BANKING FINANCE ANALYSIS ON AGRICULTURAL SECTOR AND ITS EFFECT ON ECONOMIC GROWTH AND AGRICULTURAL INVESTMENT IN INDONESIA

Muhammad Zulhilmi
Lecturer at the Faculty of Sharia and Economics
UIN Ar-Raniry - Aceh
Email: muha.zul@gmail.com

ABSTRACT

The agriculture sector is the main sector in supporting national economic development in each country. Similarly with Indonesia. With the vast area and the majority of Indonesian people work as farmers, the agriculture sector has a strategic role in employment and labor. Hence, the government should focus on improving growth and investment in the agriculture sector. The main issues in the economic development of agriculture in Indonesia is the lack of capital. This is in contrast to other developing countries where the government gives subsidies to this sector. Shortages on the capital side are due to the low income of people who have an impact on the low of saving ability, thus the investment in the agriculture sector is low. While the increase in financing at the agriculture sector will pose a considerable influence on the Real Gross National Saving, Real Bank Lending to Agriculture, Real Out-Put of Agriculture sub-Sector, Real Investment in Agriculture and will have an impact on economic growth and investment in agriculture. This study was designed to use secondary data by using a model analysis techniques of Structural Equation Modeling. In addition, this study also uses a model approach of Tawhidi String Relation (TSR). In the premise of Tawhidi String Relations, this research will be identified quantitatively by using analysis Vector Error Correction Model (VECM) and Forecast Error Variance Decomposition (FEVD), which aims to look at the welfare of farmers in sharia. The results of the analysis shows that the level of the Real Gross National Saving, Real Bank Lending to Agriculture, Real Out-Put of Agriculture sub-Sector, Real Investment in Agriculture and the agriculture sector has a significant influence on subsequent economic growth and investment. The results of the analysis with TSR also shows a significant effect. This is indicated by the level of the biggest changes in sequence, namely: variable GDP (0) 33.72%, variable (0) 22.21%, variable AGE (0) 12.43%, Variable BLAFF (0) 11.09%, variable EAGEXP (0) of 8.01% and the variable RGNS (0) of 7.17%.

Keywords: bank financing agriculture, economic growth, investment, agriculture
INTRODUCTION

Agriculture, plantation, fishery and livestock were the most important sectors in each country. these sectors have strategic roles in driving economic growth and significant in employment (Aha. 2002). Agriculture has a role in economic development in Indonesia during the downturn due to the prolonged economic crisis (Arifin, 2003). If we looked at comparative advantage, agriculture played an important role in free trade, since agricultural products have local contents that are greater than the manufacturing commodities (Saragih, 2000) and expanded production basis and economic export by creating employment, supply of industrial raw materials, ensuring durability food, growth of output and, in fact, act as growth machines in economy as a whole (Elbadawi, 2001).

Agriculture for the Indonesian nation was not only as a form of cultural heritage and economic activities cultivated by the community. Agriculture was a major producer of food and industrial needs. It was once expressed by President of the United States Abraham Lincoln that agriculture united Americans as the cornerstone of progress (Anton, 2005; Pakpahan, 2004; Yasin, 2008). In contrast with the Michael Gorbachove administration, the Soviet Union did not budget funds to develop agriculture, because he relied upon foreign exchange from the export industries to import grain from the USA, Canada and Australia. This condition caused country’s economy downturn (Sumitro, 2004).

Large agricultural areas of Indonesia, made the government need to pay attention. As we were able to understand that, agricultural development has a strategic significance for developing countries, as well as developed countries (EU, USA, Australia, Japan and others). (Subejo, 2007). While Lewis (1955), the economic development as a growth process that required reallocation systematically to production factors as a result of low productivity traditionally due to the use of technology decreased. (Lewis, 1954; Rondan, 1943; Nurkse, 1952), whereas Snowdon (2008) in Adelman (1999) argued that sustainable economic growth will be in vain without identifying and modifying as well as taking into account structural differences in developing and interdependent economic growth.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Looking at condition of agriculture in Indonesia, the development of agriculture was the largest production potential owned by Indonesia (Yudohusodo, 2006) as well as livelihood, and as environmental service provider. This contribution was different in three things from rural world: (a) Agricultural-based countries, where agriculture contributed 32 % or more from average PDB growth, (b) Transforming countries, where agriculture contributed average only 7% to GDP growth, and (c) Urban countries, where agriculture contribution to PDB growth was only 5% or less average (Uriarte, 2008).

