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SOURCE OF PROCYCLICALITY IN DUAL BANKING SYSTEM: THE CASE OF INDONESIA

Naahilah Hunafaa' Al-Qudsy, Khoirul Umam, Atika Rukminastiti Masrifah[1]

(naahilah.haq@gmail.com, khoirul.umam79@gmail.com)

ABSTRACT

The global crisis in 2008 is driven by the credit bubble until leaves the impact of economy and financial sector in many countries, including Indonesia. The behaviour of banks in excessive lending is referred to procyclicality. If loans are not balanced with the needs of the economy, it will lead to imbalances in economic growth that could lead to a financial crisis. Theoretically, Islamic banking does not cause credit bubble because it is more allocate the financing to the real sector of economy. The purposes of this research are to know whether the level of procyclicality of conventional and Islamic banking in Indonesia, and to know the determinant of procyclicality of conventional and Islamic banking in Indonesia. The researcher uses a quantitative approach. This study uses time series data, which begin monthly from the year 2013M01 - 2017M12. The data is taken from the Economic and Financial Statistics Indonesia (SEKI-Bank Indonesia), the Central Statistics Agency (BPS), and the Financial Services Authority (OJK). The method of analyzing data is *Vector Auto-regression* (VAR) and *Vector Error Correction Model* (VECM). The results of this study indicate that conventional banking behave on procyclicality. On the contrary, Islamic banking does not behave procyclicality. The determinant of procyclicality on conventional banking in short-term is the Total Credit (CRE), and also in long term is the Total Credit (CRE). Then the determinant of procyclicality on Islamic banking in short-term is the Total Financing (FIN), while in long term is the Sharia of Bank Indonesia Certificates (SBIS).

Keywords: *Crisis, Procyclicality, Banking.*

INTRODUCTION

The global crisis that occurred in 2008 in the United States has proven the fragile banking system. The financial crisis is pushed by inflating the credit turned into a global crisis and has caused the economy down.[2] The impact of crisis is not only interferes the performance of the stability in the financial sector, but the

[1] Kampus Pusat UNIDA Gontor, Jl. Raya Siman Km. 06, Siman, Ponorogo Jawa Timur, Telp. +62 352 483762 Fax. +62 352 488182.

[2] Kementerian Sekretarian Negara Republik Indonesia, ''*Kebijakan Pemerintah Dalam Mengatasi Krisis Keuangan Global'',* dalam www.setneg.go.id/ diakses pada tanggal 10 Mei 2015.

serious impact of crisis is on the real sector.[3] The global crisis in 2008 still leaves an impact on the economic and financial sector in various countries including in Indonesia. This is because Indonesia is a country that is still very profitable on a flow of funds from foreign investors.[4] The global crisis moves the foreign investors, which withdrew their funds from Indonesia and resulted on the weakness of value of the currency.

One factor of the financial crisis in 2008 was the encouragement of the credit bubble. This credit bubbles arises from excessive banking in lending which is called by procyclicality. Generally, procyclicality banks are followed by an increasing in a risk taking behaviour of credit. It can be shown from the risk of imbalance between lending to the needs of the economy.[5] The imbalance of credit with the needs of the economy will lead to imbalances on economic growth. Furthermore, the declining of economic growth will lead to financial crisis.

Based on that problem, the Central Bank is starting to focus on macro-prudential policy. Macro-prudential policy is the policy which its main purpose is to maintain the financial stability system through limiting the increase in systemic risk. When the financial system is stable, the systemic risks can be minimized. In addition, the macro-prudential policy can also prevent the shocks to stability of the economy.[6] To achieve the purposes of macro-prudential policy, the Central Bank as a monetary authority released the macro-prudential policy instruments.

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[3] Juda Agung, *''Mengintegrasikan Kebijakan Moneter dan Makroprudensial : Menuju Paradigma Baru Kebijakan Moneter di Indonesia Pasca Krisis Global'',* Working Paper No.07, Bank Indonesia, 2010. p.4.

[4] Enggal Sriwardiningsih, ''Dampak Penularan Krisis Global Terhadap Aliran Investasi Asing Di Indonesia'', *Journal The WINNERS, Vol. 11 No. 2, Fakultas Ekonomi dan Bisnis, Universitas Bina Nusantara*, Jakarta, September 2010, p.135

[5] Bank Indonesia, *Kajian Stabilitas Keuangan*, 2014, p. 29

[6] Ida Nuryana, ''Assesment Efektifitas Instrumen Makroprudensial Dalam Mengurangi Risiko Kredit Perbankan Di Indonesia (Studi Pada Perbankan Go Public Periode 2012-2015)'', *Jurnal Ilmu Manajemen dan Akuntansi* (Vol. 5 No. 1 April 2017), Malang, p. 57

Indonesia uses a dual banking system, where conventional banking and Islamic banking go hand in hand. In some aspects, Islamic banking has the advantage to maintain financial stability in Indonesia. This is proven by previous research which states that Islamic banking can restore financing during the financial crisis. At the time of the financial crisis, the rate of return of Islamic banking financing actually increased. Apart from that, Islamic banking is also more prudent in extending financing as evidenced by the low number of Islamic banking financing. This is because Islamic banking financing refers to the development of the real sector by taking into account the benefits of financing from their customers. In contrast to conventional banking which refers to loans with interest rates regardless to the benefit of each customer's credit. With the existence of the interest rate, it increases the margin on loan and credit is getting too much. Furthermore, the increasing loan increases the high value of index of industrial production. It can result on the banks are behave procyclicality and even encourage financial crises.

Based on the background issue, it needs to be researched whether conventional banking and Islamic banking in Indonesia behave on procyclicality. Then it is known determinant of procyclicality levels that occur in banking in Indonesia. The purposes of this research are to know whether the level of procyclicality of conventional and Islamic banking in Indonesia, and to know the determinant of procyclicality of conventional and Islamic banking in Indonesia.

BANKING IN INDONESIA

Banking is the financial institution that handles money, including keeping it for saving or commercial purposes, and exchanging, investing, and supplying it. A bank is a place that safeguards customers' deposits and uses their deposits to lend. Banks offer the additional services that improve the lives of customers and help businesses thrive. The fundamental functions that banks perform impact the

economies of their communities and the country.[7] One of the functions of the bank is a financial intermediary. That is mean, banks raise funds, but on the other hand, the bank disburses fund also. Distribution of funds is known as the allocation of funds. Allocating funds can be realized in the form of a loan or known as credit and financing. The allocation of fund itself means reselling the collection of funds in the form of deposits. Selling of this fund is intended to allow banks to gain optimal as possible.[8]

The banking system in Indonesia since 1992 until today embraces *the dual banking* system. Conventional bank or commonly called the Commercial Bank and Bank Syariah or Islamic Bank are conducting business operations side by side. Conventional Banking and Islamic Banking have products that offer in terms of funding, financing and other banking services. Types of products in Islamic banking and Conventional banking are offered in terms of demand deposits, saving deposits, time deposits, and bonds or commonly called sukuk in Islamic banking system. In terms of the financing include credit.[9]

Table 1. Basic Difference Between an Islamic Bank and a Conventional Bank

NO	ISLAMIC BANKING	CONVENTIONAL BANKING
1	The relation between Islamic Bank and Customer is one of participation in risks and	The relationship between bank and customer is that of debtors and creditors

[7] American Bankers Association, *''The Business of Banking: What Every Policy Maker Needs to Know''*, (Amerika, Desember 2013) p.7

