

The Impacts of Globalization on Inflation and Transmission of Islamic Monetary Policy: Case Study in Indonesia

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Abstract

This Research aims to examine the implications of globalization for the nature of domestic inflation in Indonesia and to measure how far the influence to the Islamic monetary policy and how Islamic Monetary Policy deal with it. Specifically, whether the role played by each channel in the monetary policy transmission weakened or strengthened is investigated. To achieve these objectives a dynamic factor model with stochastic volatility (DFM-SV) model of the Indonesian monetary economy is constructed. However, before these objectives are addressed the issue of whether the monetary policy shocks have plausible macroeconomic effects is dealt with. To that end, a nonrecursive identifying strategy is applied. Time series econometric methods such as cointegration test, Granger causality test and generalized impulse response functions are applied in examining the dynamic relationship of the variables.

Keyword: globalization, inflation, volatility, Islamic monetary policy

1. Background

The financial environment in which monetary policy was made has been changed and become complicated by the international integration of economy and finance. International integration of economy and financial is termed as globalization. This definition implies increased cross border capital flows and trade in financial assets in a financially global world. The size of international capital flows and trade in financial assets has increased substantially over the last decade. The global nature of economy has created a favourable field for the growth of economy and financial innovations which in turn made the economy more tightly integrated and complicated. (Fatima, 2013). The Globalization Hypothesis (GH) argues that the internationalization of goods and financial markets has been altering the determinants of National macroeconomic outcomes, such as inflation rates and business cycles, by replacing the traditional domestic determinants with global factors. This hypothesis is originated from the concerns of some monetary policymakers, the Federal Reserve in particular, of an increasing disconnection between monetary Policy on one side and domestic inflation and long term interest rate on the other (Bianchi and Civelli, 2014). Indonesia has gone a long way in liberalizing its economy, but the task is far from complete. Globalization has given the government a strong justification for undertaking market-oriented reforms that can help maintain high and sustainable rates of exports necessary for strong economic growth. The region's economic crisis has shown that maintaining macroeconomic stability has become much more difficult in a globalized world. The issue is not whether or not to open up, and it involves much more than the proper sequencing of the liberalization process.

This year to be a year full of challenges for the Indonesian economy this is because of external factors. Global economic conditions are still weakened it can be seen from China economic growth which the second largest of the world economy after the United States are still experiencing contraction.

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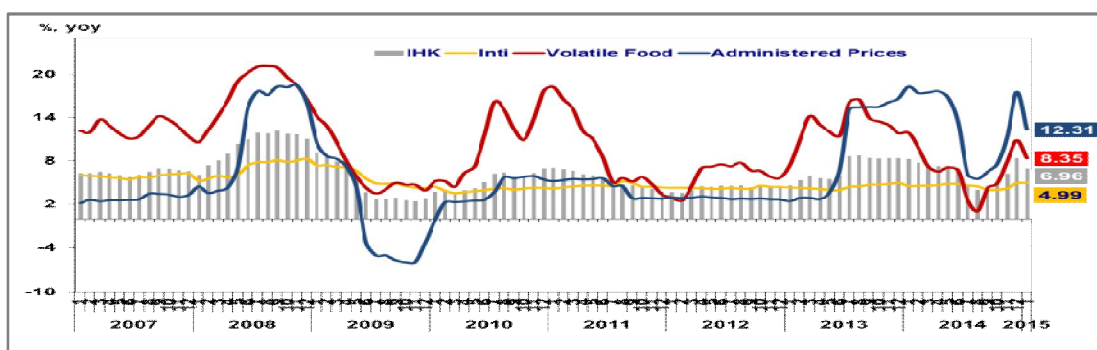
Recovery is continuing in various major economies of the world, but at a pace that is not in line with expectations and uneven. World commodity prices continued to weaken as demand is not strong enough, especially from China. In the financial sector, the uncertainty of the Fed's policy has increased the vulnerability and volatility in world financial markets. As developing countries (emerging markets), we also feel the shift of capital outflows from Indonesia.