 Financing of agriculture as a subject of the rural finance dedicated to financing activities related to the agriculture sector such as input supply, production, distribution, wholesale, processing and marketing. In particular, the financial system was positioned to make a significant contribution to
the growth in general by acting as a source of credit for investment (Afangideh, 2009). This needed
attention to micro-economic sustainability of agricultural development. Therefore, the government
should initiate the establishment of village-level micro-finance institutions. Provision of financial
services for low-income and poor people included low income levels.

Agricultural sector was the basis for rural economic growth, agriculture was a part in increasing
farmers' income and one of the measures to reduce poverty. However, until now the farmers were
still faced with the problem of financing for development. It began from the issuance of Law No.
23 Bank Indonesia on the elimination of KLBI financing. Sources of financing were directed at
commercial finance, because the national banks were encouraged to pay attention to the financing of
the agricultural sector. Then there was the phenomenon of trickle up economy, namely a surplus of
economic conditions in the agricultural sector, where surplus was not enjoyed by farmers but by the
collectors and traders who have big capital.

Look at the so great role of agriculture in the Indonesian economic development. This sector
was a pillar of life for most people in Indonesia and for the 38.37 million people working in the
agricultural sector (Fitriana and Nawawi, 2002). In 1997-1999 the labor force in the agricultural
sector increased by 7.05% from 35.8 million to 38, 3 million workers. While the industrial sector was
expected to become an Indonesian economic powerhouse only absorbed 12.96% of the total labor
workforce. Similarly, in the Indonesian economic structure, since 1991 there has been a shift in the
dominance of the economy from agriculture to industry, but the agricultural sector's role contributed
the national was still quite high.

Goldsmith (1969) argued that financial sector development was correlated with economic
growth. Pagano (1993) financial development has a positive effect on economic growth as seen from
the level of savings. Stell and Charitonenko (2003) suggested the emergence of a new paradigm as
financial services needed additional investment as a supplement to help rural communities (farmers)
in building asset growth and skills of farmers.

Here it was clear that the bank was an institution born as an agent of trust and agent of development.
Where the agent of trust as an intermediary believed to serve as the needs of and for community.
While the agent of development as an intermediary which can promote the development progress
through financing facilities and easiness in the process of payment and withdrawal transactions made
by economic actors (Judisseno, 2002).

METHODS

The method used in this research was the simultaneous equation method. Simultaneous equations
were some similarities, where the dependent variables can be exchanged into the independent
variables, and vice versa. (Widarjono 2007; Gujarati, 2009 and Sumodiningrat, 2007) mentioned
a model has a causal relationship between the dependent variables and the independent variables.
Equation used was as follows:
1. **Model of Real Gross National Saving**

   \[ \text{RGNS} = \beta_0 + \beta_1BDI1 + \beta_2SMI2 + \beta_3RIR3 + \beta_4RGDP4 + \beta_5BLAFF5 + \epsilon_0 \ldots (1) \]

   National real savings in the economy was financial development functions and indicators, real interest rate, real gross national product and the banks for lending agricultural sector.

2. **Model Real Bank Lending to Agriculture**

   Financing constraint was one of the problems in agricultural production. banking institutions must ensure the distribution mechanism of financing in the agricultural sector, because the model used are as follows:

   \[ \text{BLAFF} = \beta_0 + \beta_1BDI1 + \beta_2SMI2 + \beta_3RIR3 + \beta_4RGDP4 + \beta_5AGY5 + \beta_6RGNS6 + \epsilon_0 \ldots (2) \]

   Bank financing for the agricultural sector was a function of economic development indicators, interest rates on loans, gross domestic product, agricultural products and national saving.

3. **Model Real Output of Agriculture Sub-Sector**

   Agricultural output became the result of economic activities, the financial development to sectors and influenced significantly on the environment such as level of rainfall, because the models used were as follows:

   \[ \text{AGY} = \beta_0 + \beta_1BDI1 + \beta_2SMI2 + \beta_3RIR3 + \beta_4ATRFALL4 + \beta_5RGDP5 + \beta_6BL6 + \epsilon_0 \ldots (3) \]

   This equation taken the same model as the previous one in which all variables have been described except rainfall significantly affected agricultural production.

