

## **Economic sectors sensitivity to Islamic and conventional Monetary Instrument: Case study in Indonesia**

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*The purpose of the monetary policy is to affect the economic activity through various channel of monetary transmission. One of the transmission channels is via Islamic bank through financing to various sector of the economy. The change of monetary instruments certainly affects economic sectors differently. Given the dual monetary system (Islamic and conventional) in Indonesia, it is interesting to see how those rates influence each of the economic sectors. This is important for the government in designing the future economic programs by determining the specific sectors which has to be prioritized. This paper aims to investigate the sensitivity of the economic sectors in response to the change in the Islamic and conventional monetary rate. The paper relies on unit root test, the co-integration test, and impulse response functions, focusing on the period from May 2006 to February 2011. The data needed is monthly economic sectors for Islamic and conventional system, Islamic monetary rate, and conventional monetary rate. The results show that Islamic banks play important roles in the monetary transmission process in the Indonesian economy. In particular, specific economic sector react differently to both Islamic monetary instrument as well as conventional monetary instrument.*

**Keywords:** Monetary policy, Islamic monetary rate, and conventional monetary rate.

### **Introduction**

The important question on the monetary policy is whether it effects on the output. Monetarist would argue that money is the most important thing in affecting the output. Conversely, Keynes would argue that other variable such as government expenditure would also affect the real output. However, recently, there is consensus among monetary economists and policy-makers that monetary policy does have real effects, at least in the short run (Alam and Waheed, 2006). Hence, debate on this relationship (money and output) seems to be decreasing in number. However, the discussion remain exist on the different aspect of the relation of the monetary policy and output.

Specific aspect that need to be put in attention nowadays is how sensitive is the economic sector on the shock of the monetary policy. Previous studies have shown that economic sector response differently on the shock of the monetary policy. Studies on this issue are important as to give detail pictures to the central banks of the characteristics of the economic sector. Having this important information, central bank may treat different economic sector differently.

For example, tight monetary policy aiming to reduce capital flight might, to some extend, provide advantage to the manufacturing companies which has to import raw material as exchange rate will be no longer depreciating. However, increase in policy

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rate certainly will lower demand for loans (by the trader) as the borrower would not be able to payback the loan. Therefore, information on the sensitivity of the sectors is important.

Moreover, the results of this paper can add to our understanding of the nature of transmission mechanism. Many economists have called for a disaggregated analysis of monetary transmission mechanism (Alam and Waheed, 2006). The initial attempt to discover the monetary transmission at the disaggregated level is Bernanke and Gertler (1995). They adopt a vector autoregressive (VAR) model to seek the different effect of monetary policy on components in the final expenditures.

Another study on this issue was done by Gertler and Gilchrist (1993). They conclude that output of the smaller firms in the USA is more sensitive to monetary shocks as compared to large firms. Ganley and Salmon (1997) has attempted to seek a similar issue. They found out that the construction sector is the most interest-sensitive sector. Then it is followed by the manufacturing industry, services, and agriculture.

Ibrahim (2005) found out that sector of manufacturing, construction, and finance insurance, real estate and business service sectors seem to decline more than aggregate production in response to the interest rate shock in the case of Malaysia. Carlino and DeFina (1998) seek the sensitivity of the region of monetary policy shocks. They found evidence that New England, Mideast, Plains, southeast and the far west respond to monetary policy changes in ways that closely approximate the US average response.

Arnold and Vrugt (2002) attempt to measure the effect of monetary policy shocks on regional and sectoral output for the Netherlands. They have documented the variation in the regional and sectoral transmission of monetary policy across 132 region-sector combinations. They found out that regional effects of monetary policy are significantly related to industrial composition. Moreover, they found that sectoral effect account for most of the variation in interest coefficient.

Alam and Waheed (2006) evidenced that manufacturing, wholesale and retail trade and finance and insurance sectors seem to decline more on the shock of the interest rate. They argue that those sectors are the driving force behind the aggregate fluctuation. Meanwhile other sector such as agriculture, mining and quarrying, construction and ownership of dwelling to interest rate changes.

The structure of this paper is as follows. The following section describes background of the islamic banking industry in Indonesia. Following it, it explains the data and empirical framework. Next is to discuss the estimation results and ended with the conclusion.

### **Islamic Banks in Indonesia**

Although the Muslim population in Indonesia reaches more than 70%, the establishment of Islamic banks was relatively late as compared to the neighbouring country, Malaysia. The first Islamic bank namely Bank Muamalat Indonesia (BMI), which was established in November 1 1991, was highly supported by the then President of Indonesia, Suharto. Up to the current time, Indonesia, unlike Malaysia, does not have an Islamic Banking Act. The existing Islamic banks are under the

revision of the conventional banking act which mentions that the banks have been allowed to operate other types of banking system which does not use interest. Besides Islamic banks, there exists also the Islamic Rural Banks and Islamic Banking Units.

Eight years after the establishment of the first Islamic bank, the second bank known as Bank Syariah Mandiri was established, the. It was a conversion of the conventional bank, Bank Susila Bakti. In the same year, Islamic Banking Unit were established. It is a unit within conventional banks which offer Islamic banking products. However, the difference between Malaysia and Indonesia is that Malaysia uses Islamic windows, whereby within the office of conventional banks, there exists a different counter for Islamic banking products. In Indonesia, conventional banks would normally have a separate building as well as separate management.

