

The Role of Banking, Agriculture and Industrial Sector in Economic Growth in Indonesia

Henny Medyawati¹, Muhammad Yunanto²

¹ Gunadarma University, Indonesia

² Gunadarma University, Indonesia

Abstract. Whether financial structure influences economic growth is still considered a crucial policy issue. The aims of this research are to analyze the influence of banking development indicators, agriculture sector and industrial sector on economic growth in Indonesia and to examine the relationships between banking development and economic growth. VAR, a time-series econometric model used in this study, estimating three banking indicators that are assets, credits and third party fund, economic growth average per capita at constant price 2000 and two variables of economic growth in agriculture and industry. Two dummy variables are also implemented in VAR model, they are monetary crisis and implementation of Arsitektur Perbankan Indonesia (API) or Indonesia Banking Architecture. Based on the two-stage data processing, the research reveals empirical evidence that banking development, agriculture sector and industrial sector affects the economic growth although the percentage of the contribution are relatively small.

Keywords: banking, agriculture sector, industrial sector

1. Introduction

Whether financial structure influences economic growth is still considered a crucial policy issue. Banking industry growth after Banking Deregulation at 1988, the impact appears when Central Bank of Indonesia made a deregulation called Pakto 88 which was about facilitating opening a new bank and branch office. This was a positive impact that workers at that time have a great chance to work at the bank.

Using both traditional cross-section, instrumental variable procedures and recent dynamic panel techniques, Levine, Loayza and Beck (2000) find that the exogenous component of financial intermediary development is positively with economic growth. Also the data show that cross country differences in legal and accounting systems help account for differences in financial development.

Kar and Pentecost (2000) used five alternative proxies for financial development and Granger causality tests applied the cointegration and vector error correction methodology (VECM). The empirical results show that the direction of causality between financial development and economic growth in Turkey is sensitive to the choice of proxy used for financial development.

Deepening financial development and rapid economic growth in China have been accompanied by widening income disparity between the coastal and inland regions. By employing panel dataset for 29 Chinese provinces over the period of 1990-2001 and applying the Generalized Method of Moment (GMM) techniques, the empirical results show that financial development significantly promotes economic growth in coastal regions but not in the inland regions; the weak finance-growth nexus in inland provinces may aggravate China's regional disparities (Liang, 2006).

Using time series data from 1960-2001, the empirical evidence suggests that financial liberalization, through removing the repressionist policies, has a favorable effect in stimulating financial sector development. Financial depth and economic development are positively related; but contrary to the conventional findings, the results support Robinson's view that output growth leads to higher financial depth in the long-run (Ang and Mc Kibbin, 2007). The results show that although financial sector reforms have enlarged the financial systems, the policy changes do not appear to have led to higher long run growth.

Nasrudin (2004) investigate financial development topics related to economic growth with regional approach and adopting full Levine's model, replace the measured of sample unit from 71 country in the world with provinces in Indonesia. Empirical results show that financial indicator has a positif relationship with economic growth are assets and the total of bank branch office. Credit and third party fund suppose as power of bank intermediation show a negative sign.

The aims of this research are to analyze the lag from the model to examine the role of banking development in economic growth in Indonesia and to analyze the percentage of the contribution of the three indicators of banking development to economic growth.

2. MODEL, DATA AND METHODOLOGY

2.1 MODEL

The econometric model used in this paper is adopted model from Levine, Loayza and Beck (2000), which is also adopted by Nasrudin (2004). Adopted common equation as follows :

$$g_t = \alpha + \beta [\text{financial}]_t + \gamma [\text{conditioningset}]_t + \varepsilon_t$$

where g_t equals to real per capita GDP growth at constant price 2000, financial equals either assets, credits, and third party funds, and conditioning set represents the other determinants of growth such as agriculture, and industry. The common equation used in this paper adopted from model which is used by Nasrudin (2004) and Levine, Loayza and Beck (2000) with modification.

2.2 DATA

Data used in this paper are time series data in the period of 1988 to 2008 quaterly. The reason for the year 1988 is that in 1988 Central Bank of Indonesia issued policy deregulation Pakto 88 and the beginning of booming of new bank. The source of the data collected from Central Bank of Indonesia (BI) publication such as Financial and Economics Statistic of Indonesia (FESI or SEKI), Central Bureau of Statistic of Indonesia (CBS or BPS). Financial data are including total of saving deposits, demand deposits, time deposit and credits (all kind of banks like common bank, rural bank and sharia bank), the total assets all kind of bank. Proxies for economic growth are GDP growth per capita, contribution of agriculture sector to GDP, industry to GDP (all variables at constant price 2000). The financial indicator used in this paper refers to standard of Central Bank of Indonesia Directorate of Research and Banking Management on banking main indicator section.