4. **Model Real Investment in Agriculture**

   Investment in the agricultural sector may be influenced by developments in the financial system and the level of agricultural output, because it the model used were as follows:

   \[ \text{EAGEXP} = \beta_0 + \beta_1BDI1 + \beta_2SMI2 + \beta_3LR3 + \beta_4AGY4 + \epsilon_0 \ldots \ldots \ldots (4) \]

   Investment in the agricultural field was a linear function of financial development, the lending level and agricultural output. therefore, the financial sector became more efficient in providing financing in the agricultural sub-sector.

5. **TSR Model and Wellbeing Function**

   Construction of mathematical models in TSR methodology was basically a form of welfare functions, as follows:

   \[ W(\theta) = \text{AGY}(\theta), \text{BLAFF}(\theta), \text{EAGEXP}(\theta), \text{RGNS}(\theta), \text{RGDP}(\theta), \text{BDI}(\theta), \text{LR}(\theta) \ldots (\theta) \]

   Placement \( W(\theta) \) as the dependent variable in an equation function with an understanding of the following:

   a. That the non-\( \theta \) equation function, which put the dependent variable at a certain size (eg. AGY), was designed to focus our efforts with a view to raising the proportion value of AGY only. Limited size to how large an proportional increase in the Real Output of Agriculture Sub-Sector and understanding scope on the AGY increase benefits in the world life level. While \( W(\theta) \) have the larger range or scope included dimensional world and the hereafter. A goal on achievement in the complete or fallah life.
b. Truth, goodness and pleasure of Allah SWT, which contained ethical values of quality, moral and social development must be based on sub-system or a broader perspective, covering the scope of the life complexities to understand the essence of life as a whole in the corridors of the science of God.

RESULTS AND DISCUSSION

The method used in this research was the simultaneous equation method. Simultaneous equations were some similarities, where the dependent variables can be exchanged into the independent variables, and vice versa. This technique was used to analyze the causal relationship that occurred in the regression between the dependent variable and independent variables either directly or indirectly (Supardi, 2013), or the development of regression forms to estimate the extent to which the interest (magnitude) and significance of hypothetical relationship in a set of variables (Satarno, 2005).

1. Real Gross National Saving

From the Real Gross National Saving analysis in a simultaneous equation model with the main priority was the national saving growth as dependent variable then gotten RGNS = α0 + α1BDI + α2SMI + α3 RIR + α4 RGDP + α5BLAFF...(4.1.1)

the results of simultaneous equation:

\[
\text{RGNS} = -2.107 + 4.780 \text{BDI} + 0.106 \text{SMI} + 0.126 \text{RIR} - 3.758 \text{RGDP} + 0.004\text{BLAFF}
\]

with a value of \(F = 4848.615\) \(R^2 = 0.993\) and sig.0.000b

Results of the complete simultaneous equation shown in the table:

| Coefficients a |
|----------------|
| Model B        |
|                |
| Unstandardized Coefficients | Standardized Coefficients | t    | Sig. | Correlations Zero-order |
| Std. Error | Beta | | | |
| (Constant) | -2.107 | .188 | -11.186 | .000 | .992 |
| BDI | 4.780 | .345 | 4.719 | 13.856 | .000 |
| SMI | .106 | .015 | .066 | 7.204 | .000 |
| RIR | .126 | .024 | .049 | 5.203 | .000 |
| RGDP | -3.758 | .346 | -3.715 | -10.859 | .000 |

| a. Dependent Variable: RGNS |
| b. Predictor (Constant), BLAFF, RIR, BDI, SMI, RGDP |
2. Real Bank Lending to Agriculture

Based on the conceptual framework and hypotheses described in the previous chapter, the model used was the simultaneous equation model with top priority on the banking financing (loans) on the agricultural sector as dependent variable:

\[ \text{BLAFF} = \alpha_0 + \beta_1 \text{BDI} + \beta_2 \text{SMI} + \beta_3 \text{RIR} + \beta_4 \text{RGDP} + \beta_5 \text{AGY} + \beta_6 \text{RGNS} \ldots \ldots \quad (4.2.1) \]

The result of simultaneous equations were as follows:

\[ \text{BLAFF} = 3.018 - 12.092 \text{BDI} + 0.567 \text{SMI} + 0.112 \text{RIR} + 9.688 \text{RGDP} + 2.677 \text{AGY} + 0.137 \text{RGNS} \]

with a value of \( F = 4848.615 \quad R^2 = 0.993 \quad \text{and sig.}\ 0.000 \)