In terms of the number of Islamic Banks that existed since the last seven years, there was steady growth (see Table 1). In 2000, there were only three Islamic banking units namely: Bank IFI Syariah, Bank Jabar Syariah, and Bank BNI Syariah. The third Islamic full-fledged bank, namely Bank Syariah Mega Indonesia was established in 2004.

Bank Muamalat performed good in the early years of its commencement. In the second year of its existence, deposit increased from 20,800 million Rupiah in 1992 to 60,320 million in 1993. Similarly, financing also increased very significantly, from 32,650 million Rupiah to 92,000 million Rupiah in the subsequent year (Table 2). The following years, BMI was able to maintain good performance. However, the Asian crisis in 1997 created damage to the banking system. Not only did the conventional banks suffer, Islamic Banks were also affected. Table 2 shows that in 1998, Islamic banking assets, financing and deposit were declining very significantly. Growth of those three indicators shows contractions of 18.3%, 30.5%, and 15.4% respectively.

Table 1  
Number of Islamic Banking Institutions in Indonesia

Year	Islamic Bank	Islamic Banking Unit
1992	1	0
1993	1	0
1994	1	0
1995	1	0
1996	1	0
1997	1	0
1998	1	0
1999	2	1
2000	2	3
2001	2	3
2002	2	6
2003	2	8
2004	3	15
2005	3	19
2006	3	20
2007	3	26

Source: Bank Indonesia, Shariah Banking Development Report 2007

At that time, Bank Indonesia had to increase the interest rate in a significant rate to prevent further deterioration of the Rupiah due to capital flight. Consequently, this high interest rate caused the withdrawal of funds from the Islamic banks to conventional banks. This kind of situation known as the displacement commercial risk had to be faced by Islamic banks. It is the risk whereby depositors withdraw their money from Islamic banks and put it in the conventional banks due to more attractive interest rates given by their conventional counterparts. Nevertheless, in 1999, Islamic banks were able to recover. Asset, Financing and Deposit increased to 44.5%, 8.05% and 34.7% respectively.

The growth of Islamic banks in Indonesia, although increased significantly in the nominal term, did not increase in terms of the percentage share of the total banking asset. In 2000, total Islamic banking assets amounted to Rp 1,790,168 million and that amount accounted for only 0.17% of total banking assets. 2004 marked the year in which the proportion of Islamic banking assets out of total banking assets reached beyond 1% (Shariah Banking Statistics, August 2004). Comparing the percentage share of the total banking assets between Malaysia and Indonesia, Malaysia is still far ahead of Indonesia. Currently, Islamic banking assets in Malaysia is over 10% out of total banking assets whereas in Indonesia it is around 2%. This is of no surprise given the fact that Islamic banking in Malaysia was established ten years earlier than that of Indonesia.

Table 2  
Performance of Islamic Banks in Indonesia

Year	Asset <sup>a</sup>	Financing <sup>b</sup>	Deposit <sup>c</sup>	Growth (%)		
				Asset	Financing	Deposit
1992	120,880	32,560	20,800			
1993	166,960	92,000	60,320	38.12	182.56	190.00
1994	246,080	188,800	132,880	47.39	105.22	120.29
1995	394,400	285,920	275,680	60.27	51.44	107.47
1996	515,200	310,480	396,560	30.63	8.59	43.85
1997	586,720	456,160	463,440	13.88	46.92	16.87
1998	479,200	317,040	391,920	-18.33	-30.50	-15.43
1999	692,800	342,560	528,080	44.57	8.05	34.74
2000	1,790,168	1,271,162	1,028,923	158.40	271.08	94.84
2001	2,718,770	2,049,793	1,806,366	51.87	61.25	75.56
2002	4,045,235	3,276,650	2,917,726	48.79	59.85	61.52
2003	7,858,918	5,530,167	5,724,909	94.28	68.78	96.21
2004	15,325,997	11,489,933	11,862,117	95.01	107.77	107.20
2005	20,879,874	15,231,942	15,582,329	36.24	32.57	31.36
2006	26,722,030	20,444,907	20,672,181	27.98	34.22	32.66
2007	36,537,637	27,944,311	28,011,670	36.73	36.68	35.50

Note. <sup>a, b, c</sup> are in Million IDR

Source: Bank Indonesia Shariah Banking Statistics, Various Issues and Harahap and Basri (2003)

In terms of the economic sectors which were financed by Islamic banks, there exist two sectors which dominated the Islamic bank financing portfolio. These sectors include: business services sector and trade, restaurants and hotels sectors. The former sector accounted for about Rp 4.5 trillion and Rp 8.4 trillion in 2005 and 2007 respectively. Meanwhile the trade, restaurant and hotels sector as the second biggest

sector financed by Islamic banks accounted about Rp 1.7 trillion and Rp 4.1 trillion in 2005 and 2007 respectively. The sector which was least financed by the Islamic banks was the utilities sector which accounted for Rp 66 Billion in 2005 and Rp 165 Billion in 2007 (see Table 3).