[8]Achasih Nur Chikmah, *''Analisis Perbandingan Sistem Pemberian Kredit Bank Konvensional dengan Pembiayaan Bank Syariah pada Usaha Mikro Kecil dan Menengah (UMKM)''*, Universitas Negeri Surabaya, Surabaya. p. 4-6

[9] Ali, Zainuddin. (Ed.) 2008. *Hukum Perbankan Syariah*. Jakarta: Sinar Grafika, p.2-4

	rewards.	
2	There is no previously fixed invested with the bank, and it is same of the case when banks provide funds	There is pre-agreed fixed return on the funds either provided by the bank or invested by the customer
3	An Islamic bank keeps capital funds and investor's funds segregated, in order not mix up the profit earned on its own funds balances.	The conventional banks pool together all the funds
4	Islamic banks do not provide finance by offering cash loans, but through Musharakah, Mudharabah, etc.	The conventional banks offer provide finance totally by offering cash loans.
5	Islamic banking is primarily equity based	The conventional system is as a whole interest based
6	The Islamic system is value oriented.	This system is value neutral

BANKING PROCYCLICALITY

As intermediary institutions, the banking industry was instrumental in disbursing credit to the public. Bank receives and subsequently redistributes funds in the form of credit to the public. Procyclicality an interaction between the financial system and the real economy are mutually reinforcing. Such interactions tend to amplify the amplitude of the business cycle; stimulate the economy to

grow faster when the cycles of expansion and contraction cycles when the economy weakens.[10] Banking procyclical excessive behavior, especially in the economic conditions *booming* can trigger excessive credit growth. This was proven by some of the literature that is often associated with a key factor that contributed to the crisis in the financial sector, especially in developing countries.[11]

A common explanation for the procyclicality of the financial system has its roots in information asymmetries between borrowers and lenders. When economic conditions are depressed and collateral values are low, information asymmetries can mean that even borrowers with profitable projects find it difficult to obtain funding. When economic conditions improve and collateral values rise, these firms are able to gain access to external finance and this adds to the economic stimulus. This explanation of economic and financial cycles is often known as the "financial accelerator". The source is the limitations in the measurement of risk. The size of the risks and assumptions used for the banking sector in general dimension of time regardless of a short-term business cycle as a whole.[12]

MACRO-PRUDENTIAL INSTRUMENTS

The macro-prudential policy is set by Central Bank which has a goal to reduce systemic risk that caused by the behavior of the banking system through excessive lending and led to procyclicality. Macro-prudential policy is *a countercyclical* policy aimed to maintain the resilience of the financial sector as a whole to be able to address systemic risk due to the failure of institutions or

[10] Ida Nuryana, ‘*’Assesment Efektifitas Instrumen Makroprudensial Dalam Mengurangi Risiko Kredit Perbankan Di Indonesia (Studi Pada Perbankan Go Public Periode 2012-2015)*’’, Jurnal Ilmu Manajemen dan Akuntansi Vol. 5 No. 1 April 2017, Malang. p.57

[11] Kartika Pakpahan, dalam skripsi berjudul ‘‘Analisis Faktor-Faktor Yang Mempengaruhi Prosiklikalitas Sektor Perbankan di Indonesia Periode 2009:Q1–2013:Q4’’ *Fakultas Ekonomi dan Bisnis*, Universitas Lampung, 2015, p.21-23

[12] Claudio Borio, Craig Furfine and Philip Lowe, ‘’Procyclicality of the Financial System and Financial Stability: Issues and Policy Options’’, *BIS papers No.1*, p.1

financial markets impacting create a crisis.[13] New macro-prudential policy term sticking and concern since the onset of the 2008 global financial crisis policy macro-prudential also aims to maintain the stability of the financial system. Financial system stability is a condition that allows the national financial system to function effectively and efficiently, and able to withstand internal and external vulnerability so that the allocation of funding or financing sources can contribute to the growth and stability of the national economy.[14]

To meet all the objectives of macro-prudential policies have controlling instruments. Basically, macro-prudential policy instruments are arranged by adjusting the conditions of each country. However, some macro-prudential instruments are implemented in response to the mandate of international standard.

During this time, the instrument is used in macro-prudential policy implementation in each country is different. For example, Indonesia applied at least 6 (six) macro-prudential instruments aimed at identifying and preventing the risks inherent in the financial system that could potentially lead to the creation of a systemic risk. Until the end of 2013, Bank Indonesia has released four (4) macro-prudential policy instruments, including: *loan-to-value* (LTV) for ownership of home loans and advances for the financing of vehicles; The ratio of loans to deposits (GWM-LDR) to strengthen the banking intermediation; Net Open Position (NOP) to dampen the systemic risk associated with *currency mismatch* in bank due to increased exchange rate volatility and outflows of foreign capital inflows in Indonesia; *Credit Base Rate Transparency* (CBRT) aims to improve good governance in the banking industry and reduce the credit risk exposure in the banking due to promotions and competitive environment in the middle of high credit growth. In 2013, Bank Indonesia also released two (2) other

[13] Bank Indonesia. *Booklet Perbankan Indonesia 2012*. Diunduh dari http://www.bi.go.id/id/publikasi/perbankan-dan-stabilitas/booklet-bi/Pages/bpi_2012.aspx

[14] Bank Indonesia, Mengupas Kebijakan Makroprudensial, (Jakarta : Bank Indonesia, Departemen Kebijakan Makroprudensial) Agustus 2016. p.4

macro-prudential instruments that will come into force at the beginning of 2016 the *countercyclical capital buffer* (CCB), and *capital surcharges* (CS).[15]

LTV policy formulation on mortgages and DP on Credit of Motor motivated by the growth in the property sector credit and vehicle high enough at the time, so that potentially lead to the formation of systemic risk due to take excessive risk behaviors.[16] Policies minimum limit on LTV for mortgages and DP for Credit of Motor was first implemented in 2012. To date, the policy has been adjusted three (3) times in 2013, 2015 and 2016, namely to make changes to the amount of the minimum value of LTV and DP adjusted for the economic cycle and credit growth. The last change made is easing (expansion) in order to maintain the momentum of economic growth through increased intermediation function, so that the bank can disburse more credit.[17]

MONETARY INSTRUMENTS

Monetary policy is the action taken by monetary authorities to influence the money supply and credit which in turn will affect the economic activities of the community.[18] The aim of monetary policy is mainly for economic stabilization can be measured by employment, price stability and a balanced international balance of payments. If the stability in economic activity disrupted, then monetary policy can be used to restore the disturbed conditions (stabilization measures). Monetary policy is part of macroeconomic policy also includes other policies to influence economic activity.

[15] Adiwarman Karim., *''Kajian Finance To Value Pembiayaan Kendaraan Bermotor Perusahaan Pembiayaan Syariah''* Otoritas Jasa Keuangan., Jakarta., p. 5

[16] Bank Indonesia, Mengupas Kebijakan Makroprudensial, (Jakarta : Bank Indonesia, Departemen Kebijakan Makroprudensial) Agustus 2016. p.46

[17] *Ibid*, Mengupas Kebijakan Makroprudensial, ……. p.47

[18] Ascarya, ''Instrumen-Instrumen Pengendalian Moneter'', (Jakarta : Pusat Pendidikan dan Studi Kebanksentralan (PPSK) Bank Indonesia) 2002. p.2

Monetary policy can use the instrument, either directly or indirectly. Direct instrument is an instrument of monetary control that can directly affect the desired operational target by the central bank. The indirect instrument is an instrument of monetary policy can indirectly affect the desired operational target by the central bank.[19] Instruments of monetary control are tool or medium used for monetary operations by the central bank to influence the operational objectives and the final target that has been set.[20] In the conduct of monetary policy, central banks typically use a variety of tools as an instrument in achieving objectives. The instruments used are the Reserve Requirement (RR); Open Market Operations (OMO); Discount Rate; Foreign Exchange Intervention; Moral suasion.