Results of the complete simultaneous equation can be seen in the following table:

| Model   | Unstandardized Coefficients | Standardized Coefficients | t    | Sig. | Correlations Zero-order |
|---------|----------------------------|---------------------------|------|------|-------------------------|
| (Constant) | 3.018 | 1.211 | 2.491 | .014 |                         |
| BDI     | -12.092 | 2.106 | -18.002 | -5.743 | .000 | .525 |
| SMI     | .567 | .070 | .531 | 8.112 | .000 | .455 |
| RIR     | .112 | .118 | .066 | .946 | .345 | -.400 |
| RGDP    | 9.688 | 1.899 | 14.443 | 5.102 | .000 | .532 |
| AGY     | 2.677 | .355 | 3.835 | 7.550 | .000 | .550 |
| RGNS    | .137 | .332 | .207 | .412 | .681 | .516 |

a. Dependent Variable: BLAFF

b. Predictors: (Constant), RGNS, SMI, RIR, AGY, RGDP, BDI

3. Real Output of Agriculture Sub-Sector

The model used was a simultaneous equation model with the top priority was national agricultural income as dependent variable:

\[ \text{AGY} = \alpha_0 + \beta_1 \text{BDI} + \beta_2 \text{SMI} + \beta_3 \text{RIR} + \beta_4 \text{ATRFALL} + \beta_5 \text{RGDP} + \beta_6 \text{BL} \ldots \ldots \quad (4.3.3) \]

the result of simultaneous equations was as follows:

\[ \text{AGY} = -0.734 - 0.449 \text{BDI} - 0.050 \text{SMI} - 0.017 \text{RIR} - 0.080 \text{ATRFALL} + 1.361 \text{RGDP} + 0.061 \text{BL} \]

with value of \( F = 4848.615 \quad R^2 = 0.993 \quad \text{and sig.}\ 0.000 \)

Complete simultaneous equation results were shown in the following table:
4. Real Investment in Agriculture

Based on the conceptual framework and hypotheses described in the previous chapter, the model used was a simultaneous equation model with the top priority was investment in the national agricultural sector as dependent variable:

$$EAGEXP = a_0 + B_1 BDI + B_2 SMI + B_3 LR + B_4 AGY$$

The result of simultaneous equations was as follows:

$$EAGEXP = 2.431 -1.072 BDI + 0.151 SMI -0.001 LR + 1.934 AGY$$

with value of F = 1129.730, R² = 0.959 and sig. 0.000

Complete simultaneous equation results were shown in the following table:

| Model | Unstandardized Coefficients | Standardized Coefficients | T | Sig. | Correlations |
|-------|-----------------------------|---------------------------|---|------|--------------|
|       | B  | Std. Error | Beta |     | Zero-order  |
| (Constant) | -0.734 | 0.247 | 2.968 | .003 |             |
| BDI | -0.449 | 0.321 | -0.666 | -1.399 | .163 | 0.964 |
| SMI | -0.050 | 0.018 | -0.333 | -2.773 | .006 | 0.161 |
| RIR | -0.017 | 0.029 | -0.007 | -0.582 | .561 | -0.517 |
| ATRFALL | -0.080 | 0.027 | -0.018 | -3.003 | .003 | 0.142 |
| RGDP | 1.361 | 0.304 | 4.649 | .000 | 0.996 |
| BL | 0.061 | 0.038 | 0.054 | 1.622 | .107 | 0.953 |

5. Analysis of Tawhidi String Relations (TSR) Knowledge Induced?

a. Knowledge Induced Variable

In the analysis by using equation result of the endogenous and exogenous functions that have been included in knowledge induced with other variables that have been induced knowledge in the methodology of Tawhidi String Relations (TSR). In principle, in analyzing the Tawhidi String Relations (TSR) model still used the basic model within the framework in the previous simultaneous equation, where all variables were endogenous variables.
In methodology of Tawhidi String Relations (TSR), the Qur'an as the fundamental philosophy of the Islamic economic system (Sura al-Zumr: 38), the essence of monotheism was submission to the will of Allah both related to worship and muamalah. Tawhid became the basis from the whole concept of human activities (Moslem) either economic, political, social and cultural. Tawhid was a unity of divinity reflection in the of the sharia economic activity in practice and realize the relationship between man and the manifestation of relation with God.