2.3 METHODOLOGY

Often found that economic theory was not good enough to specify the dynamic relationship among variables. Sometimes estimation and inference process become complicated because the endogen variable on both side. VAR method by Sims then appear as a solution to this problem with non structural approach (Widarjono, 2007). VAR model consists of 6 macro economics variable and four dummy variable can be written as follows :

$$Vljgdp_t = \beta_1 + \sum_{i=1}^n \beta_{1i} Vljgdp_{t-i} + \sum_{i=0}^n \beta_{2i} Vaset_{t-i} + \sum_{i=0}^n \beta_{3i} Vkredit_{t-i} + \sum_{i=0}^n \beta_{4i} Vdana_{t-i} + \sum_{i=0}^n \beta_{5i} Vtani_{t-i} + \sum_{i=0}^n \beta_{6i} Vindus_{t-i} + D_1 + D_2 + \varepsilon_1$$

$$Vaset_t = \beta_2 + \sum_{i=0}^n \beta_{7i} Vljgdp_{t-i} + \sum_{i=1}^n \beta_{8i} Vaset_{t-i} + \sum_{i=0}^n \beta_{9i} Vkredit_{t-i} + \sum_{i=0}^n \beta_{10i} Vdana_{t-i} + \sum_{i=0}^n \beta_{11i} Vtani_{t-i} + \sum_{i=0}^n \beta_{12i} Vindus_{t-i} + D_1 + D_2 + \varepsilon_2$$

Same formulas are for $Vkredit$, $Vdana$, $Vtani$, $Vindus$.

Econometrics model in this paper is a VAR model divided into three stages processing data, that are:

- VAR model with 6 variable without dummy variable that are economic growth and three banking indicators that are assets, loans and third party funds, and also 2 macro economics indicators in agriculture, industry; and
- VAR model with 6 variable with dummy variable that are economic growth, assets, loans, third party funds, agriculture, industry, and two dummy variables are, monetary crisis 1997, and implementation of API in 2004.

3. Results

The optimal lag length obtain from VAR Model with 6 variabels without dummy variabel is 9 or 2 years 3 month. The impact can be said quite slowly. The result comes into alignment with theoretical study that economic growth not only influence by banking industries but also by another factors, that are natural resources proxy by agriculture, and industrial sector. The smaller the lag can be interpreted that the impact become faster.

3.1 Impulse Response Analysis of Economic Growth With Dummy Variable

Analysis of economic growth in response to the shock of assets, loans and funds, agriculture, industrial sector and two dummy variables is carried out through one of the properties of the VAR that is Impulse Response Function. The following analysis reviews the three indicators of banking shocks, economic growth of four variables and two dummy variables.

The shock of assets variable have an impact on economic growth in first quarter. In general this can be explained that the bank's assets consist of buildings, computer equipment, in the early stages can not be used optimally for the bank operational. At a later period as shown in Figure 1 is the second quarter, economic growth up until the third quarter, then continued to decline until the fourth quarter. This condition can occur because the bank assets can be operated optimally and reached its peak in the third period. Economic growth gave a positive response to credit shocks in the second quarter, causing the next shocks to the decline in economic growth in the third.

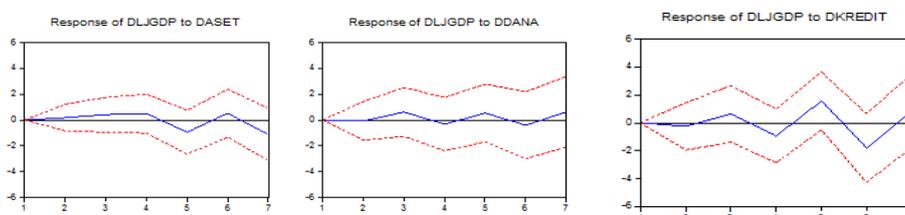


Fig 1. Economic Growth Response of Shock from the Three Indicators of Banking

Positive response was also shown by the shock of agriculture and industry variables in the second quarter. In Figure 1. Above shows that the line response to the shocks of economic growth in the agricultural variables rose slightly in the second quarter, then fell in mid-second quarter and continued to decline until the fourth quarter. Positive response was also shown by the shock of agriculture and industry variables in the second quarter. The shock of the industry variables are also positive to economic growth. This is indicated by a line going up from the first quarter period until the fourth quarter in Figure 2. as follows. The condition can be concluded that the industrial sector is able to move the economic growth is slow but still increasing.