Table 3  
Direction of Islamic Financing in Indonesia (in Million IDR)

Sectors	2005	006	2007
Agriculture,Forestry and Agricultural Facilities	687,281	701,044	837,037
Mining	395,043	374,581	510,669
Manufacturing	933,295	939,713	1,371,254
Water,gas and Electricity	66,082	17,158	165,990
Construction	1,548,151	1,637,027	2,370,638
Trade,Restaurants and Hotels	1,715,810	3,041,050	4,151,785
Transport,Cargo Storage and Communication	1,261,178	1,165,429	1,568,781
Business Services	4,503,918	5,457,711	8,424,724
Social Services	1,208,165	1,456,391	1,904,390
Others	2,951,510	5,654,803	6,639,043
Total	15,270,433	20,444,907	27,944,311

Source: Bank Indonesia , Shariah Banking Statistics.Various Issues

In terms of the types of financing contract in Islamic banks, it has been dominated by the buy and sell concept or *Murabahah*. This figure is more or less same with what has existed in Malaysia. Financing in Indonesia is still dominated by *Murabahah*. In 2000, this contract amounted to Rp 775,721 Million (see Table 4) whilst the profit sharing concept which uses of *Musyarakah* and *Mudharabah* were Rp 31 Billion and Rp 378 Billion respectively. Interestingly, over the last four years, the composition mix has changed in that while the trend of the proportion of *Murabahah* showed a decrease, the profit sharing concept showed an increasing trend. This is because Islamic banks have been able to extend the use of the profit sharing concept to the cooperative societies even though they extend the funds to their members using the *Murabahah* concept. Although it is shariah-compliant, the *Murabahah* concept is almost similar to that of conventional bank lending. Hence in order for Islamic banks to be differentiated from conventional banks, they should emphasize and implement more on the profit-sharing concept more on the profit sharing concept.

Table 4  
Islamic Bank Financing by Type of Contracts (in Million IDR)

Type of Contract	2000	2001	2003	2005	2007
Musyarakah	31,739	53,593	305,997	1,898,389	4,406,360
Mudharabah	378,604	402,623	794,244	3,123,759	5,577,912
Murabahah	775,721	1,420,401	3,955,815	9,487,318	16,552,869
Istishna	74,583	167,893	295,960	281,676	350,995
Others	3700	3834	151246	440,800	1,056,175

Source: Bank Indonesia ,Shariah Banking Development Report ,2006 and 2007

## **Data and Empirical Framework**

### *Data*

In an attempt to examine the sensitivity of the economic sector funded by banks supported by major studies such as Ibrahim (2005), Ganley, J. and C.Salmon (1997), Alam, T and Waheed, M (2006). The study analyzes a model comprising of variables representing the real economy and monetary policy. Focus variables being considered are economic sectors funded by both banks (Islamic and conventional banks). In view of this, the following model is being considered:

$$IPI = f(\text{ISMONINST}/\text{CONMONINST}, \text{economic sectors})$$

where IPI is industrial production index, IPI is being used as a proxy for economic output or GDP as the data is not available in the monthly form. Overnight interbank rate for conventional bank is adopted as a proxy for the conventional monetary instrument (CONMONINST). Meanwhile, islamic overnight interbank rate is used as a proxy for the Islamic monetary policy (ISMONINST). All variables are in the natural logarithm form, except the both monetary rate.

Nine economic sectors which is funded by conventional banks are agriculture, mining, manufacturing, electricity, construction, trade, transportation, finance, and service. Meanwhile, numbers economic sector funded by islamic banks are ten namely, agriculture, mining, manufacturing, electricity, construction, trade, transportation, business service, social service and others. The period cover in this study start from june 2006- February 2011 (58 observations). All data are sourced from the Bank Indonesia website

### *Empirical framework*

As in any time series estimation procedure, we undertake the pre-tests to determine the unit root properties as well as the degree of integration of the variables involved in the study before more rigorous investigation techniques are adopted. As such, the following steps are undertaken: first, the unit root and cointegration tests, followed by impulse response functions (IRF). The details of the tests are elaborated in the following sections.

#### Unit root tests

The unit root test is very important in the context of time series analysis so as to check the level of stationarity of the data. Utilizing non-stationary data in a model will result in a spurious regression whereby the result shows that the relationship between the variables of X and Y is significant, whereas a priori there should be none. In order to test for the order of integration of the variables, two types of unit root tests are employed in this study, namely the Augmented Dickey Fuller (ADF), and Phillips-Peron (PP),

#### Cointegration test

Cointegration is said to exist if two (or more) series are linked to form an equilibrium relationship spanning the long-run, even though the series themselves may contain stochastic trends (non-stationary). They will nevertheless move closely together over time and difference between them will be stable (Harris, 1995).

From the above definition, it implies that even though examining non-stationary variables may result in spurious regression however, if the residual of the model is found to be stationary, then the variables is said to have co-movement in the long run or they have a long term equilibrium relationship. Hence the regression is meaningful. There are at least two types of cointegration tests, namely the Engle-Granger (EG) and Johansen and Juselius (JJ) tests. In this study, the JJ method is being adopted due to various weaknesses that are well-known in the EG test.

The JJ procedure is able to prevent the use of two-step estimator and can test for the presence of multiple cointegrating vectors. The JJ procedure is nothing more than a multivariate generalization of the DF test. The key important thing in this procedure is the determination of the rank matrix ( $\pi$ ). Rank  $\pi$  is equal to the number of independent cointegrating vectors. If rank  $\pi = 0$ , then the matrix is null, hence the standard VAR model in first differences is employed. If rank  $\pi$  is of rank  $n$  (number of variables) then the vector is stationary. If rank of  $\pi = 1$ , there is a single cointegrating vector and the component of  $\pi x_{t-p}$  is the error correction factor (Enders, 1995). Other case whereby  $1 < \text{rank } \pi < n$ , there are multiple cointegrating vectors.