The situation at the global level are exacerbated by various structural problems in the domestic economy, which is actually not a new thing because it has taken place in recent years. The structural problems include the exports are still dominated by products based on natural resources, food and energy security are still low, financial markets are still shallow, and the dependence on external financing increases. The combination of the unfavorable global situation and a number of domestic problems that still surfaced in turn increase the risk of instability in the economy, which looks at a variety of indicators such as the balance of payments, exchange rates and inflation (Bank Indonesia, 2015). The global economic recovery is not as expected, in turn, pushed down world commodity prices. As the largest natural resource commodities, weakening Chinese economy led to declining global demand for commodities. These conditions led to a decline in world commodity prices which had began in 2012. The second factor that caused the decline in commodity prices is the drop in oil prices since mid-2014 as a result of increased oil supplies from shale oil and OPEC production levels are not reduced amid weakening global oil demand. In the financial sector, the uncertainty of the Fed's policy as well as monetary policy divergences developed countries increase the vulnerability and volatility in world financial markets.

US economic conditions continued to improve has been the basis for the monetary authorities to end the policy of Quantitative Easing (QE) in October 2014. The reduction of monetary stimulus gradually (tapering off) have put pressure on Indonesia economy. This is demonstrated by the tendency of shifting global capital flows from Indonesia to the developed countries. Post tapering off, uncertainties arise related to the certainty of the time for the US central bank to normalize policy rates are planned to be done in 2015. The behavior of the financial markets began to anticipate this normalization has prompted increasing pressure from Indonesia capital flows, especially in December 2014. In addition to anticipation of policy normalization US central bank, the difference (divergence) monetary policy stance of the European central bank (ECB) and the bank of Japan (BOJ) that take loose monetary policy and the US central bank is planning to raise the FFR also increase pressure volatility in world financial markets, the subsequent impact on the volatility of capital flows and the exchange rate of emerging economies (EM), including Indonesia.

The combination of global economic dynamics that are less conducive and a number of domestic problems have increased the risk of macroeconomic stability in 2014. First, the adjustment of the current account deficit is still running slow due to continued high oil and gas trade deficit amid the improving non-oil deficit trafficking. Second, the increasing fiscal risks due to lower receipts and high subsidy burden of the government to make savings which slows the growth of domestic demand amid global demand is still limited. Third, the high foreign ownership in national financial markets are still shallow and rising private external debt amid global financial conditions are still full of uncertainties pose risks to the sustainability of external financing. The pressure from globalization also can be seen from indicators of macroeconomic such as Inflation, which is the inflation experiencing the volatility along three years since 2013, and tend to be higher from the years before.

Tabel 1.1 Inflation in Indonesia



Source : Bank Indonesia

The table shows that CPI inflation has remained above 7 percent yoy since May 2013 owing to persistently high food price increases of 8.35 percent yoy on average in May-August, compounding the base effect from the sharp increase in retail fuel prices in November 2014. There was a small decline in headline inflation to 6.8 percent yoy in September 2014. At the same time, core inflation, which excludes the more volatile food and energy prices, has stabilized at around 5.0 percent yoy. Headline inflation has stayed high despite unchanged retail gasoline and diesel prices since March 2014 and weaker domestic demand growth. Moreover, over the same period, international food prices, as measured by the World Bank food price index for emerging markets, have experienced a sustained decline since May 2014 as economic activity across countries has remained subdued. The diverging trajectory of domestic food price inflation is likely due to structural factors in the agricultural sector, such as falling productivity and high labor intensity, poor infrastructure and connectivity, fragmented markets, and transaction costs related to obtaining import licenses.

Meanwhile, since 2005, the bank of Indonesia as the monetary authority in Indonesia has implemented full-fledged inflation targetting. This monetary policy framework is characterized with an official announcement of inflation target for a specific timeframe. In addition, the monetary policy is implemented independently to achieve high transparency and credibility. The inflation targetting framework has been implemented by most central banks, particularly in developed countries in the last twenty years, hence the interest rate pass through has attracted more attention than before. The empirical application of the inflation targetting framework in some developed and developing countries has been proven successfully in controlling inflation at a relatively low level except for in Argentina and Indonesia (Ascarya, 2012).