Some instruments of monetary policy are closely linked to macro-prudential policy instruments. One of them is *the Reserve Requirement (RR)*, which is used as an instrument of credit control, reduction of systemic risk, and the allocation of credits for liquidity. In the context of credit control, RR impact on the price and availability of credit is determined by the market structure of the banking system, financial sector development, and design policy for *the Reserve Requirement.* Thus, the bank has a client registered on both sides of bank balance sheets. Therefore, the effect of RR depends on the structure of the banking system market.[21]

METHODOLOGY

This research uses a quantitative approach that emphasizes research data in the form of numbers. The type of data in this study is secondary data. This study uses time series data *(time series)* months of the year 2013M01 - 2017M12 taken from the Indonesian Banking Statistics (SPI-OJK) and Statistics of Islamic

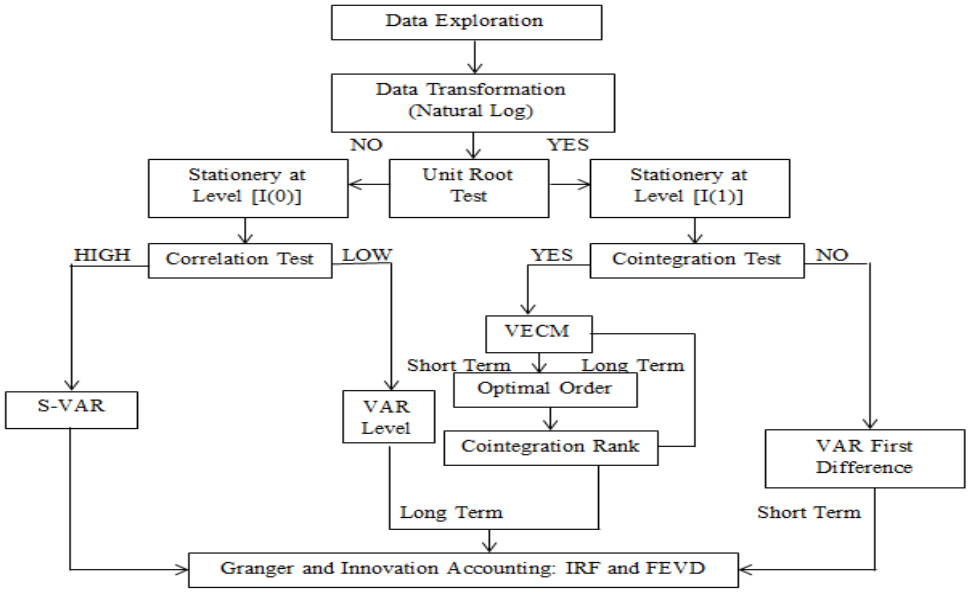
[19] *Ibid*, ‘’Instrumen-Instrumen Pengendalian Moneter’’,…….... p.5

[20] Perry Warjiyo, Solikin M. Juhro, ‘’Kebijakan Bank Sentral Teori dan Praktik’’, (Jakarta:Rajawali Press) 2016.

[21] Diah Utari, et all., ‘’Pertumbuhan Kredit Optimal Dan Kebijakan Makroprudensial Untuk Pengendalian Kredit’’, (Jakarta ; Working Paper Bank Indonesia) Desember 2012. p.12-13

Banking (SPS-OJK), Statistics of Economics and Trade (BPS) and the Statistics of Indonesia Economic and Financial-Bank Indonesia (SEKI-BI). Generally, the variables can be divided into dependent and independent variables. Industrial Production Index (IPI) is the dependent variable. While the variable total loans (CRE), Loan To Value (LTV), the Non-Performing Loan (NPL), Certificates of Bank Indonesia (SBI), the total financing (FIN), Financing To Value (FTV), Sharia of Bank Indonesia Certificates (SBIs) and Non-Performing Financing (NPF) are an independent variable.

This study uses a Vector Error Correction Model (VECM). VECM (or Vector Error Correction Model) is a derivative of the VAR method. The reasons for using analysis of VAR or VECM is due to the impact procyclicality on conventional banking and Islamic banking in Indonesia is one of the factors the macroprudential policy to developments in the real sector, so it must be through a mechanism that generally cannot be impacted almost immediately, but it takes a certain period of time*(*lag*)* and because procyclicality on conventional banking and Islamic banking in Indonesia is something complex to be explained theoretically as interrelated with other economic instruments. They are some steps being taken in the methods of VAR and VECM, it described in the figure below:



Source: Ascarya, Atika, 2016.[22]

Figure 1. Stages Flow Method of Use VAR and VECM

Equation model to see the effect procyclicality of conventional banking to the IPI in Indonesia are as follows:

$$\ln IPI_t = \beta_0 + \beta_1 \ln CRE_t + \beta_2 \ln NPL_t + \beta_4 \ln SBI_t + \mu_t$$

Thus, the equation of the VAR model for determinants procyclicality on conventional banking in Indonesia is as follows:

$$\begin{bmatrix} \Delta lnIPI_t \\ \Delta lnCRE_t \\ \Delta NPL_t \\ \Delta SBI_t \end{bmatrix} = \begin{bmatrix} \beta_{10} \\ \beta_{20} \\ \beta_{30} \\ \beta_{40} \end{bmatrix} + \begin{bmatrix} \beta_{11}\ \beta_{12}\ \beta_{13}\ \beta_{14}\beta_{15} \\ \beta_{21}\ \beta_{22}\ \beta_{23}\ \beta_{24}\beta_{25} \\ \beta_{31}\ \beta_{32}\ \beta_{33}\ \beta_{34}\beta_{35} \\ \beta_{41}\ \beta_{42}\ \beta_{43}\ \beta_{44}\beta_{45} \end{bmatrix} \begin{bmatrix} lnIPI_{t-1} \\ lnCRE_{t-1} \\ NPL_{t-1} \\ SBI_{t-1} \end{bmatrix} + \begin{bmatrix} \mu_{1t} \\ \mu_{2t} \\ \mu_{3t} \\ \mu_{4t} \end{bmatrix}$$

Meanwhile, the equation for VECM models the determinant procyclicality on conventional banking in Indonesia is as follows:

$$\begin{bmatrix} \Delta lnIPI_t \\ \Delta lnCRE_t \\ \Delta NPL_t \\ \Delta SBI_t \end{bmatrix} = \begin{bmatrix} \beta_{10} \\ \beta_{20} \\ \beta_{30} \\ \beta_{40} \end{bmatrix} + \begin{bmatrix} \beta_{11}\ \beta_{12}\ \beta_{13}\ \beta_{14}\beta_{15} \\ \beta_{21}\ \beta_{22}\ \beta_{23}\ \beta_{24}\beta_{25} \\ \beta_{31}\ \beta_{32}\ \beta_{33}\ \beta_{34}\beta_{35} \\ \beta_{41}\ \beta_{42}\ \beta_{43}\ \beta_{44}\beta_{45} \end{bmatrix} \begin{bmatrix} lnIPI_{t-1} \\ lnCRE_{t-1} \\ NPL_{t-1} \\ SBI_{t-1} \end{bmatrix} - \lambda \begin{bmatrix} \mu_{1t} \\ \mu_{2t} \\ \mu_{3t} \\ \mu_{4t} \end{bmatrix}$$