At this point in time, it is necessary to outlines the VAR order selection or the selection of relevant lag length in the modelling of VAR. There are some of the criteria used in selecting the VAR lag length for each variable are, among others, the Akaike's Information Criterion (AIC) and the Schwarz Criterion (SIC). The lag length used should be long enough to confine the dynamics of the system. However, it should not be too long to exhaust the degree of freedom.

#### Impulse Response Function

An IRF measures the time profile of the effect of shocks at a given point in time on the (expected) future values of variables in a dynamical system (Pesaran and Shin, 1998). The approach is well-suited because not only that it allows for the relative strength of various shocks to be quantified in terms of their contributions to variations in a particular variable of interest, but it also enables the pattern and direction of the transmission of shocks to be traced. In the context of this study, we are interested to analyze the responses of the objective variables, namely IPI, Islamic deposit and Islamic financing to a shock in the monetary policy variable which is the overnight rate. Meanwhile, the VDC analysis shows the fraction of forecast error variance of a variable attributed to shocks in other variable particularly to make inferences about the relative strength of innovations in the variable of interest. It is a method of providing a literal breakdown of the change in the value of a variable in a given period arising from changes in the same variable and in other variables during previous periods. The VDC which is termed as an out-of-sample causality tests, partition the variance of forecast error of a certain variable into proportions attributable to innovations (or shocks) in each variable in the system including its own, can provide an indication of these relatives.

### **Empirical results and analysis**

#### Unit root test results

In an attempt to examine the economic sectors, we found difficulty as number of sectors as well as the optimal lag are many, while the number of observation are relatively small. To solve this problem, we narrow down the number of the economic

sector and select five biggest economic sector funded by islamic bank as well as the conventional bank. Five selected economic sector funded by islamic banks are business services, others, trade, hotel and restaurant, construction, social service, while those funded by conventional banks are trade, manufacturing, finance, agriculture and construction.

The results of the unit root tests are presented in Table 1. It was conducted in the log level and first difference, and in both cases it uses intercept, and trend and intercept. It can be seen that most of the variables are stationary in the first difference or simply, are I(1) process. In the case of LIPI, both ADF and PP tests (using trend and intercept) show that it is an I(0) process, while based on the intercept, the result shows that it is I(1). Other variables such as Islamic monetary instrument show I(1) in ADF and PP (with trend and intercept), while using intercept it is found to be stationary in level. All other variables are I(1) in ADF or PP either in trend & intercept or intercept alone.

Based on these tests, in general, it can be concluded that all the variables are I(1) process. Confirming the data suitability by unit root test for VAR approach, we continue to examine whether there exists long-run equilibrium among the variables by conducting the JJ cointegration test.

Table 5  
Unit Root Tests

	ADF				PP	
	Level		1st Diff		Level	1st Diff
	LL	Trend&itcp	LL	Trend&itcp	Trend&itcp	Trend&itcp
	AIC	Itcp	AIC	Itcp	Itcp	Itcp
lconst	1	-1.88	0	-9.23***	-2.39	-9.25***
	2	-0.69	0	-9.31***	-0.77	-9.33***
litrade	1	-2.82	0	-12.6	-3.4**	-11.91***
	1	-2.16	0	-12.4***	-2.09	-11.65***
libusserv	0	-2.3	0	-8.04***	-2.36	-8.05***
	0	-0.31	0	-8.12***	-0.31	-8.13***
lisocserv	4	-1.46	3	-4.74***	-2.47	-9.72***
	4	-1.02	3	-4.76***	-1.12	-9.76***
liothers	1	-1.29	0	-10.3***	-2.36	-10.2***
	1	0.6	0	10.3***	0.06	10.17***
lagri	0	-3.24*	0	-8.74	-3.23*	-9.55***
	0	-0.64	0	8.81***	0.52	0.96***
lmanuf	6	-2.62	10	-3.20*	-1.57	-8.63***
	6	1.16	10	-2.87*	0.60	-8.65***
lconst	1	-2.28	9	-4.26	-1.70	-5.54***
	4	-1.46	3	-4.99***	-1.57	-5.46***
ltrade	0	-3.13	1	-7.35***	-3.03	-8.98***
	2	-0.97	1	-7.38***	-0.95	-9.02***
lfin	1	-1.3	0	-11.54***	-1.84	-11.18***
	1	-1.62	0	-11.52***	-1.67	-11.1***
Conmoninst	6	-1.92	5	-3.28*	-4.44***	-29.47***
	6	-1.96	5	-3.28**	-4.47***	-29.97***
ismoninst	0	-2.85	0	-8.51***	-2.82	-15.12***
	0	-2.89**	0	-8.53***	2.91**	-10.72***
lipi	0	-5.43***	10	6.51***	-5.44***	-16.61***
	1	-1.70	10	6.63***	-2.48	-15.6***
	*, **, *** are significant in 10%, 5%, 1% respectively					



Cointegration test results

The lag length used in conducting the cointegration test was based on criteria which is commonly used in many empirical studies such as AIC. Based on the optimal lag length selection criteria, the chosen lag length is four. The results of cointegration test based on lag four are shown in Table 6. The cointegration test results (for the Islamic monetary instrument) suggest that there exist long run co-movement among the variables. Based on the Trace statistics, there exist four cointegrating equations as shown by the value of Trace statistics which is greater than the 5 percent critical value (248.3 > 124.4, 169.8 > 94.15, 102.3 > 68.5, 52.19 > 47.21). Similarly, the Max-Eigen statistics show that there are three cointegrating equations since the values are greater than the 5 percent critical value (78.49 > 45.28, 67.58 > 39.37, 50.1 > 33.46, 21.49 > 20.97).