The development of science in Tawhidi String Relations (TSR) methodology can be written as follows:

\[ \Omega \rightarrow S \rightarrow \theta \]

In the development of science, then every existing variable should be knowledge induced. It can be written as follows:

\[ X \rightarrow X(\theta) \]

Each variable will experience the process of knowledge-induced? variables of induced knowledge? was a function of any existing variable, all variables run the process as follows:

\[ fX \rightarrow f X(\theta) \]

In all functions, equation variable variables have been induced knowledge?, Then each variable will be included with one variable?, This variable was known as the estimated value? (index). In a simultaneous equation was written as follows:

\[ f(X_i) \rightarrow f(\theta, X_i(\theta)) \]

So it can be interpreted that the function of each variable that was already in the knowledge induced was a function in view of wellbeing (maqashid shari’a) in the economic growth and development for the welfare of society. It can be written in the following equation:

\[ W(\theta) = f(\theta, X(\theta)) \]

b. Induced Knowledge Variable arrangement? and Wellbeing Index?

Knowledge induced -- the wellbeing function included AGY (?), BLAFF (?), EAGEXP (?), RGNS (?), RGDP (?), BDI (?), LR (?) and ?. AGY(?), BLAFF(?), EAGEXP(?), RGNS(?), RGDP(?), BDI(?) obtained by linear conversion from the numerical value of each research variable. Assuming that each variable was given the quality weight of ethical, moral and social in the sciences corridor of Allah, then the lowest numerical value during the study period have the quality weight of smallest ethics, moral and social. And otherwise, the high-
est numerical value during the study period has the quality weight of highest ethical values, moral and social. Increased value weight from the lowest to the highest run gradually from the lowest value (1) to the highest (10).

While the variable was the average of the AGY (?), BLAFF (?), EAGEXP (?), RGNS (?), RGDP (?), BDI (?) and LR (?) variable values. Here were the linear conversion results as a form of knowledge-induced process in order to obtain well-being function, as to which existing in the following table:

Table 1: Data induced variable

| Year | AGY (0) | BLAFF (0) | EAGEXP (0) | RGNS (0) | RGDP (0) | BDI (0) | LR (0) | t |
|------|--------|----------|------------|----------|----------|---------|--------|---|
| 1990 | 1.00   | 1.00     | 8.74       | 1.00     | 1.00     | 9.89    | 3.37   |
| 1991 | 1.03   | 1.11     | 10.00      | 1.08     | 1.11     | 9.31    | 3.53   |
| 1992 | 1.09   | 1.26     | 4.84       | 1.12     | 1.18     | 9.14    | 2.83   |
| 1993 | 1.17   | 1.40     | 5.71       | 1.33     | 1.26     | 8.85    | 3.00   |
| 1994 | 1.26   | 1.55     | 6.69       | 1.44     | 1.36     | 8.74    | 3.20   |
| 1995 | 1.41   | 1.69     | 1.00       | 1.52     | 1.44     | 8.17    | 2.38   |
| 1996 | 1.51   | 1.86     | 1.10       | 1.65     | 1.60     | 7.88    | 2.46   |
| 1997 | 1.61   | 2.55     | 1.26       | 1.81     | 1.70     | 7.65    | 2.61   |
| 1998 | 2.26   | 3.65     | 1.93       | 1.92     | 2.04     | 7.31    | 3.02   |
| 1999 | 2.61   | 2.37     | 2.12       | 2.26     | 2.26     | 10.00   | 3.35   |
| 2000 | 2.50   | 2.02     | 2.00       | 2.16     | 2.41     | 9.89    | 3.34   |
| 2001 | 2.80   | 1.30     | 2.27       | 2.40     | 2.75     | 8.45    | 3.25   |
| 2002 | 3.06   | 2.25     | 2.51       | 2.48     | 3.01     | 7.88    | 3.46   |
| 2003 | 3.26   | 2.38     | 2.70       | 2.92     | 3.26     | 9.31    | 3.87   |
| 2004 | 3.46   | 3.08     | 2.94       | 2.85     | 3.59     | 9.03    | 4.08   |
| 2005 | 3.76   | 3.43     | 3.24       | 3.33     | 4.10     | 8.74    | 4.38   |
| 2006 | 4.35   | 4.20     | 3.84       | 4.22     | 4.79     | 5.30    | 4.50   |
| 2007 | 5.28   | 5.13     | 4.74       | 4.70     | 5.56     | 3.29    | 4.90   |
| 2008 | 6.78   | 6.01     | 6.15       | 6.13     | 6.78     | 4.73    | 6.19   |
| 2009 | 7.98   | 6.80     | 7.28       | 7.59     | 7.75     | 1.57    | 6.67   |
| 2010 | 9.08   | 8.04     | 8.37       | 8.55     | 8.83     | 1.57    | 7.61   |
| 2011 | 10.00  | 10.00    | 9.37       | 10.00    | 10.00    | 1.00    | 8.62   |

c. Stationary Data Determination

Random process results was said to be stationary if it met three criteria: if the average and its variants were constant over time and the co-variance between the two time series data only depended on the inaction between the two periods (Widarjono, 2007). From existing stationary test, Philips-Perron test (PP) was selected.