Equation model to see the effect procycliclaity on Islamic banking to the IPI in Indonesia are as follows:

$$\ln IPI_t = \beta_0 + \beta_1 \ln FIN_t + \beta_2 \ln NPF_t + \beta_4 \ln SBIS_t + \mu_t$$

So the equation of the VAR model for determinants procyclicality on Islamic banking in Indonesia is as follows:

[22] Ascarya, Atika R. Masrifah., *Asistensi Analisis Pengaruh & Respon Variabel Dengan Vector Error Correction Model (VECM): Application with Eviews, (*Manual Metodologi 2014) p.5

$$\begin{bmatrix} \Delta lnIPI_t \\ \Delta lnFIN_t \\ \Delta NPF_t \\ \Delta SBIS_t \end{bmatrix} = \begin{bmatrix} \beta_{10} \\ \beta_{20} \\ \beta_{30} \\ \beta_{40} \end{bmatrix} + \begin{bmatrix} \beta_{11}\ \beta_{12}\ \beta_{13}\ \beta_{14}\beta_{15} \\ \beta_{21}\ \beta_{22}\ \beta_{23}\ \beta_{24}\beta_{25} \\ \beta_{31}\ \beta_{32}\ \beta_{33}\ \beta_{34}\beta_{35} \\ \beta_{41}\ \beta_{42}\ \beta_{43}\ \beta_{44}\beta_{45} \end{bmatrix} \begin{bmatrix} lnIPI_{t-1} \\ lnFIN_{t-1} \\ NPF_{t-1} \\ SBIS_{t-1} \end{bmatrix} + \begin{bmatrix} \mu_{1t} \\ \mu_{2t} \\ \mu_{3t} \\ \mu_{4t} \end{bmatrix}$$

Meanwhile, the equation for VECM models the determinant procyclicality on Islamic banking in Indonesia is as follows:

$$\begin{bmatrix} \Delta lnIPI_t \\ \Delta lnFRE_t \\ \Delta NPF_t \\ \Delta SBIS_t \end{bmatrix} = \begin{bmatrix} \beta_{10} \\ \beta_{20} \\ \beta_{30} \\ \beta_{40} \end{bmatrix} + \begin{bmatrix} \beta_{11}\ \beta_{12}\ \beta_{13}\ \beta_{14}\beta_{15} \\ \beta_{21}\ \beta_{22}\ \beta_{23}\ \beta_{24}\beta_{25} \\ \beta_{31}\ \beta_{32}\ \beta_{33}\ \beta_{34}\beta_{35} \\ \beta_{41}\ \beta_{42}\ \beta_{43}\ \beta_{44}\beta_{45} \end{bmatrix} \begin{bmatrix} lnIPI_{t-1} \\ lnFIN_{t-1} \\ NPF_{t-1} \\ SBIS_{t-1} \end{bmatrix} - \lambda \begin{bmatrix} \mu_{1t} \\ \mu_{2t} \\ \mu_{3t} \\ \mu_{4t} \end{bmatrix}$$

ANALYSIS OF RESULTS

Result of VECM Estimation for Conventional Banking

After doing the cointegration test, it can be seen that for the model of procyclicality on Conventional Banking and Islamic Banking has only 1 rank cointegration so that it can continue to test VECM. At this stage, the VECM test results will be used to determine the relationship of short-term and long-term variables. The variable is said to be significant in affecting other variables when the value of t-statistics on these variables is greater than t-table, or a probability value of t-statistics are smaller than the significance level of 5% is 1.671 or 1.045 (t-statistics> 1.671). The results are estimated in the model VECM test on Procyclicality of Conventional Banking in Indonesia can be seen in Table 2.

Table 2. Estimation Results of VECM for Conventional Banking

Jangka Pendek		
Variabel	Koefisien	T-Statistics
CointEq1	0.000696	[4.23450]

D(IPI(-1))	-0.896361	[-4.95799]
D(IPI(-2))	-1.17552	[-5.00113]
D(IPI(-3))	-0.847895	[-3.10447]
D(IPI(-4))	-0.632498	[-2.21648]
D(IPI(-5))	-0.392338	[-1.70706]
D(IPI(-6))	-0.093756	[-0.52482]
D(TOTAL_CREDIT(-1))	-0.339075	[-0.62517]
D(TOTAL_CREDIT(-2))	-0.029608	[-0.05446]
D(TOTAL_CREDIT(-3))	-0.717493	[-1.35843]
D(TOTAL_CREDIT(-4))	0.937476	[1.49860]
D(TOTAL_CREDIT(-5))	0.469901	[0.88352]
D(TOTAL_CREDIT(-6))	1.262114	**[2.57041]***
D(NPL(-1))	0.122876	[1.75008]
D(NPL(-2))	0.175802	[2.54694]
D(NPL(-3))	0.153775	[2.23546]

D(NPL(-4))	0.234902	**[3.37194]***
D(NPL(-5))	0.10994	[1.68087]
D(NPL(-6))	0.140978	[2.02278]
D(SBI(-1))	0.058069	**[3.46749]***
D(SBI(-2))	0.03967	[2.01832]
D(SBI(-3))	0.058215	[2.94317]
D(SBI(-4))	0.022602	[1.30399]
D(SBI(-5))	0.002122	[0.12033]
D(SBI(-6))	0.013373	[0.73470]
Jangka Panjang		
TOTAL CREDIT	280.5444	**[2.29447]***
NPL	-11.55244	[-0.39843]
SBI	-14.03705	**[-2.33936]***

Source: Data processed in Eviews 7

Description: (*) = significant at the 5% level.

Based on the results presented in Table 2 above in the short term, there are four significant variables on the level of five per cent (5%). The significant variables on the level of five per cent are the IPI at lag 2, Total Credit at lag 6, NPL at lag 4, and the SBI at lag 1. The short-term estimation results are indicated that the IPI variable lag 2 has negative effect on the level of five per cent for -1.17. This means, if there is 1 per cent increase in two month earlier, it will lower the IPI by -1.17 per cent in a time. Then, if there is an increase in total credit 1 per

cent in the previous 6 months, the IPI increases by 1.26 per cent in a time. Neither the NPL variable, if there is an increase in NPL 1 per cent at 4 month before, an increase of 0.23 per cent in a time. As for the variable SBI, if there is an increase of 1 per cent SBI at 1 month before, the IPI will increase by 0.05 per cent now.