Table 6  
Cointegration test for Islamic monetary instrument

Model	Null Hypothesis	Trace Statistic	5 % Critical value	Max Eigen Statistic	5 % Critical value
$r \leq 0$	0.778988	248.3856	124.24	78.49606	45.28
$r \leq 1$	0.727394	169.8896	94.15	67.58583	39.37
$r \leq 2$	0.618479	102.3037	68.52	50.10664	33.46
$r \leq 3$	0.381385	52.19711	47.21	24.97416	27.07
$r \leq 4$	0.338632	27.22294	29.68	21.49909	20.97
$r \leq 5$	0.100471	5.723849	15.41	5.505949	14.07
$r \leq 6$	0.004182	0.2179	3.76	0.2179	3.76

The normalized cointegration equation is represented as follows:

$$\begin{aligned} \text{LIPI} = & -0.011 \text{ ISMONIST} + 0.237 \text{ LIBUSSERV} - 0.14 \text{ LIOOTHERS} + 0.17 \text{ LITRADE} \\ \text{SE} & (0.00435) \quad (0.117) \quad (0.04) \quad (0.09) \\ & -0.75 \text{ LICONST} + 0.902 \text{ LISOCSEV} \\ \text{SE} & (0.136) \quad (0.133) \end{aligned}$$

From the model above, it can be inferred that there are association between variables to the real output. The negative sign of ISMONINST would mean that when Islamic monetary instrument increases, the IPI would decrease. This can be explained by theory which says that in an attempt to slow down an economy, the central bank can raise the policy interest rate. trade, hotel and restaurant and social service shows positive significant to the IPI

For the conventional monetary instrument, it shows that based on the trace statistics, there are four integrating equations as shows by the value of trace statistics which is greater than 5 percent critical value ( 248 > 124, 165.3 > 94.15, 107.3 > 68.5, 58.5 > 47.21). max eigen value reveals three cointegrating equation ( 82.6 > 45.28, 58.04 > 39.37, 48.8 > 33.4, 30.7 > 27.07)

Table 7  
Cointegration test for Islamic monetary instrument

Model	Null Hypothesis	Trace Statistic	5 % Critical value	Max Eigen Statistic	5 % Critical value
$r \leq 0$	0.795925	248.0378	124.24	82.64184	45.28
$r \leq 1$	0.672521	165.3959	94.15	58.04928	39.37
$r \leq 2$	0.609019	107.3466	68.52	48.83306	33.46
$r \leq 3$	0.446335	58.51358	47.21	30.74216	27.07
$r \leq 4$	0.292103	27.77142	29.68	17.96375	20.97
$r \leq 5$	0.161689	9.807669	15.41	9.171054	14.07
$r \leq 6$	0.012168	0.636614	3.76	0.636614	3.76

The normalized cointegration equation is represented as follows:

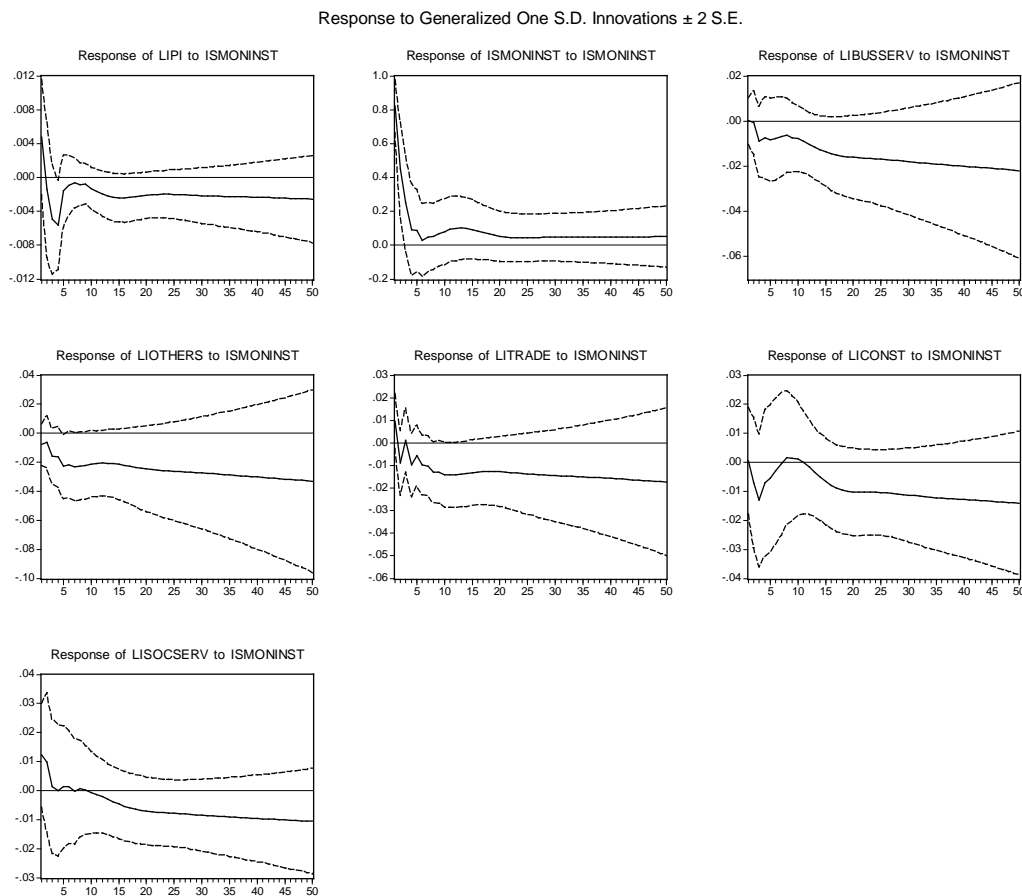
$$\begin{aligned}
 \text{LIPI} &= 0.0003 \text{ CONMONINST} - 0.037 \text{ LTRADE} - 0.486 \text{ LMANUF} - 0.089 \text{ LFIN} \\
 \text{SE} & \quad (0.002) \quad \quad \quad (0.144) \quad \quad \quad (0.100) \quad \quad \quad (0.012) \\
 & +0.39 \text{ LAGRI} + 0.22 \text{ LCONST} \\
 & \quad (0.13) \quad \quad \quad (0.06)
 \end{aligned}$$