Here were the stationary testing results of research variable data of AGY, BLAFF, EAGEXP, RGNS, RGDP, BDI and LR that have undergone an induced knowledge process and variable itself. All the variables have made the natural logarithm (Ln) in order to refine the data. It can be seen in the following table:
| No. | Variable         | PHILIPS-PERRON LEVEL | 1st Diff | 2nd Diff | α 5% | Stationary Data On Level |
|-----|------------------|----------------------|----------|----------|------|--------------------------|
| 1.  | Ln(θ)            | 3.779306             | -2.783050| -5.009070| -2.872904 | Sta. Lev. 2              |
| 2.  | Ln(AGY(θ))       | 6.545491             | -1.398275| -4.698690| -2.872904 | Sta. Lev. 2              |
| 3.  | Ln(BLAFF(θ))     | 3.800834             | -2.106133| -4.573022| -2.872904 | Sta. Lev. 2              |
| 4.  | Ln(EAGEXP(θ))    | -1.313641            | -3.698711| -2.872857 | Sta. Lev. 2              |
| 5.  | Ln(RGNS(θ))      | 8.747566             | -1.089399| -5.161632| -2.872904 | Sta. Lev. 2              |
| 6.  | Ln(RGDP(θ))      | 15.23057             | -0.075083| -4.769007| -2.872904 | Sta. Lev. 2              |
| 7.  | Ln(BDI(θ))       | -1.656550            | -2.782781| -4.740076| -2.872904 | Sta. Lev. 2              |
| 8.  | Ln(LR(θ))        | 0.035514             | -3.462104| -2.872857 | Sta. Lev. 1              |

Stationary test results in the table above showed that all research variables of Ln (AGY (?)), Ln (BLAFF (?)), Ln (EAGEXP (?)), Ln (RGNS (?)), Ln (RGDP (?)), Ln (BDI (?)), Ln (LR (?)) and Ln (?) has nothing stationary on the level. This was demonstrated by the PP statistical value in the variable of Ln (AGY (?)), Ln (BLAFF (?)), Ln (RGNS (?)), Ln (RGDP (?)), Ln (BDI (?)), Ln (LR (?)) and Ln (?) were positive, when it should be negative. Similarly, the variable of Ln (EAGEXP (?)) and Ln (LR (?)) has PP absolute statistic value of less than its critical value.

d. **Cointegration Test**

Of several co-integration test, co-integration test was selected developed by Johansen. The determination of whether or not there was co-integration in the VAR model by comparing the trace statistic value with the critical value. If the statistical trace value was greater than the critical value then there was co-integration. And otherwise, if the statistic trace value was smaller than the critical value then there has no co-integration. This can be seen in the following table:
Trend assumption: Linear deterministic trend
Series: LOG(THETA) LOG(RNGS_T) LOG(AGY_T) LOG(BLAFF_T)
LOG(EAGEXP_T) LOG(RGDP_T) LOG(BDI_T) LOG(LR_T)
Lags interval (in first differences): 1 to 4

| Hypothesized | Eigen value | Trace Statistic | 5 Percent Critical Value | 1 Percent Critical Value |
|--------------|-------------|-----------------|--------------------------|--------------------------|
| None **      | 0.353874    | 365.9540        | 156.00                   | 168.36                   |
| At most 1 ** | 0.271033    | 257.6375        | 124.24                   | 133.57                   |
| At most 2 ** | 0.220484    | 179.2380        | 94.15                    | 103.18                   |
| At most 3 ** | 0.190148    | 117.4657        | 68.52                    | 76.07                    |
| At most 4 ** | 0.133749    | 65.16152        | 47.21                    | 54.46                    |
| At most 5    | 0.063606    | 29.55358        | 29.68                    | 35.65                    |
| At most 6    | 0.035961    | 13.25532        | 15.41                    | 20.04                    |
| At most 7 *  | 0.016684    | 4.172627        | 3.76                     | 6.65                     |