In terms of monetary policies, bank of Indonesia introduced the first Islamic monetary instrument in 2000, the Wadi'ah certificate of bank Indonesia (SWBI), which is still passive. Along with the rapid growth of Islamic banking; Bank Indonesia replaced SWBI with better Islamic monetary instrument in 2008, namely the Shariah Certificate of Bank Indonesia (SBIS), which based on Ju'alah contracts. Amongst all, the main function of central bank, the Islamic central bank conducts its monetary operation by using Islamic monetary instruments which are free from interest, links with the business sector activities and gives value added into the economy (Mills and Presley, 1999). Along with the development of Islamic banking since the transmission mechanism may also pass through Islamic banking. Multiple monetary policy are not limited to interest rates only, but they also use the profit sharing, margins or fees. Thus, in the dual monetary system, the interest rate pass through is more appropriately termed as the policy rate pass-through' where the policy rate in conventional bank is interest rates, and the policy rate for Islamic banks is either profit sharing, margin, or fees.

2. Aims of Research

This Research aims to examine the implications of globalization for the nature of domestic inflation in Indonesia and to measure how far the influence to the Islamic monetary policy and how Islamic Monetary Policy deal with it. Specifically, whether the role played by each channel in the monetary policy transmission weakened or strengthened is investigated. And to propose the Islamic monetary instruments as an Islamic approach for the central banking monetary operation. It is assumed that the central bank may not deal with the uncertain return of the project (asset) and its ultimate monetary policy target is to stabilize the economy by utilizing the excess (idle) liquidity in the economy. This study benefits the central bank from the assessment of the usage of every proposed Islamic monetary instrument with respect to the monetary operation purposes.

3. Significance of The Research

The last three decades has seen the industrialised countries around the world face a multitude of shocks, which led to the inflationary experience of many countries since 1970s, to the exchange rate crises during the early 2000s. The monetary experiences faced by these countries have also led to numerous questions. What kind of policies should central bank follow when shock occur? how should central banks react to such shocks that hit the economy? What are the welfare effects of such shocks?. This research conduct to answer such kind of this question with the Islamic perspective in Monetary Policy. The Islamic financial industry is at a critical stage of its development. While it has been growing steadily over the years, the continuation of this growth is becoming more challenging as the industry moves towards maturity.

Innovation and new product development in all aspect of economy play an important role in driving the growth and formulate the strategy to answer the problem of economy. Hence, what the authority economy really needs at this stage is to setup specific guidelines, enhance the methodology and formulate the strategy used by monetary instrument, but there is an evident lack of research in the critical area of Islamic monetary. Furthermore, the majority of existing literature focuses on the theoretical side of monetary policy and how to apply it with conventional method, this research try to give alternative to the monetary system how to combine the Islamic theology into the Islamic Monetary policy, and very little research has actually attempted to tackle the issue from a technical point of view to explain the process of implementation of Islamic monetary policy. It is in this context that this research can add real value to the existing body of knowledge as it attempts to examine and explore the existing practices, in order to identify potential areas for improvement and take a further step, from pervious researches, by providing guidelines on how to integrate the requirements of *maqasidal-Shari'ah* into the economic policy especially in the monetary subject.

4. Literature Review

The empirical evidence on role of globalization in the determination of domestic inflation is overall mixed. Tootell (1998) find that the globalization whose proxied by foreign output gap does not effect the United States inflation, while Milani (2009) verify the results of Gamber and Hung (2001) and Wynne and Kersting (2007) and find that global slack has become an important determinant of domestic inflation after 1985. The broadest evidence in favour of role of foreign output gap in the determination of domestic inflation of 16 OECD countries is provided by Borio and Filardo (2007), which is challenged by Ihrig et al. (2007) who show that the results of Borio and Filardo (2007) are not robust to alternate measures of foreign output gap. The evidence against the role of the foreign output gap in the determination of domestic ination is also provides by Hooper et al. (2006), Ball (2006), Koske et al. (2010) and Calza (2009). The second important implication of the relationship between globalisation and inflation is that sensitivity of domestic inflation to domestic output gap is decreasing with increased globalization which implies that the Phillips Curve has become flatter. Evidence on the flattening of Phillips Curve is abundant in industrial economies. However, there is unsettled debate in literature that it is due to improved monetary policy framework or increased globalization (Fatima, 2013). The impact of globalisation on inflation is further analysed by using a Phillips Curve augmented with an interaction term between domestic output gap and trade openness. IMF (2006) finds that the sensitivity of inflation to domestic output has decreased since the 1980s and the key factor behind the reduced sensitivity of prices to output is found to be trade openness. Similar findings are reported by Koske et al. (2010), Borio and Filardo (2007) and Dexter et al. (2005).

