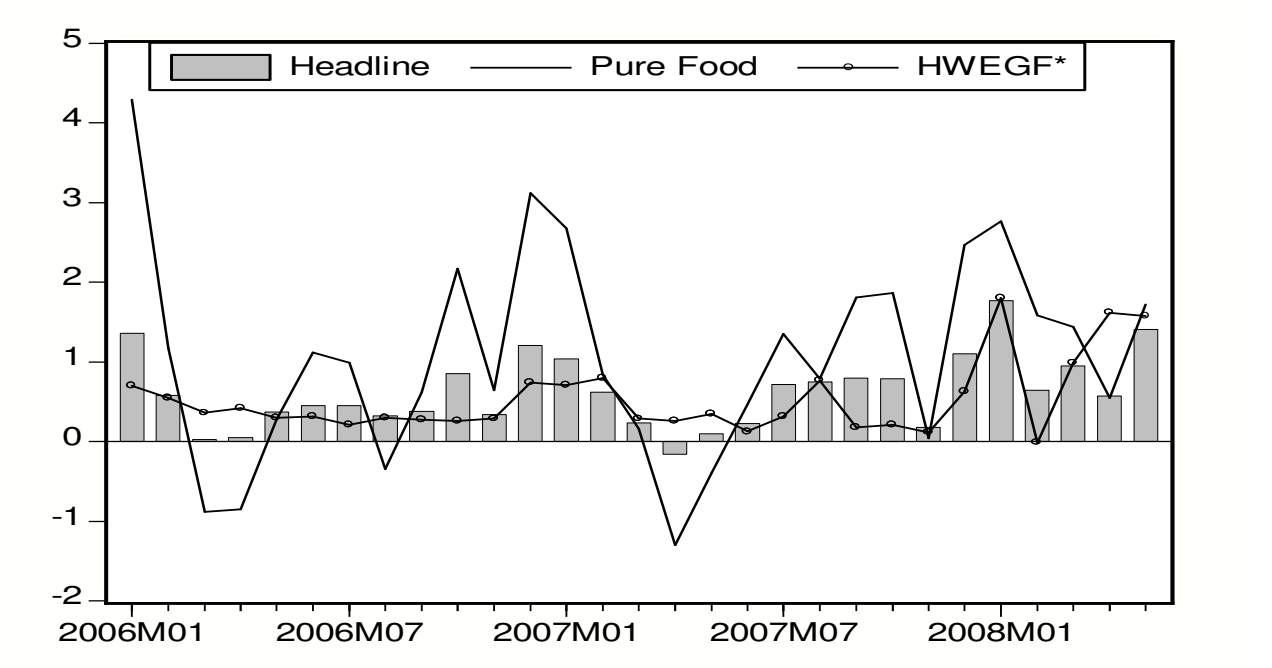
Source: Bank Indonesia's website.

Figure 3: Monthly Year-on-Year Core versus Headline Inflation (in %)