**(**) denotes rejection of the hypothesis at the 5% (1%) level
Trace test indicates 5 cointegrating equation(s) at both 5% and 1% levels

| Hypothesized | Eigen value | Max-Eigen Statistic | 5 Percent Critical Value | 1 Percent Critical Value |
|--------------|-------------|---------------------|--------------------------|--------------------------|
| None **      | 0.353874    | 108.3165            | 51.42                    | 57.69                    |
| At most 1 ** | 0.271033    | 78.39945            | 45.28                    | 51.57                    |
| At most 2 ** | 0.220484    | 61.77235            | 39.37                    | 45.10                    |
| At most 3 ** | 0.190148    | 52.30417            | 33.46                    | 38.77                    |
| At most 4 ** | 0.133749    | 35.60794            | 27.07                    | 32.24                    |
| At most 5    | 0.063606    | 16.29826            | 20.97                    | 25.52                    |
| At most 6    | 0.035961    | 9.082695            | 14.07                    | 18.63                    |
| At most 7 *  | 0.016684    | 4.172627            | 3.76                     | 6.65                     |

**(**) denotes rejection of the hypothesis at the 5% (1%) level
Max-eigenvalue test indicates 5 cointegrating equation(s) at both 5% and 1% levels

The above table presented the Johansen co-integration test with a length of inaction 1-4. The upper part shown the co-integration statistical test and the bottom shown eigen value of statistical report. Based on statistical trace test indicated co-integration at an alpha significance level of 1%. This was indicated by the statistical trace value on inaction 1-4 was greater than the critical value.

5. Data Processing Results
From the co-integration test results shown that there was co-integration, then the selected model was the Vector Error Correction Model (VECM). VECM models required long series of data, therefore the data owned in annual periods was transforming prior to the data with the monthly period.
Estimation Proc:

\[ EC(C,1) = \log(\text{THETA}) \log(\text{RGNS}_T) \log(\text{AGY}_T) \log(\text{BLAFF}_T) \log(\text{EAGEXP}_T) \log(\text{RGDP}_T) \log(\text{BDI}_T) \log(\text{LR}_T) \]

VAR Model:

\[ D(\log(\text{THETA})) = A(1,1) \cdot B(1,1) \cdot \log(\text{THETA}(-1)) + B(1,2) \cdot \log(\text{RGNS}_T(-1)) + B(1,3) \cdot \log(\text{AGY}_T(-1)) + B(1,4) \cdot \log(\text{BLAFF}_T(-1)) + B(1,5) \cdot \log(\text{EAGEXP}_T(-1)) + B(1,6) \cdot \log(\text{RGDP}_T(-1)) + B(1,7) \cdot \log(\text{BDI}_T(-1)) + B(1,8) \cdot \log(\text{LR}_T(-1)) + B(1,9) \]

\[ D(\log(\text{THETA})) = C(1,1) \cdot D(\log(\text{THETA}(-1))) + C(1,2) \cdot D(\log(\text{RGNS}_T(-1))) + C(1,3) \cdot D(\log(\text{AGY}_T(-1))) + C(1,4) \cdot D(\log(\text{BLAFF}_T(-1))) + C(1,5) \cdot D(\log(\text{EAGEXP}_T(-1))) + C(1,6) \cdot D(\log(\text{RGDP}_T(-1))) + C(1,7) \cdot D(\log(\text{BDI}_T(-1))) + C(1,8) \cdot D(\log(\text{LR}_T(-1))) + C(1,9) \]

VAR Model - Substituted Coefficients:

\[ D(\log(\text{THETA})) = -0.0030544 \cdot \log(\text{THETA}(-1)) + 5.0966894 \cdot \log(\text{RGNS}_T(-1)) + 0.2616298 \cdot \log(\text{AGY}_T(-1)) - 0.2616298 \cdot \log(\text{BLAFF}_T(-1)) + 5.8248249 \cdot \log(\text{RGDP}_T(-1)) + 2.0191975 \cdot \log(\text{BDI}_T(-1)) - 7.2630525 \cdot \log(\text{LR}_T(-1)) + 1.0822320 \cdot \log(\text{THETA}(-1)) - 0.0043299 \cdot \log(\text{RGNS}_T(-1)) - 0.0061208 \cdot \log(\text{AGY}_T(-1)) - 0.0059177 \cdot \log(\text{BLAFF}_T(-1)) - 0.0243140 \cdot \log(\text{EAGEXP}_T(-1)) - 0.0757597 \cdot \log(\text{RGDP}_T(-1)) - 0.0125115 \cdot \log(\text{BDI}_T(-1)) - 0.0219353 \cdot \log(\text{LR}_T(-1)) - 0.0009465 \]