Rogoff (2004) argues that globalization may help support low inflation, even over the longer term when developing world's integration into the global economy is no longer a surprise. In particular, globalization creates favorable milieu for maintaining low inflation by steepening the output-inflation (philips curve) tradeoff faced by central banks. This steepening, in turn, makes comitments to low inflation more credible and more durable. The core mechanism comes through greater competition that weakens the power of domestic monopolies and labor unions. Greater competition contributes to greater price and wage flexibility, and diminishes the output gains to be reaped from expansionary monetary policy for any given inflation impulse. At the same time, as enhanced competition steepens the output-inflation tradeoff, it also closes the gap between the natural rate of output and the effecient rate of output, further sterenghtening the political economy of maintaining low inflation. Meanwhile, research on the influence of monetary policy to inflation in Indonesia were conducted by Ascarya (2012), with the title transmission mechanism on dual monetary system, the purpose of the research isto discover transmission channel and monetary effectiveness in dual banking system through credit and financing channel to inflation and output using Granger and VAR method. The results show that the transmission mechanism of conventional monetary through conventional interest rate policy has a relationship to the output and inflation, while the profit sharing policy in syariah not related to the output and inflation. In addition, interest rate, conventional credit total, the interest rate of interbank moneymarket, provide permanent and negative shocks impact on inflation and putput, while the profit-loss sharing (PLS), syariah financing, profit-loss sharing of inter-islamic bank money market, and (Sertifikat Bank Indonesia Syariah) as the interest rate islamic policy shocks gives a positive and permanent impact to the inflation and output. SBI (Sertifikat Bank Indonesia) as the conventional policy have a positive impact on inflation and negative impact on output. Ayuniyyah, et al (2013) conducted a study to see the effectiveness of Islamic monetary transmission against two major variables of macroeconomy, output and inflation, using VAR / VECM analysis. This study used monthly data from industrial production index (IPI), consumer price index (CPI, indeks harga konsumen -IHK), the number of Islamic banking deposits, total Islamic banking financing.

Money supply and SBIS (Sertifikat bank Indonesia Syariah), from January 2004 until December 2009. The finding indicated that all Islamic variables has significant effect to the real sector growth and the non-Islamic variable does not affect the inflation rate.

5. Methodology and Design

In order to achieve the aforementioned aims and objectives and answer the research questions, this research adopts mixed method, both from a qualitative and a quantitative research methodology that defines the main research frame and process. An inductive strategy is followed with mixed design approach of both exploratory and descriptive tools to examine and explore the current practices of globalization and its impact to inflation and monetary policy in Indonesia, and test them against the collected data to identify and construct a model of transmission Islamic monetary policy. In collecting and analysing the data, a mixed method is utilised in the form of econometric method, as a quantitative method, and review of the literature, as a qualitative method. In this research we use quarterly data on domestic output gap, inflation, interest rate, real exchange rate, global inflation, SBIS (sertifikat bank Indonesia Syariah), Export Import Profit and Loss Sharing Islamic Bank (PLS), margin and global output gap for Indonesia. The quarterly data are obtained from web sites of the Bank Indonesia, BPS (Badan Pusat Statistik, Financial services authority (OJK), International monetary fund (IMF), and world bank, over a time period of 2009-2015. The model will be constructed by co-movements in aggregate inflation of Indonesia using the Vector Auto Regressive (VAR)/ Vector Error Correction Model (VECM) to estimate and explain the causality between globalization, Inflation and Islamic monetary instrument. This research estimate the composition of the variable both endogenously and exogenously. For endogenous composition of variable, this research apply K-means clustering to estimate regions after extracting the global component from the inflation series. Three different exogenously determined model of regions are used to test whether globalization variable has any effect on the importance of regional factor in explaining the variance of inflation.

4. Analysis and Discussion

Econometric Analysis

Test Data Stationarity

Assumptions stationary data is the first requirement for application in data processing time series with a unit root test (unit root test). Data are not stationary can generate spurious regression (spurious regression) is a regression that describes the relationship between two variables or more visible statistically significant when reality is not. The data used in this study has the potential to not stationary because their unit root at the current level, it must be held stationary test. Test stationary data in this study using the Software Eviews 9.0, the guide is taken if the Philips Perron test is greater than the critical value, it means that there is a unit root and not stationary vice versa if the Philips Perron is smaller than the critical value (5%), means no root unit and stationary. If the data is stationary, the VAR can be used but if not stationary then there are two options of use in the form of first difference VAR or VECM.