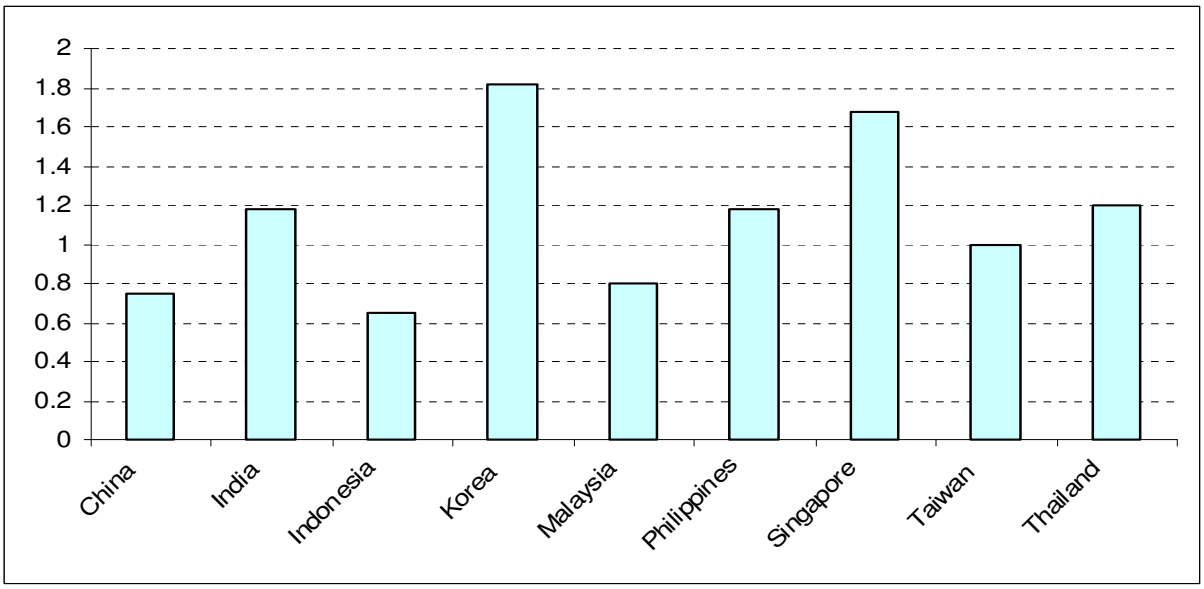
Source: Bank Indonesia website

Figure 4: Monthly Inflation for Headline, Food, and HWEGF(Housing, Water, Electricity, Gas and Fuel) (in %)



Source: Central Bureau of Statistics of Indonesia

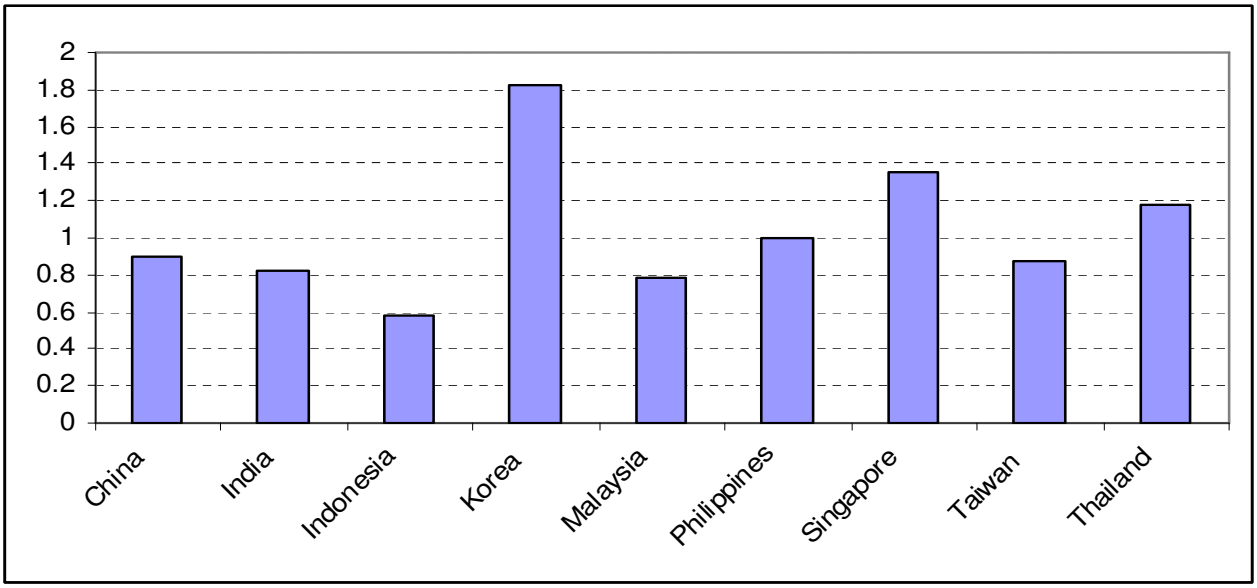
Figure 5: Gasoline Prices Across Asia
(as end of June-2008; in USD/litre; including tax and refining margin)



Source: Jha (2008).

Figure 6: Diesel Prices Across Asia

(as end of June-2008; in USD/litre; including tax and refining margin)



Source: Jha (2008)