The model above shows that conventional monetary instrument is not significant in explaining the LIPI. The coefficient of CONMONINST which is 0.0003 and the standard error which is 0.002, resulted to the t statistics of 0.15. Certainly this is below even 10% critical value. Hence the CONMONINST is not significant.

#### Impulse Response Functions

The IRF allow for the analysis of the impact of a shock on both monetary policy indicators on the respective variables. In the context of this study, the IRF shows the magnitude and timing of the responses of the objective variables which is the economic sectors to a shock in the monetary policy variables (ISMONINST and CONMONINST). This enables a comparison of the extent of responses of the objective variables to the policy shocks. In all cases, the IRFs are reported over the 50-month horizon. In determining whether the economic sectors are sensitive to the shocks of the monetary policy, we analyze the nexus of shocks originating from the monetary policy indicator to the real economy as well as the five respective economic sectors.

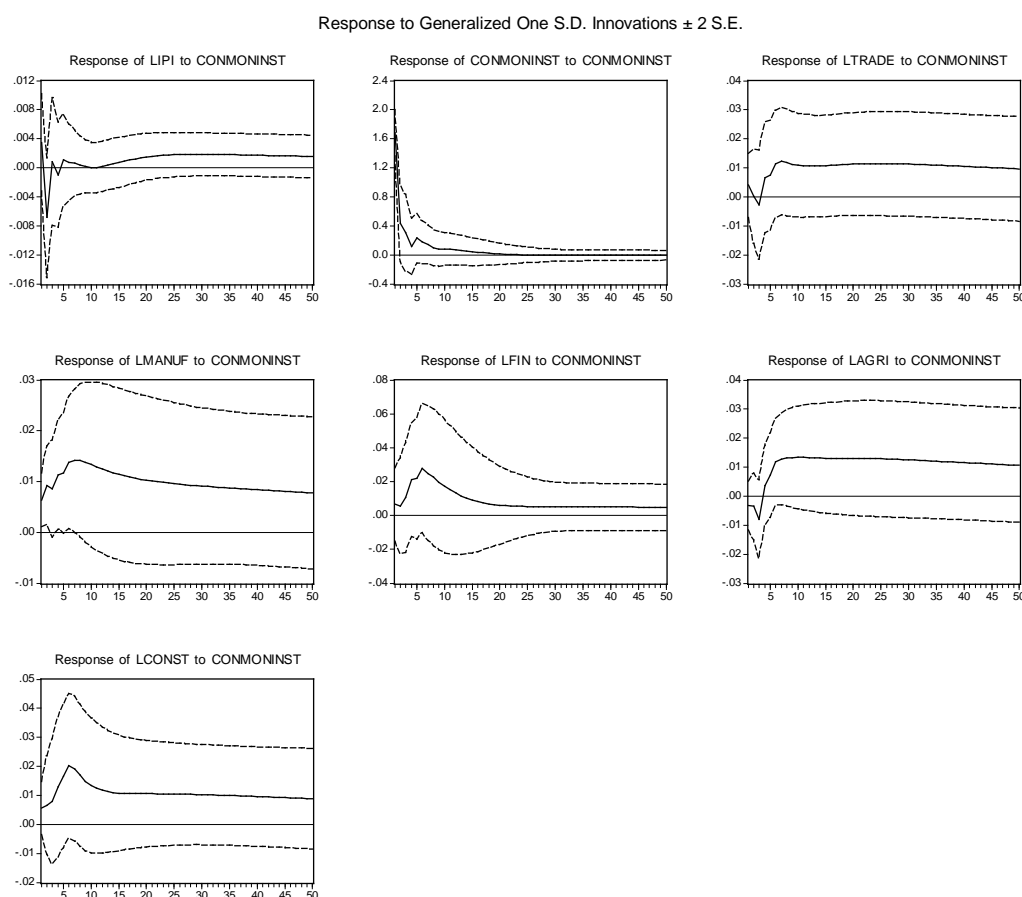
**Figure 1**  
**Impulse response Function**  
**Responses of IPI and Economic sectors on the shock of Islamic Monetary Instrument**



For the case of the shock of the Islamic monetary instrument (ISMONINST) to the output as represented by LIPI, as shown in figure 1, it reveals that LIPI response negatively. This implies that if ISMONINST increases, the overall economic activity will decrease. This supports the theory that if a central bank adopts a tight money policy (the increase in rate), it affects the ability of the firms to pay back the financing. Hence, firms are reluctant to renew or extend the financing from the Islamic banks.