Table. 4.1 Stasioneritas Test First Level

Variable	Philips Peron Test	Philips Peron Mckinnon Critical Value (5%)	Information
Export Import	-7.40559	-3.5875	Stasioner
Inflation	-3.64595	-3.5875	Stasioner
Interest Rate	-2.72218	-3.5875	No Stasioner
Exchange Rate	-5.08611	-3.5875	Stasioner
Output	-1.53759	-3.5875	No Stasioner
SBIS	-2.84054	-3.5875	No Stasioner
Profit & Loss Sharing	-2.79617	-3.5875	No Stasioner

The results of the stationary test data there are variables that no stationary at level such as Interest rate, Output, SBIS, Profit and Loss Sharing. Therefore it need to derive variable in differencing first level, as listed in the table above.

Table.4.2 Stasioneritas Test First Differencing

Variable	Philips Peron Test	Philips Peron Mckinnon Critical Value (5%)	Information
Export Import	-13.60866	-3.595026	Stasioner
Inflation	-5.484768	-3.595026	Stasioner
Interest Rate	-5.505860	-3.595026	Stasioner
Exchange Rate	-5.524961	-3.595026	Stasioner
Output	-5.240390	-3.595026	Stasioner
SBIS	-7.741423	-3.595026	Stasioner
Profit & Loss Sharing	-5.204117	-3.595026	Stasioner

In the first differencing level all data stasioner (table above)

Var Stability Test

VAR stability test is done by calculating the roots of a polynomial function or known by the roots of characteristic polynomial. If all the roots of the polynomial function are located inside the unit circle, the VAR model is considered to be stable so Impuls Response Function (IRF) and the Forecast Error Variance Decomposition (FEVD) generated deemed valid (Paradise 2011).

Roots of Characteristic Polynomial

Endogenous variables: D(EX_IM) D(INFLASI) D(INTEREST_RATE) D(LN_EXCHANGE_RATE) D(LN_OUPUT) D(LN_SBIS) D(PLS)	
Exogenous variables: C	
Lag specification: 1 1	
Date: 11/01/16 Time: 14:24	
Root	Modulus
0.485284	0.485284
-0.417314	0.417314
-0.020527 - 0.387386i	0.387930
-0.020527 + 0.387386i	0.387930
-0.261062 - 0.266035i	0.372731
-0.261062 + 0.266035i	0.372731
0.140158	0.140158
No root lies outside the unit circle.	
VAR satisfies the stability condition.	

From table above shows the results of stability tests var VAR models declared stable if its root has a modulus of less than one. VAR stability test results of this study shows that the modulus value to the research model ranges from 0.140158 to 0.4852. Based on these results it can be deduced that the VAR system used in this study declared stable so that further testing on IRF and the resulting FEVD considered valid.

Lag Length Criteria

The next stage is the determination of the optimal lag. Determination of the optimal lag is very important because the independent variable used is nothing but a lag of endogenous variables. Determination of the optimal lag is done based on the value of Schwartz information criterion (AIC). Selection of optimal lag cointegration test done before, it is important to do before estimating Vector Autoregressive (VAR) model. Election lag length is important because it can affect the acceptance and rejection of the null hypothesis, resulting in biased estimates and could result in inaccurate predictions.

VAR Lag Order Selection Criteria						
Endogenous variables: D(EX_IM) D(INFLASI) D(INTEREST_RATE) D(LN_EXCHANGE_RATE) D(LN_OUPUT) D(LN_SBIS) D(PLS)						
Exogenous variables: C						
Date: 11/01/16 Time: 14:27						
Sample: 3/01/2009 12/01/2015						
Included observations: 25						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-270.9714	NA*	10.72819*	22.23772*	22.57900*	22.33237*
1	-239.7259	42.49400	52.24731	23.65807	26.38835	24.41533
2	-173.0052	53.37654	39.62006	22.24041	27.35969	23.66028
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