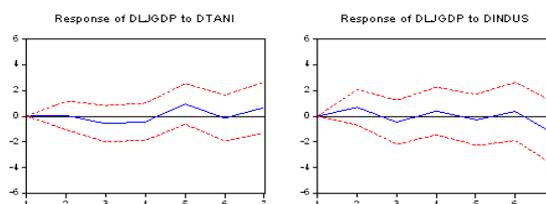


Fig 2. The Response of Economic Growth to the Shock of Agriculture, and Industry

The same positive response of variable of economic growth in the second quarter describes the roles of both agricultural and industrial sectors that can drive economic growth for about 6 months. This can be explained that one of the industry sub-sector non-oil industry is comprised of industries including food, beverages, textiles, paper and printed material impact growing rapidly and providing employment opportunities. Increased demand for products of finished goods or semi-finished both domestically and internationally has led the industry sector to be ranked first in the formation of GDP since the late 90s (BPS, 2009). Another request for an increase occurred in transportation equipment industry, cement industry and chemical industry.

3.2 Economic Growth Response to the Shock of Monetary Crisis Dummy Variable and Variable API

The economic crisis that hit Indonesia has brought down the banking performance at zero point. The peak of the crisis is the revocation of business licenses of 16 banks insolvent category (Bank Indonesia, 1998). The next process is the establishment of IBRA as one item in a series of Letter of Intent (LOI) between the Government of Indonesia to the IMF, with the first LOI was signed on 1 November 1997 (Hermana, 2007). The next IMF loan agreed to provide standby (stand-by credit) amounting to U.S. \$ 10 billion. Other assistance also came from the World Bank and ADB, each with U.S. \$ 4.5 billion and U.S. \$ 3.5 billion (Bank Indonesia, 1998). This is done to save the banking industries in Indonesia. This condition is mainly associated with the loss of public confidence in the national banking system. IBRA formation is considered as the beginning of the process of rehabilitation of the banking industry remained liquidation casualties with 10 banks, four banks recapitalized (Hermana, 2007). In addition, in this period occurred a sharp depreciation in the capital of the bank caused by a fall in asset quality, the banks rush and the negative spread. As a result, the supply of credit falls drastically known the term credit crunch. The same thing also happened with the implementation of the API starting early in 2004. Economic growth in the early period did not give a positive response, even economic growth tends to slow and only moved up after the fourth quarter. This condition describes the recovery process marked by the banking implementation of the precautionary principle and the closure of the banking consolidation of two banks in April 2004 and self-Liquidation of the bank (ING Bank) and the merger of three banks (Bank Pikko, Danpac Bank, Bank CIC to Century Bank) (Bank Indonesia, 2004). Economic conditions that tend to not experience these movements, due to the implementation of one program in the API is the first pillar that contains the strengthening of national banking structures. The program aims to strengthen the bank's capital both conventional and Islamic banks in order to increase the bank's ability to manage business and risks, developing information technology, and improve its business scale in order to support capacity building of banking credit growth. As a result the bank focused on the addition of new capital and mergers with other banks to achieve the minimum capital requirement set BI.

3.3 Variance Decomposition Analysis with Dummy Variable

The results of variance decomposition show that the three indicators of banking assets, loans and third party funds to contribute to economic growth below 7%. The highest contribution is shown by the third party funds variables in the 7th quarter of 11.434%, while the asset variables in the same period of 4.41% only. The sharp increasing of the percentage contribution of credit which nearly doubled in the quarter-period, does not occur in third party funds and the assets variable. This indicates that credit is channeled only a small portion coming from third-party funds. The following are the analysis of variance decomposition for the two dummy variables that, the monetary crisis in 1997 and API 2004 respectively to economic growth. Monetary crisis that hit Indonesia in 1997 was felt the impact from the liquidation of 16 banks in November. The impact of the closure of 16 banks namely the establishment of IBRA as an institution that seeks to save the banking industries in Indonesia. IBRA formation is regarded as the beginning of the process of rehabilitation of the banking industry. This phenomenal events give strongly impact on the Indonesian economy. The result show that the percentage contribution of monetary crisis variable to economic growth in the third quarter is below 1.5%.