Having known the relationship of the Islamic monetary policy to the output in general. It is interesting to see the response of the specific sector to the shock of the ISMONINST. The same figure reveals that the response of the sector of others (LIOOTHERS) is negative to the shock of the Islamic monetary policy (ISMONINST). It means that if a central bank decides to decrease the Islamic monetary rate, then the performance of this sector is increasing. Other sectors which respond significantly to the shock of the Islamic monetary rate are trade, hotel, and restaurant sector (LITRADE). Similar to that of the sector of others (LIOOTHERS), this sector responds negatively to the shock of ISMONINST. This implies that if a central bank decides to increase the ISMONINST (tight monetary policy), then the trade sector will decrease. In contrast, we observe the insensitivities of social service, business service, and construction.

Figure 2  
Impulse response Function  
Responses of IPI and Economic sectors on the  
shock of conventional Monetary Instrument



Having discussed the impulse response of the Islamic monetary instrument, it is interesting to see the response of the economic sectors on the shock of the conventional monetary instrument (COMMONINST). From Figure 2, it shows that the shock of COMMONINST does not influence the IPI. It means that whenever the IPI increases or decreases, it does not affect the performance of the overall economy as indicated by the IPI. In the case of the specific sector, Figure 2 reveals that only the manufacturing sector has a positive response to the shock of COMMONINST. This means that if COMMONINST is increasing, it is followed by an increase in the manufacturing sector. The probable explanation can be seen from the argument by Miranda (2007, p269). She mentioned that

*“In addition, the appreciation of the exchange rate could generate higher GDP growth through indirect pass-through, as the appreciation will encourage consumption and investment. Indeed, at a certain level, exchange rate appreciation would support export of manufacturing products with high import content.”*

This implies that if the rupiah depreciates to the US dollar, it discourages consumption and investment. Demand for loans by manufacturing companies will certainly drop. The central bank would not let the rupiah depreciate even further as this will affect other firms which have different characteristics. In order to do so, the central bank will increase the policy

rate so as to encourage the consumption and investment by companies. The objective is to strengthen the rupiah against US dollar. By increasing the policy rate, investment is expected to increase particularly for the manufacturing sector with high import content. In other word, for this type of manufacturing, they prefer to have appreciation in rupiah as oppose to the depreciation. In the case of rupiah deteriorating, central bank tends to increase the policy rate so as to reduce the capital flight that lead to the strengthen the rupiah. When the rupiah strength, this firm is in advantage and continue to borrow fund from banks. This may be the reason of the positive response of the manufacturing sector on the shock of the COMMONINST. Other sectors would not seems to be significantly response by it.

### Conclusion

The present paper discusses the sensitivity between sectoral economics activities and the monetary policy rate in a multivariate framework in an attempt to seek the answer of an important question: are monetary policy shocks affecting sectoral economics differently? This paper is important particularly for other country which is keen to adopt the dual banking system as in the case of Indonesia.

Sectoral economic activities in this case refer to the sector which is funded by islamic banks as well as conventional banks. Monetary policy rate adopted in this study is islamic monetary instrument (ISMONINST) as well as conventional monetary instrument (COMMONINST). Technically, we would seek the response of the LIPI as representing the overall economic activities to the shock of ISMONINST and COMMONINST and moreover, we extend the discussion by looking at the response of the specific sector on the shock of both monetary policy rates. This study adopts Vector AutoRegressive concept which data start from June 2006 to February 2011 (58 observations).

Result of the sensitivity of the economic sector to the islamic monetary instrument shows that generally LIPI is response negatively to the ISMONINST. This means that when ISMONINST increase, overall economic activities as represented by LIPI decrease. This is consistent with the previous finding by Sukmana and kassim (2010) in the case of Malaysia that islamic banks play a role in transmitting the monetary policy to the real sector. Their study shows that monetary policy supports the real effects.

In the context of the specific economic sector funded by islamic banks. Two sectors responses significantly, namely other sector and trade, hotel and restaurant sector. Other sector defines as individual customers who are seeking financing from Islamic banks for their own consumptive purposes such as housing and motor vehicle financing. The result above implies that individual customers are very sensitive to the islamic rate. Whenever islamic monetary rate is high, customer may alter their financing from islamic banks to borrowing from conventional banks. They tend to look for a cheaper price. In actual fact, this is happening<sup>2</sup>. The unloyal customers can also be found in the case of liability side of the islamic banks. This is called displacement commercial risk. It is a risk whereby depositors will choose banks which offer attractive rates of return. For instance, when interest rate increases, Islamic bank customers will withdraw their funds and deposit into conventional

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<sup>2</sup> Discussion held between the author and some islamic bankers reveal that islamic banking customers are not very loyal.

conventional banks. A study done by Sukmana and Kassim (2010) reveals that displacement risk in Malaysian Islamic banks really exists. They argue that in the case where interest rates on deposits are relatively attractive as compared to the profit rates given to Islamic bank depositors, one would likely see a significant deposit withdrawal from Islamic banks to conventional banks. This suggests that the Islamic bank depositors, whether Muslims or non-Muslims, tend to have profit motive in their saving behaviour.