Based on estimates VECM long term, all of the variables in the study showed the effect, as follows:

a. The Effect of Variable Total Credit to IPI

The variable total credit(CRE) has a positive and significant impact on the IPI amounted to 280.5444 in the long term. When there is an increase of 1 per cent credit, the IPI will increase by 280.54 per cent. This is supported by the results of research conducted by Jupri Piji (2017) which stated that total credit has positive and significant impact on Industrial Production Index (IPI). It means that conventional banks in the period 2013-2017 are procyclicality. It also shows the 2013 to 2017 period right after 5-10 years after the economic crisis total loans continued to rise, the exceeding credit to IPI indicates procyclicality on banking. In this case, the government needs to pay attention to the movement of conventional banks so that the incidence of the global crisis in 2008 did not recur. Moreover, the 2008 crisis was triggered by excessive bank lending.

b. The influence of NPL

The variable of Non-performing loans (NPL) has a negative effect and significant, it is amounted to -11.55244 in the long term. Which is an increase in NPL by 1 per cent, the IPI will decrease by -11.55 per cent. This is supported by the results of research conducted by Nugraha and Wilman San Marino (2016), which states that the NPL ratio has a negative effect and significant. NPL reflects the credit risk, the higher NPL ratio, the greater credit risk borne by banks. The higher of NPL makes bank more selective in lending. The higher of NPL will lead to increased risk and the impact on lending rates which impact on the reduction in credit demand and it is reduced of Industrial Production Index (IPI).

c. The Effect of SBI

The variable of SBI has a positive influence on IPI of 3.46749 per cent. It indicates that when the SBI increased 1 per cent, will improve the IPI by 3.46 per cent. When the increase of SBI is responded positively it can cause the credit sector becomes more controllable. However, financial markets are always characterized by asymmetric information between borrowers and lenders. Depositors cannot know with certainty the funds saved be used for any bank. Banks also cannot completely monitor of borrowers in using of loans. So that, when the monetary authority issuing policies, it makes for the banking sector need long time to respond the policy, credit consumer tends to have its own opinion and it see economic conditions at that time. This condition needs to be a concern for the authority of banks, it makes regulate the increase and decrease of SBI in Indonesia.

Test Results Estimates of VECM of Islamic Banking

After doing the cointegration test, it can be seen that for the model of procyclicality on Conventional Banking and Islamic Banking has only 1 rank cointegration so that it can continue to test VECM. At this stage, the VECM test results will be used to determine the relationship of short-term and long-term variables. The variable is said to be significant in affecting other variables when the value of t-statistics on these variables is greater than t-table, or a probability value of t-statistics are smaller than the significance level of 5% is 1.671 (t-statistics> 1.671). The results estimate in the model VECM test on Procyclicality of Conventional Banking in Indonesia can be seen in Table 3.

Table 3. Estimation Results of VECM for Islamic Banking

Jangka Pendek		
Variabel	Koefisien	T-Statistics
CointEq1	-0.029691	[-0.24194]

D(IPI(-1))	-0.596888	**[-2.51119]***
D(IPI(-2))	-0.644993	[-2.38609]
D(IPI(-3))	-0.475665	[-1.55617]
D(IPI(-4))	-0.300212	[-0.97033]
D(IPI(-5))	-0.094224	[-0.37186]
D(IPI(-6))	0.063126	[0.33068]
D(TOTAL_FINANCING(-1))	-0.060813	[-0.16702]
D(TOTAL_FINANCING(-2))	0.194934	[0.54510]
D(TOTAL_FINANCING(-3))	-0.163445	[-0.48676]
D(TOTAL_FINANCING(-4))	-0.019117	[-0.06081]
D(TOTAL_FINANCING(-5))	0.612285	**[2.06592]***
D(TOTAL_FINANCING(-6))	-0.299687	[-0.95771]
D(NPF(-1))	-0.005421	[-0.31414]
D(NPF(-2))	0.017318	[1.07857]
D(NPF(-3))	0.027995	[1.65912]

D(NPF(-4))	0.031388	[1.69598]
D(NPF(-5))	0.017296	[0.81249]
D(NPF(-6))	-0.049157	**[-2.35748]***
D(SBIS(-1))	-0.009609	[-0.57770]
D(SBIS(-2))	-0.008478	[-0.48647]
D(SBIS(-3))	0.025521	[1.43013]
D(SBIS(-4))	0.020084	[1.04386]
D(SBIS(-5))	-0.014116	[-0.75119]
D(SBIS(-6))	-0.024636	[-1.25293]
Jangka Panjang		
TOTAL FINANCING	0.047004	[0.62334]
NPF	-0.069762	**[-5.00656]***
SBIS	0.087213	**[5.06500]***

Source: Data processed in Eviews 7

Description: (*) = significant at the 5% level.

Based the results presented in table 3 above in the short term, there are three significant variables on the level of five per cent. The significant variables on the level of five per cent are the IPI at lag 2, Total Financing (FIN) on the lag 5, and NPF at lag 6. Short-term estimation results indicate that the IPI variable lag 2 negative effect on the level of five per cent of -2.51119. This means, if there is an increase of 1 per cent in the previous 2 months, it will lower the IPI by -2.51 per cent in a time. Then, if there is an increase in total financing 1 per cent in the

previous 5 months, then an increase in the IPI of 2.06 per cent now. So for the NPF variable, if there is an increase NPF 1 per cent in the previous 6 months, there is an decrease of 2.35 per cent in a time.

Based on estimates VECM long term, all of the variables in the study showed the effect, as follows:

a. Effect of Variable Total Financing

Variable total financing (FIN) has a positive and not too significant impact on the IPI for 0.62334 in the long term. When there is an increase of 1 per cent financing, the IPI will be increased by 0.62 per cent. It means Islamic banks in the period 2013-2017 increasing the distribution of funding, it will positively affect the IPI and if the IPI increases the Islamic banks raise the finance. It shows that Islamic banks do not behave procyclicality. This is because the Islamic banking utilize high finance portfolio, in order to improve banks' balance sheets so that Islamic demand and supply financing.

It also shows the 2013 to 2017 period right after 5-10 years after the economic crisis total financing of Islamic banking in Indonesia continues to increase. This will have a negative impact on the movements of the business cycle if Islamic banking continued to take the finance portfolio which over. In anticipation of this, the government needs to pay attention to the movement of conventional banks so that the incidence of the global crisis in 2008 did not recur. Moreover, the crisis of 2008 was triggered by the credit and excessive bank financing.

b. The Influence NPF

Variable Non-performing financing (NPF) has a negative influence, and significant to IPI amounted to -5.00656 in the long term. The NPL is increasing by 1 per cent, the IPI will decreases by -5.00 per cent. This is supported by the results of research conducted by Zakiah Dwi and Yulizar (2011) which states that the NPF ratio is negative and significant. NPF reflect the financing risk, the higher the ratio, the greater the NPF risk borne by banks. The high of NPF make banks more selective in lending. NPF high will lead to increase the risk and it will

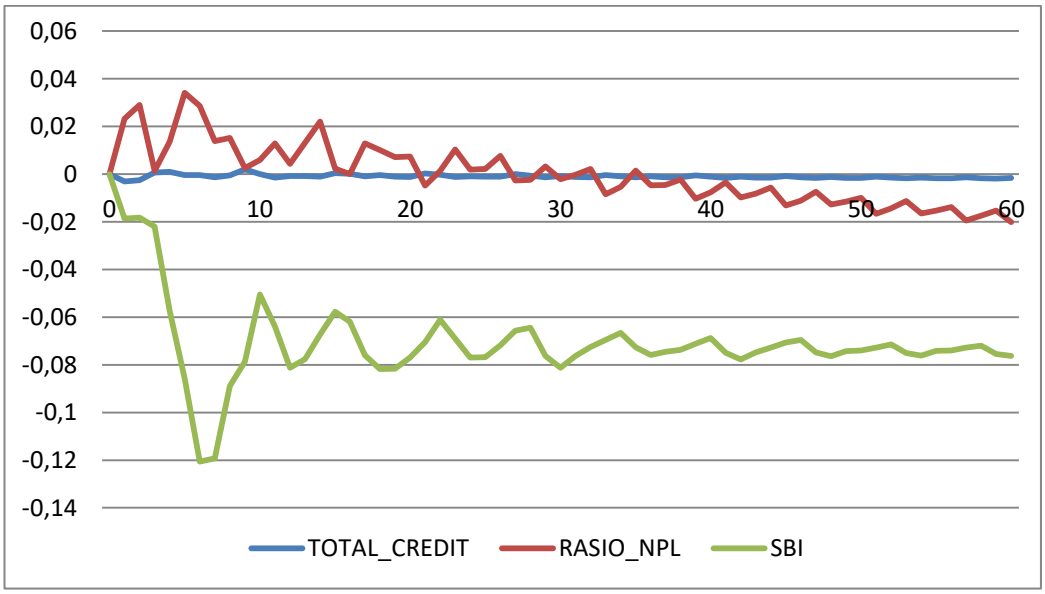
impact on lending rates, so the impact on the reduction in credit demand community and it reduced credit demand of Industrial Production Index (IPI).