The longer the lag is used to reduce the degree of freedom and the number of observations, while the amount of lag that is too short will result in incorrect specification (Gujarati, 2007). The issue of the selection of lag length also increased with the assumption that the selection of the appropriate lag will result in residual (free from autocorrelation and hetroskedastisitas) (Gujarati, 2007). To define the optimal lag value typically used Akaike information criteria (AIC), Final Prediction Error (FPE), Hannan-Quinn Information Criterion (HQ) and Schwarz Information Criteria (SC). In this study the magnitude of the lag is selected based on the value of the smallest SC. SC calculations every lag. From the test results it is known that CAR models, FDR, NPF and ROA indicates optimal lag one, is evident from the value Schawart Information Criteria and Hannan-Quinn Information that shows the smallest value in lag 0

Cointegration Test

The detection of the presence of cointegration is accomplished by methods Johanssen. If the variables are not cointegrated we can apply the standard VAR results will be identical to Ordinary least squares (OLS), after making sure these variables in the same order stationary in first differencing. This shows that all the variables have properties integrated of order one. Testing cointegration for model using lag 0. Tests conducted on the most value and compare the value rekstriktif trace statistic to the critical value, and stopping at the first null hypothesis is not rejected. Interplay can be seen from the co integration that occurs between the variable itself, if there is cointegration relationship between variables that affect each run thoroughly and spread information in parallel.

Date: 11/01/16 Time: 14:33				
Sample (adjusted): 12/01/2009 12/01/2015				
Included observations: 25 after adjustments				
Trend assumption: Linear deterministic trend				
Series: D(EX_IM) D(INFLASI) D(INTEREST_RATE) D(LN_EXCHANGE_RATE) D(LN_OUPUT) D(LN_SBIS) D(PLS)				
Lags interval (in first differences): 1 to 1				
Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.945651	202.8847	125.6154	0.0000
At most 1 *	0.813636	130.0763	95.75366	0.0000
At most 2 *	0.730609	88.07489	69.81889	0.0009
At most 3 *	0.701660	55.28514	47.85613	0.0086
At most 4	0.433495	25.04711	29.79707	0.1598
At most 5	0.236061	10.84037	15.49471	0.2215
At most 6 *	0.151552	4.108672	3.841466	0.0427
Trace test indicates 4 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

From table above, it can be seen that this model have four cointegration, it means there is a relationship in the long run in each variables, therefore this model will be run in the vector error correction model (VECM) Granger Causality Test