The second sector which needs to be put in attention is on the trade, hotel and restaurant sector. This sector response negatively to the shock of the Islamic monetary instruments (ISMONINST). This means that if ISMONINST increases, this sector decrease. It is argued that among three subsectors of trade, hotel and restaurant, we believe that trade is dominant among others. Moreover given the consistent highest proportion of murabahah (see table 8), then there is high probability that the subsector of trade is using the contract of murabahah.

Table 8  
Islamic Financing based on Type of Contracts (%)

Type of Contract	2000	2001	2002	2003	2004	2005	2006	2007
Musyarakah	0.025	0.026	0.018	0.055	0.111	0.125	0.114	0.158
Mudharabah	0.298	0.196	0.152	0.144	0.179	0.205	0.199	0.200
Murabahah	0.610	0.693	0.709	0.715	0.665	0.623	0.617	0.592
Salam	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Istishna	0.059	0.082	0.067	0.054	0.027	0.018	0.016	0.013
Qardh	0.000	0.000	0.000	0.000	0.009	0.008	0.000	0.000
Others	0.008	0.002	0.053	0.032	0.009	0.021	0.053	0.038

Source: Bank Indonesia, Shariah Banking Development Report, Various Issues

If this is the case, then it implies that this sector is very volatile. It means that whenever Islamic monetary instrument increase (expensive), trader would seek other cheaper loan, that is from conventional banks.

Given this fact, it is necessary to start with equity based contract such as mudharabah, and musyarakah as compare to the debt based contract such as murabaha. Equity based contract is believed to give fairness not only to the trader but also to the Islamic bankers. Whenever the customer gains a lot of profit, customer has also share this profit to the Islamic banker according to the pre agreed ratio. Conversely, if customer is in loss, he has also share to the Islamic bank according to the contributed capital. This is a typical of musyarakah (equity based contract). For the case of conventional monetary instrument, it is shown that, manufacturing sector is sensitive to the movement of the conventional monetary instrument.

General conclusion is that, as the central bank, it is necessary to look into the characteristic of the economic sector. The sensitivity of the economic sectors response differently on the shock of ISMONINST and CONMONINST. For the sector which produces exported products, central bank should consider the movement of the exchange rate before imposing a certain level monetary rate. For the companies in this sector, appreciation of the rupiah should be maintained at the certain level (by monetary rate) in which it does not significantly affect other manufacturing companies which have a lot of imported products

Moreover, other sector which is financing to the rental/individual (other sector) has to be put in greater attention. This is because individual is believed to be unloyal to the islamic banks. They are still looking at the best rate for financing (profit motive). Long term project needs to be taken as to shift the profit motive individual to religious motive individual.

## References

Alam, T and Waheed, M (2006),” Sectoral Effect of Monetary Policy: Evidence from Pakistan, The Pakistan Development Review

Arnold, I.J.M and Vrugt, E.B, (2002),” regional Effect of Monetary policy in the Netherlands”. International Journal of Business and Economics, Vol. 1, No.2, 123-134

Bank Indonesia. (2007). *Laporan Perkembangan Perbankan Syariah Tahun* [Shariah Banking Development Report ]. Various issues Jakarta: Author.

Bank Indonesia. *Statistik Perbankan Syariah Bank Indonesia* [Shariah Banking Statistic]. Jakarta: Author. Various Issues

Bernanke, B., and M. Gertler (1995) Inside the Black Box: the Credit Channel of Monetary Policy. *Journal Economics Perspectives* 9:4, 27–48.

Carlino, G. and R. DeFina (1998) The Differential Regional Effects of Monetary Policy. *Review of Economics and Statistics* 80, 57–87.

Enders, W. (1995). *Applied Econometric Time Series*. New York: John Wiley & Sons, Inc.

Ganley, J. and C.Salmon (1997),” The industrial impact of monetary policy shocks: some stylized facts, bank of England working paper, Bank of England, london

Gertler, M. and S. Gilchrist (1993) The Role of Credit Market Imperfections in Monetary Transmission Mechanism: Arguments and Evidence. *Scandinavian Journal of Economics* 95, 43–64.

Harris, R. (1995), *Using Cointegration Analysis in Econometric Modelling*, Prentice Hall.

Ibrahim, M (2005),”Sectoral Effects of Monetary Policy: Evidence from Malaysia” Asian Economic Journal 2005. Vol 19 no 1

Miranda. S. Goeltom. (2007). *Essays in Macroeconomic Policy: The Indonesian Experience*. Jakarta: Gramedia Pustaka Utama Publisher.

Pesaran, M.H. and Shin, Y. (1998), “Generalized impulse response analysis in linear multivariate models”, *Economic Letters*, Vol. 58, pp. 17-29.

Sofyan. S Harahap., & Yuswar Z. Basri. (2003). History and Development of Islamic Bank in Indonesia. Paper presented at International Islamic Banking Conference 2003, Kuala Lumpur.

Sukmana, R and Kassim, S (2010),” Roles of the Islamic banks in the monetary transmission process in Malaysia,” international Journal of Islamic and Middle Eastern Finance and Management Vol 3 No 1, 2010 pp 7-19. Emerald Group Publishing Limited