c. Effect of SBIS

The variable of SBIS has a positive influence on the IPI by 5.06500 per cent. It pointed out that SBIS increased 1 per cent, it will improve also the IPI by 5.06 per cent. When the increase in SBI responded positively, it can cause the financing sector becomes more controllable. This condition needs to be a concern for the authority of banks, it makes regulate the increase and decrease of SBI in Indonesia.

Analysis of Impulse Response on Model Procyclicality of Conventional Banking

Analysis impulse response is done to see traces of response variables are the present and future shocks other variables. The results of the analysis of impulse response to shocks variable IPI models on proclycality of conventional banking in Indonesia can be seen in Figure 2.



Source: Data processed in Eviews 7

Figure 2. The Response of IPI to Procyclicality Conventional Banking Variables

Shocks 1 standard deviation of the variable Total Credit, it will cause a shock to the IPI standard deviation amounted to 0.000657 in the third period. However, it is not permanent for the next period is increasing which is positive and is starting to look permanent stable of the ninth period is about 0.001977 standard deviation. When the variable Total Credit experiencing shocks in terms of Total Credit increased, the IPI will be increased. This indicates that when there is a recession in which the IPI as a proxy of GDP increases accompanied by increase in the level of sales will be responded by the conventional banks to increase lending. Conversely, if the IPI decreased the conventional banking will reduce the level of lending.

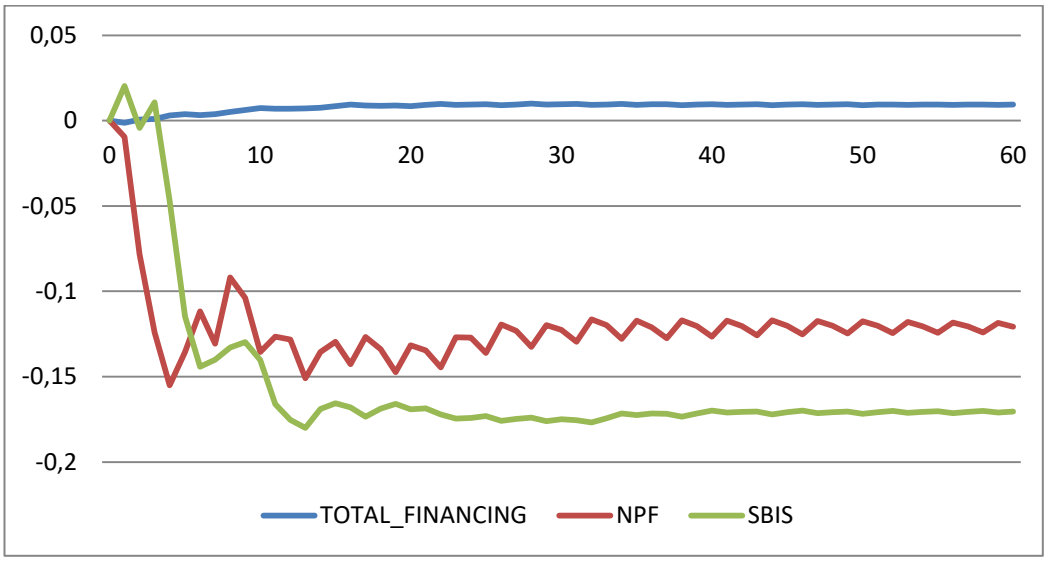
1 standard deviation shock to the NPL variable, it will cause a shock to the IPI for amounted standard deviation about 0.001346, in the third period. However, it is not permanent for the next period is increasing which is positive and is starting to look permanent stable of the sixth period is amounted 0.028626 standard deviation. When variable NPL shocks in the sense of increasing or credit ratio jam occurs, the IPI will decline. This indicates that when there is a recession in which the IPI as a proxy of GDP decline accompanied by a decreased level of sales would cause conventional banking customers having difficulty paying back credit, thus increasing NPLs in conventional banking. Conversely, if the IPI increases then the conventional banking customers will be easy to pay back the loan, so the declining NPL in conventional banking.

One standard deviation shock in SBI variable, it will cause a shock to the IPI standard deviation amounted to -0.11922 in the seventh period. However, it is not permanent for the next period is increasing 0.06732 standard deviations on fourteenth period. When variable SBI suffered shocks in terms of the number of SBI increases, the IPI will decline. When SBI suffered shock in the sense that the government carry out a tight monetary policy to fight inflation by raising interest

rates SBI, the IPI increased. This shows that when the SBI interest rate increases accompanied by increased credit interest rate on conventional banking led to customers of conventional banks have difficulties to restore credit to conventional banks because interest expense is so high coupled with inflationary conditions, then NPL in conventional banking increased so cause IPI decreased. This is reinforced by the statement Sipahutar and Rahmawulan that the government raise interest rates SBI follows conventional banks to raise interest rates on credit, the customer will have difficulty paying their credit coupled with interest rate higher, then the conventional banking NPL increases, causing the IPI decreased.

Analysis Impulse Response on Model Procyclicality of Islamic Banking

The analysis impulse response is done to see traces of the response variable are the present and future shocks other variables. The results of the analysis of impulse response model of IPI to shocks variable of Procyclicality on Islamic banking in Indonesia can be seen in Figure 3.



Source: Data processed in Eviews 7

Figure 3. The Response of IPI to Procyclicality of Islamic Banking Variables

Shocks 1 standard deviation of the variable Total Financing will cause a shock on IPI about 0.00379 standard deviations in the fifth period. When the variable Total Financing experiencing shocks in terms of Total Funding increases,

the IPI will increase or decrease. This indicates that when there is a recession in which the IPI as a proxy of GDP increases accompanied by increase in the level of sales will be responded by the Islamic banking by increasing or decreasing the finance portfolio. Conversely, if the IPI decreased the Islamic banking will increase or decrease the level of the distribution of funding.

1 standard deviation shock to the NPF variable will cause a shock to the IPI amounted to -0.0783 in the second period. However, it is not permanent for the next period to have movement that is positive and negative have not even seen a permanent stable from period to standard deviation. When the variable Total Financing is experiencing the shocks in terms of Total Funding increases, the IPI will increase or decrease. This indicates that when there is a recession in which the IPI as a proxy of GDP increases accompanied by increase in the level of sales will be responded by the Islamic banking by increasing or decreasing the finance portfolio. Conversely, if the IPI decreased the Islamic banking will increase or decrease the level of the distribution of funding. By decreasing the IPI as a proxy of GDP accompanied by reduced levels of sales would cause conventional banking customers having difficulty paying back credit, so the NPL on conventional banking increased or decreased. Conversely, if the IPI increases then the conventional banking customers will be easy to pay back the loan, so the declining NPL in conventional banking could even increase.