API which was released in 2004 is a basic framework of the Indonesian banking system that is comprehensive and provides direction, shape and structure of the banking industry to create a stable financial system in order to help drive national economic growth (Bank Indonesia, 2009). The first pillar is a strong banking structure, the second pillar is an effective regulatory system, the third pillar is a system of independent monitoring and effective, is the fourth pillar of a strong banking industry, the fifth pillar is adequate supporting infrastructure, and is the sixth pillar of consumer protection. Analysis of API dummy variable contribution to economic growth is the same general analysis based on impulse response. The percentage contribution of zero per cent in the first quarter period can be explained that the implementation of one program in the API is the first pillar of strengthening the national banking structure to make the bank focused on strengthening the bank's capital. Increasing the minimum capital requirements for conventional banks and sharia banks (including BPD) from 80 billion dollars targeted implementation in 2007 to 100 billion rupiah in 2010, tend to make the bank refrained from too expansionary in disbursing credit (Medyawati, Nopirin, Bambang Sutopo, Budi Hermana, 2010)

Reviews from the results of the impulse response and variance decomposition states that the role of banks to economic growth is relatively small. The results of variance decomposition analysis shows that the overall average percentage contribution of the credit variable reached 2.97% of economic growth, the variable assets reached 3.61%, and variable funds reached 6.43%. This result is reasonable given that the Bank of Indonesia since 1991, when it first launched the policy regarding the procedures for assessment of bank soundness (CAMEL), banks more cautious in disbursing credit. The phenomenon of credit supply is known to decrease drastically with the term credit crunch, the imbalance of demand and credit supply, reflected in the low LDR since 1999, is clear evidence that recent years have occurred in the Indonesian banking Disintermediation. Whereas the main function of banks is as a financial intermediary institution or known by the term financial intermediary. This serious problem has been a focus of Bank Indonesia to be repaired immediately.

4. CONCLUSIONS

Based on the discussion in the previous chapter, it can draw the following conclusions.

1. Analysis of the lag obtained from the three VAR models, the agriculture and industry explained the role of banking, agriculture and industry to economic growth though the role relatively small.
2. Assets, loans and funds have contribution to economic growth, although the percentage is relatively small compared with other economic variables such as agricultural variable and industrial sectors. Analysis of the percentage contribution of the three banking indicators to economic growth show that banking disintermediation occurs.

5. Acknowledgements

We want to say thank you to Prof. Nopirin, Prof. Bambang Sutopo and also Dr. Budi Hermana for their correction and their constructive comments to this paper.

6. References

- [1] Ang, James B. and Warwick J. McKibbin .2007. "Financial Liberalization, Financial Sector Development and Growth: Evidence From Malaysia", *Journal of Development Economics*, Vol. 84. pp. 215-233
- [2] . 2004. Laporan Perekonomian Indonesia 2006. Bank Indonesia. Jakarta
- [3] .2009."Arsitektur Perbankan Indonesia". <http://www.bi.go.id/web/id/Perbankan/Arsitektur+Perbankan+Indonesia> (accessed 1-09- 2009)
- [4] BPS. 2009. *Pendapatan Nasional Indonesia 2009*. BPS. Jakarta
- [5] Hermana, Budi. 2007. "Peran Bank Indonesia Menuju Indonesia 2025: Prahara, Sengsara, atau Nusantara Jaya?". Bank Indonesia Working Paper
- [6] Kar, Muhsin and Eric J.Pentecost .2000. "Financial Development and Economic Growth in Turkey : Further Evidence on the Causality Issue". Loughborouh University. *Economic Research Paper* No. 0/27
- [7] Liang, Zhicheng (2006). "Financial Development, Growth, and Regional Disparity in Post-Reform China", *Research Paper* No. 2006/90
- [8] Levine, Ross, Norman Loayza, and Thorsten Beck (2000). "Financial Intermediation and Growth :Causalities and Causes", *Journal of Monetary Economics* Vol. 46. pp. 31-77
- [9] Medyawati, Henny, Nopirin, Bambang Sutopo and Budi Hermana. 2010, The Role of Banking in Economic Growth in Indonesia. Proceeding of International Conference on Business and Economics Research (ICBMR). University of Indonesia
- [10] Nasrudin, Rus'an (2004). 'Perkembangan Perbankan Indonesia : Analisis Dampak terhadap Pertumbuhan Ekonomi Regional Indonesia dan Penyebab-penyebabnya dengan Data Panel 1983-1999'. *Jurnal Ekonomi dan Pembangunan Indonesia* Vol. 4 No. 1, pp. 140-150
- [11] Widarjono, Agus (2007). "Ekonometrika Teori dan Aplikasi untuk ekonomi dan bisnis", Ekonisia. Yogyakarta