Pairwise Granger Causality Tests			
Date: 11/01/16 Time: 14:43			
Sample: 3/01/2009 12/01/2015			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
D(INFLASI) does not Granger Cause D(EX_IM)	25	1.43557	0.2615
D(EX_IM) does not Granger Cause D(INFLASI)		0.07913	0.9242
D(INTEREST_RATE) does not Granger Cause D(EX_IM)	25	1.78070	0.1942
D(EX_IM) does not Granger Cause D(INTEREST_RATE)		0.36480	0.6989
D(LN_EXCHANGE_RATE) does not Granger Cause D(EX_IM)	25	0.89539	0.4242
D(EX_IM) does not Granger Cause D(LN_EXCHANGE_RATE)		1.64087	0.2188
D(LN_OUPUT) does not Granger Cause D(EX_IM)	25	1.21152	0.3187
D(EX_IM) does not Granger Cause D(LN_OUPUT)		1.54615	0.2375
D(LN_SBIS) does not Granger Cause D(EX_IM)	25	0.82607	0.4522
D(EX_IM) does not Granger Cause D(LN_SBIS)		1.34898	0.2821
D(PLS) does not Granger Cause D(EX_IM)	25	0.10421	0.9015
D(EX_IM) does not Granger Cause D(PLS)		0.26115	0.7728
D(INTEREST_RATE) does not Granger Cause D(INFLASI)	25	0.45319	0.6420
D(INFLASI) does not Granger Cause D(INTEREST_RATE)		0.35302	0.7069
D(LN_EXCHANGE_RATE) does not Granger Cause D(INFLASI)	25	0.53215	0.5954
D(INFLASI) does not Granger Cause D(LN_EXCHANGE_RATE)		0.30319	0.7418
D(LN_OUPUT) does not Granger Cause D(INFLASI)	25	0.38820	0.6833
D(INFLASI) does not Granger Cause D(LN_OUPUT)		0.84562	0.4441
D(LN_SBIS) does not Granger Cause D(INFLASI)	25	0.12977	0.8790
D(INFLASI) does not Granger Cause D(LN_SBIS)		0.03042	0.9701
D(PLS) does not Granger Cause D(INFLASI)	25	3.60761	0.0459
D(INFLASI) does not Granger Cause D(PLS)		6.09737	0.0086
D(LN_EXCHANGE_RATE) does not Granger Cause D(INTEREST_RATE)	25	0.16228	0.8513
D(INTEREST_RATE) does not Granger Cause D(LN_EXCHANGE_RATE)		0.61808	0.5490
D(LN_OUPUT) does not Granger Cause D(INTEREST_RATE)	25	0.18777	0.8303
D(INTEREST_RATE) does not Granger Cause D(LN_OUPUT)		0.02726	0.9731
D(LN_SBIS) does not Granger Cause D(INTEREST_RATE)	25	1.26234	0.3046
D(INTEREST_RATE) does not Granger Cause D(LN_SBIS)		0.85396	0.4407
D(PLS) does not Granger Cause D(INTEREST_RATE)	25	0.20897	0.8132
D(INTEREST_RATE) does not Granger Cause D(PLS)		3.41444	0.0530
D(LN_OUPUT) does not Granger Cause D(LN_EXCHANGE_RATE)	25	0.38795	0.6834
D(LN_EXCHANGE_RATE) does not Granger Cause D(LN_OUPUT)		0.39254	0.6804
D(LN_SBIS) does not Granger Cause D(LN_EXCHANGE_RATE)	25	1.26728	0.3033
D(LN_EXCHANGE_RATE) does not Granger Cause D(LN_SBIS)		0.25938	0.7741
D(PLS) does not Granger Cause D(LN_EXCHANGE_RATE)	25	0.63694	0.5393
D(LN_EXCHANGE_RATE) does not Granger Cause D(PLS)		1.34777	0.2824
D(LN_SBIS) does not Granger Cause D(LN_OUPUT)	25	0.20395	0.8172
D(LN_OUPUT) does not Granger Cause D(LN_SBIS)		0.05399	0.9476
D(PLS) does not Granger Cause D(LN_OUPUT)	25	0.02724	0.9732
D(LN_OUPUT) does not Granger Cause D(PLS)		0.00333	0.9967
D(PLS) does not Granger Cause D(LN_SBIS)	25	0.20462	0.8166
D(LN_SBIS) does not Granger Cause D(PLS)		0.93087	0.4106

Granger Pairwise Causality test for Inflation model through Islamic monetary channels indicates the correlation between profit and loss sharing and Inflation, however from that test it can be known that there are no correlation between proxy of globalization to Inflation. This finding did not match with the previous monetary mechanism theory which is stated that SBI interest rate will not directly give effect to output.

It needs structuralmechanism approach via interest rate channel to influence output. The next step is to test the Impulse Response Function (IRF) IRF test serves to illustrate the k-period expectations ahead of the prediction error variable due to the innovation of other variables. Thus, the length of the shock effect of a variable against another until the effect is lost or returned to the point of balance can be seen (Ajija Shochrul R., 2011: 168).

Figure Impulse Response Function (IRF) will show a variable response due to shock other variables until some period after the occurrence of shock. If the image Impulse Response shows the movement is getting closer to the point of equilibrium (convergence) or return to the previous equilibrium meaningful response to a shock the longer will disappear so that surprises are not leaving a permanent effect on these variables. The following will be displayed test results Impulse Response Function (IRF) in this study:



After seeing the pattern of the shock effect of a variable to another variable in the IRF test, the next step is to test the FEVD or Variance Decomposition. Variance Decomposition test will provide information on the proportion of the movement of the shock effect of a variable to another variable shock in the current period and future periods. The following are the test results Variance Decomposition in this study:

Variance Decomposition of D(INFLASI):								
Period	S.E.	D(EX_IM)	D(INFLASI)	D(INTEREST)	D(LN_EXCRATE)	D(LN_OPT)	D(LN_SBIS)	D(PLS)
1	1.764335	2.329233	97.67077	0.000000	0.000000	0.000000	0.000000	0.000000
2	2.158576	2.541756	84.88797	0.122815	1.041882	0.409752	9.497950	1.497874
3	2.840378	2.177206	88.61452	0.796667	0.608295	0.995371	5.526831	1.281107
4	3.303792	1.801514	85.13592	0.654850	0.664861	0.794512	9.471016	1.477327
5	3.686199	1.506670	83.39073	1.597889	1.659200	1.718381	8.617891	1.509234
6	4.035046	1.260772	83.70560	1.355241	1.385025	1.505413	9.247264	1.540683
7	4.344699	1.088051	83.48790	1.681743	1.763244	1.594032	8.804086	1.580942
8	4.644919	0.953832	83.53810	1.540772	1.564848	1.627113	9.170728	1.604603
9	4.915934	0.857694	83.55999	1.688560	1.718325	1.603694	8.950098	1.621641
10	5.177421	0.773252	83.58242	1.606077	1.597886	1.640347	9.157789	1.642230

From the table above it is known that variable Inflation in the first period is influenced by the variable itself at 97.67%, then the period of ten variables FDR is affected by the variable itself influenced by 83.58% and the second biggest variable whose gives influenced is SBIS at 9.157%. Further PLS gives at 1.64% in the period of ten.

Conclusion

This empirical study provides several important findings, first, based on Granger causality test, overall conventional monetary policy transmission channel showed no continuity and not in accordance with the theory, as well as the transmission channel of monetary policy sharia can not be clearly identified and disconnected in yields or profit and loss sharing deposits. Deposit yields using contract profit and loss sharing, as well as mudaraba and Musharaka financing margin significant negative effect on the real sector output and does not have a significant influence on the level of inflation. By meant, sharia instruments is the effective instrument in reducing inflation rate and also encourage the growth of Islamic banking, and should also consider the right margin level to increase the output on real sector. Second, the results of overall IRF, shock Export Import and Monetary Instrument, have a positive impact to the inflation, means will increase inflation in the long run and this response is permanent. Interest rate (conventional) have negative impact and permanent to the inflation. SBIS. This means a decrease in PLS will increase the inflation which is in line with the theory. From the result of these studies lead to the empirical conclusion that monetary policy to reduce inflation with Islamic pattern is more effective than the conventional pattern, in accordance with research by Ascarya (2012) which examined the dual monetary system through conventional credit channel and syariah financing.

This Research investigates whether domestic monetary policy reaction functions are influenced by global variables and how Islamic Monetary instrument respond on it. We estimate vector error correction model with domestic variables (domestic inflation and output gap, interest rate), with global variables (Export-Import, Exchange Rate) and Islamic Monetary instrument (Profit and Loss Sharing, SBIS), incorporating domestic and global variables in one reaction function and augmenting it with external variables such as real effective exchange rate and foreign interest rate. We computed global variables and domestic variables output gap for Indonesia and find that the global measures are not highly correlated with domestic inflation and output gap. To distinguish the output gap on the inflation. The residuals obtained from this regression are used as the component of domestic inflation and output gap that is not related to the global variations. Then we estimated forward-looking policy reaction function for the Indonesia with domestic and global inflation, output gaps. Moreover, we augmented policy reaction function with foreign variables such as export-import. We find strong empirical evidence that the policy makers at the Bank Indonesia and consider the international factors while conducting monetary policy. For a sample period from 2009-2015, we find that they respond to the global inflation, global output gap and the country specific output gap while the country specific inflation appears as insignificant. The global inflation appears as significant irrespective of the specification used to estimate the Taylor Rule where the coefficient is well above unity. This result does not seem surprising once we consider the globalization of inflation. The literature on globalization of inflation such as studies by Ciccarelli and Mojon (2010), Bagliano and Morana (2009) among many others show that larger variance of domestic inflation rates is explained by international factors.

Similar results were obtained when we estimated reaction function using the inflation measure based on CPI. However, contrary to the full sample estimation in sub sample estimation of the reaction function (1992-2010 for the United Kingdom and for 1987-2010 for the United States) we find that the country specific inflation as well as global inflation is taken into account while setting the monetary policy rate.

An other important result of the research is, we find that Bank Indonesia is more concerned about the medium and long term variation in inflation and does not follow the Taylor principle when responding very short term variation in inflation. Moreover, we find evidence that the Bank Indonesia respond to changes in real effective exchange rate.

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