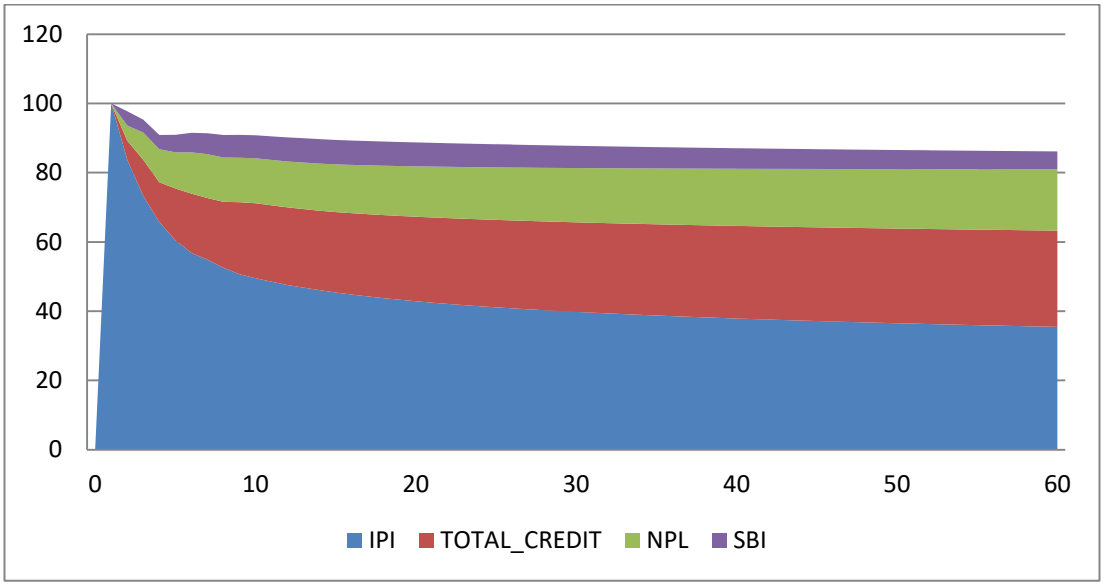
1 standard deviation shocks on SBIS variable will cause a shock to the IPI for -0.14427 standard deviations in the fourth period. However, it is not permanent for the next period is increasing and a significant decrease has not even seen a permanent stable from period to periode standard deviation. When variable SBIS experiencing shocks in terms of the number of SBIS increases, the IPI will be decreased and increased. When SBIS experiencing shocks in the sense that the government carry out a tight monetary policy to fight inflation by increasing the ratio for SBIS result, the IPI increased and decreased. This shows that when the ratio increased revenue share SBIS accompanied by increased levels of inflation cause of Islamic banking customers experiencing difficulties to restore the ratio to

the yield on Islamic banking inflationary conditions, then NPF on Islamic banking increased by causing the IPI decreased. This is reinforced by the statement Sipahutar and Rahmawulan that when the government raised the rate for SBIs result, then the customer will be difficult to restore the ratio to its results, then NPF on Islamic banking increased by causing the IPI decreased.

Analysis of Forecasting Error Variance Decomposition of Procyclicality of Conventional Banking

It can be seen in Figure 4, procyclicality on conventional banking models in the first period is influenced by variables IPI itself about 100 per cent. However, the influence on IPI itself reduced to stands at 35.42% per cent in the period to 60th. Furthermore, from the results of these FEVD we can find out information that the IPI can be explained by the variable TOTAL CREDIT, NPL, LTV and SBI of 12:00 per cent in the first period.

Furthermore, IPI can be explained by the variable TOTAL CREDIT 0.78% in the period to 60, it indicates that the TOTAL CREDIT has the greatest influence on the IPI. Then variable NPLs by 0.49 per cent in the period to 60, it indicates that the NPL has the second largest influence on the IPI. Results FEVD also provide information that affects LTV by 0.39 per cent in the period to 60th, this influence is also quite large and is almost comparable to the effect of NPL. While no significant effect SBI by 0.17 per cent in the period to 60th.



Source: Data processed in Eviews 7

Figure 4. Variance Decomposition of Procyclicality of Conventional Banking

Table 4. The Response of Procyclicality of Conventional Banking

Variabel	The Response of Procyclicality of Conventional Banking
IPI	49,48%
TOTAL CREDIT	27,03%
NPL	16,77%
SBI	6.71%

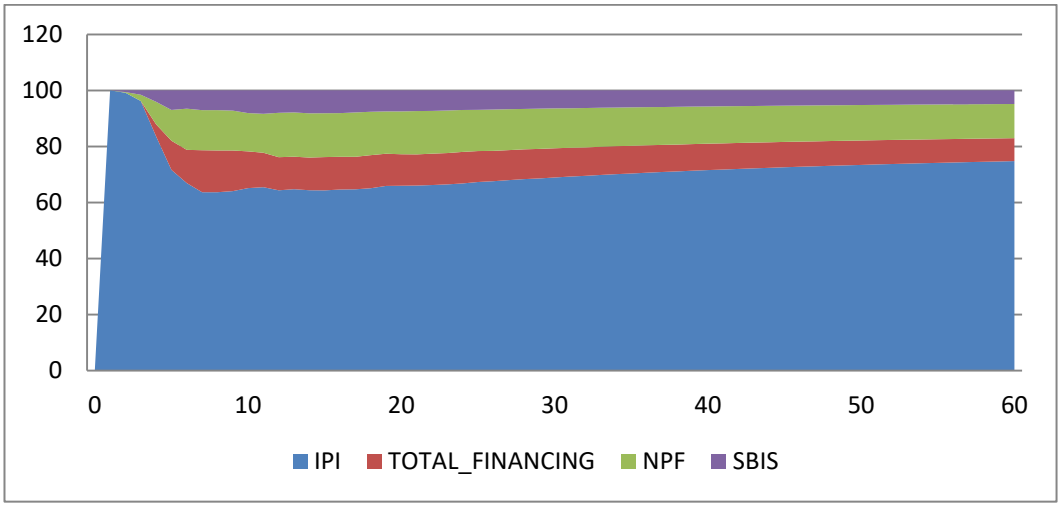
Source: Author's calculations based on data

Overall, the variabel of NPL and SBI have contributed the economic growth about 23,48 per cent. Contributions Total Credit in affecting output growth is quite large, so the change in the total number of Credit can provide an impact on output change and proxy right to IPI.

Forecasting Error Variance Decomposition Model Procyclicality Islamic banking

It can be seen in Figure 5 model of procyclicality on Islamic banking in the first period is influenced by variables IPI itself by 100 per cent. However, the influence on IPI itself reduced to stands at 56.07% per cent in the period to 60th. Furthermore, from the results of these FEVD we can find out information that the IPI can be explained by the variable TOTAL CREDIT, NPL, LTV and SBI of 12:00 per cent in the first period.

Furthermore, IPI can be explained by the variable NPF 0.35% in the period to 60, this suggests that the NPF has the greatest influence on the IPI. Then variable LTV of 0.24 per cent in the period to 60, it indicates that LTV has the second largest influence on the IPI. Results FEVD also provide information that TOTAL FINANCING effect of 0.10 per cent in the period to 60th, this influence is also quite large and the lack of influence of NPF and LTV. While the variable SBIS no significant effect of 0.07 per cent in the period to 60th.



Source: Data processed in Eviews 7

Figure 5. Variance Decomposition of Procyclicality of Islamic Banking

Table 5. The Response of Procyclicality of Islamic Banking

Variabel	The Response of Procyclicality of Islamic Banking
IPI	71,15%
TOTAL FINANCING	9,71 %
NPF	13,08%
SBIS	6,04%

Source: Author's calculations based on data

Overall, the variable Total Financing, and SBIs have contribution to the variability of the economic growth about 15,75 per cent. NPF contribute for increasing the output is high, so as the movement of NPF will extend the impact for the output movement which that proxy of IPI.

The Synthesis of Results

According to VECM results, Total Credit, Non-Performing Loan (NPL) and Certificate of Bank Indonesia (SBI) had a significant influence on Industrial Production Index (IPI). The short-term estimation results are indicated that the IPI variable lag 2 has negative effect on the level of five per cent for -1.17. This means, if there is 1 per cent increase in two month earlier, it will lower the IPI by -1.17 per cent in a time. Then, if there is an increase in total credit 1 per cent in the previous 6 months, the IPI increases by 1.26 per cent in a time. Neither the NPL variable, if there is an increase in NPL 1 per cent at 4 month before, an increase of 0.23 per cent in a time. As for the variable SBI, if there is an increase of 1 per cent SBI at 1 month before, the IPI will increase by 0.05 per cent now.

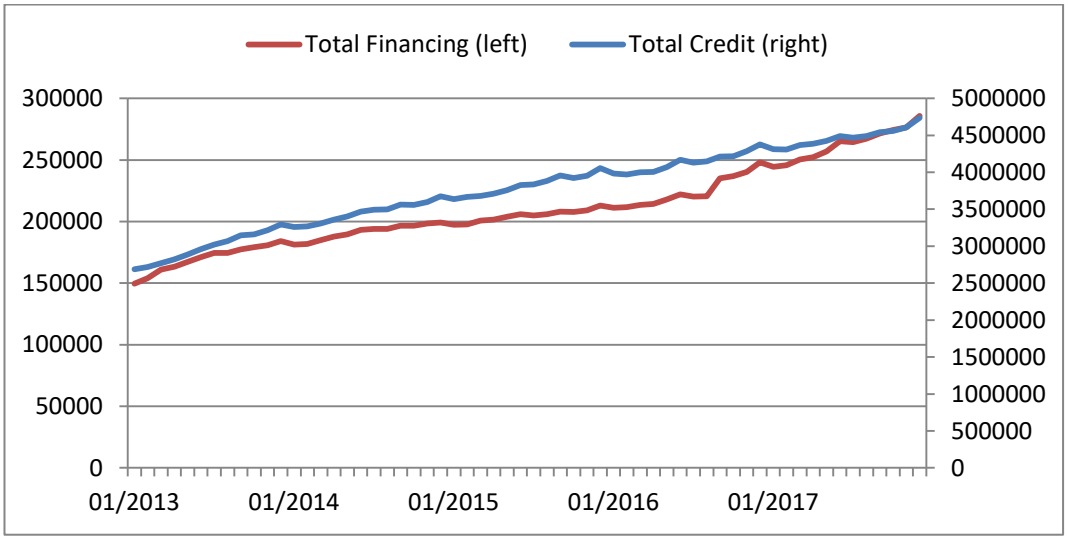
The long-term estimation results are indicated that the variable total credit (CRE) has a positive and significant impact on the IPI amounted to 280.5444 in the long term. When there is an increase of 1 per cent credit, the IPI will increase by 280.54 per cent. The variable of Non-performing loans (NPL) has a negative effect and significant, it is amounted to -11.55244 in the long term. Which is an

increase in NPL by 1 per cent, the IPI will decrease by -11.55 per cent. The variable of SBI has a positive influence on IPI of 3.46749 per cent. It indicates that when the SBI increased 1 per cent, will improve the IPI by 3.46 per cent.

So for VECM results on Islamic Banking model, Total Financing, Non-Performing Financing (NPF) and Shariah of Certificate Bank Indonesia (SBIS) had a significant influence on Industrial Production Index (IPI). In the short term estimation results indicate that the IPI variable lag 2 negative effect on the level of five per cent of -2.51119. This means, if there is an increase of 1 per cent in the previous 2 months, it will lower the IPI by -2.51 per cent in a time. Then, if there is an increase in total financing 1 per cent in the previous 5 months, then an increase in the IPI of 2.06 per cent now. So for the NPF variable, if there is an increase NPF 1 per cent in the previous 6 months, there is an decrease of 2.35 per cent in a time.

The long-term estimation results are indicated that variable total financing (FIN) has a positive and not too significant impact on the IPI for 0.62334 in the long term. When there is an increase of 1 per cent financing, the IPI will be increased by 0.62 per cent. Variable Non-performing financing (NPF) has a negative influence, and significant to IPI amounted to -5.00656 in the long term. The NPL is increasing by 1 per cent, the IPI will decreases by -5.00 per cent. The variable of SBIS has a positive influence on the IPI by 5.06500 per cent. It pointed out that SBIS increased 1 per cent, will improve also the IPI by 5.06 per cent.

The regulation on LTV is one of the macro-prudential instruments set by Bank Indonesia. With the increase of down payment to be paid by the debtor is expected to reduce the growth of credit that is too fast, especially from the debtor with the speculative purpose. The chart below illustrates the number of credits and financing on the Implementation of Risk Management on Banks Conducting Credit or Financing of Property Ownership, Credit or Financing of Property-Backed Consumption, and Credit or Motor Vehicle Financing.



Source: The Central of Statistic Agency, proceed.

Figure 4.11. The Comparison of Total Credit and Total Financing 2013-2017

The development of credit in conventional banks shows that following the regulation of Loan to Value (LTV) which began on June 15, 2012, the development of credit numbers is increasing positively. And also Financing to Value (FTV) was starting in April 2013 and improving the provisions on September 30, 2013, the development of financing continues to increase positively. LTV / FTV as macro-prudential instrument is not effective to reduce the growth of Non-Performing Financing in Islamic banking and growth of Non-Performing Loan in conventional bank.

This study shows that not all credit / financing facilities are influenced by significant LTV / FTV rules. The credit will continue to grow despite LTV rules, since the LTV rules have no significant impact on the number of credit demands on banks. This proves that if the application of the amount of LTV / FTV is different between sharia and conventional financial institutions will not cause regulatory arbitrage as the economic observer presumes.

CONCLUSION

Based on the results of research, the result conducts on the determinant of procyclicality of conventional and Islamic banking in Indonesia. It can be obtained several conclusions as follows, the conventional banking in Indonesia behaves on procyclicality and Islamic banking does not behaves on procyclicality. The determinant of procyclicality of conventional banking in Indonesia is the Total Credit (CRE) in the short term, and also in the long term is Total Credit (CRE). Then, in the short term, the determinant of procyclicality of Islamic banking is the Total Financing (FIN), while for the long term is by Sharia of Bank Indonesia Certificates (SBIS).

SUGGESTIONS

Through the analysis of the determinants of procyclicality of conventional and Islamic banking in Indonesia, it is expected that the Indonesian government, especially the Central Bank gives more attention to the development of Islamic banking, and also put forward Islamic banking. However, Islamic banking is more prudent in maintaining the financial stability, it is evidenced by not behaving procyclicality. It is expected for another researcher to investigate and prove another advantage of Islamic banking.

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