Forecast Error Variance Decomposition (FEVD)

6. Tawhidi String Relations (TSR) Analysis

TSR analysis in this research focused on the following variables: AGY (?), BLAFF (?), EAGEXP (?), RGNS (?), RGDP (?), BDI (?) and LR (?). These variables acted as independent
variable and the dependent variable. All of these variables were made with the natural logarithm thus transformed into $\ln (AGY (?))$, $\ln (BLAFF (?))$, $\ln (EAGEXP (?))$, $\ln (RGNS (?))$, $\ln (RGDP (?))$, $\ln (BDI (?))$, $\ln (LR (?))$ and $\ln (?).$ The dependent variable $\ln (?)$ or $\ln (W (?))$ the so-called well-being function was a magnitude value holistically contained certain numerical value with the quality level as freedom of goodness and blessing to mankind, with the larger and greater understanding scope dimensions with the main reference basis was on the science of Allah SWT.

Data processing result with VECM method and then interpreted by the contribution of influence variable on the error variance of well-being function ($D (\ln (W (?)))$) were as follows:

$$D(\ln(W(?))) = KD(\ln(AGY(?))) + KD(\ln(BLAFF(?))) + KD(\ln(EAGEXP(?))) + KD(\ln(RGNS(?))) + KD(\ln(RGDP(?))) + KD(\ln(BDI(?))) + KD(\ln(LR(?)))$$

Based on the VECM data processing and estimation methods, then the contribution value of the change of the independent variables on the error variance ($D (\ln (W (?)))$) resulted as follows:

### Table 2: Variance Decomposition

| Period | $\ln(\text{W}(0))$ | $\ln(\text{RGNS}(0))$ | $\ln(\text{AGY}(0))$ | $\ln(\text{BLAFF}(0))$ | $\ln(\text{EAGEXP}(0))$ | $\ln(\text{RGDP}(0))$ | $\ln(\text{BDI}(0))$ | $\ln(\text{LR}(0))$ |
|--------|------------------|-----------------------|---------------------|------------------------|-----------------------|-----------------------|---------------------|---------------------|
| 1      | 100.0000         | 0.000000              | 0.000000            | 0.000000               | 0.000000              | 0.000000              | 0.000000            | 0.000000            |
| 2      | 99.0983          | 0.096265              | 0.000057            | 0.072019               | 0.247083              | 0.146169              | 0.006622            | 0.329811            |
| 3      | 96.46676         | 0.381805              | 0.001456            | 0.104241               | 1.225227              | 0.023787              | 0.012869            | 1.178852            |
| 4      | 92.3012          | 0.846409              | 0.030308            | 0.065287               | 2.974479              | 1.465467              | 0.010834            | 2.306096            |
| 5      | 87.25098         | 1.435743              | 0.146088            | 0.042781               | 5.143956              | 2.589704              | 0.005762            | 3.384984            |
| 6      | 81.97660         | 2.079651              | 0.411031            | 0.135610               | 7.300327              | 3.893095              | 0.015936            | 4.187752            |
| 7      | 76.84367         | 2.707901              | 0.867023            | 0.400075               | 9.191900              | 5.279594              | 0.058217            | 4.653258            |
| 8      | 71.93019         | 3.251656              | 1.536130            | 0.846407               | 10.80355              | 6.662285              | 0.125675            | 4.844113            |
| 9      | 67.16140         | 3.649672              | 2.439478            | 1.450902               | 12.28808              | 7.957686              | 0.180929            | 4.871848            |
| 10     | 62.52588         | 3.902444              | 3.553604            | 2.135062               | 13.68858              | 9.163464              | 0.238797            | 4.791898            |
| 250    | 22.45175         | 6.968426              | 12.63570            | 11.05003               | 8.084976              | 33.51802              | 2.30803            | 2.999286            |
| 251    | 22.37614         | 7.036390              | 12.56940            | 12.06176               | 8.061490              | 33.59079              | 2.30943            | 2.994486            |
| 252    | 22.29602         | 7.105010              | 12.50842            | 11.07604               | 8.036646              | 33.65897              | 2.321159            | 2.997734            |
| 253    | 22.21159         | 7.173871              | 12.45299            | 11.09287               | 8.010596              | 33.72275              | 2.335460            | 2.999961            |

From the table above shown that the error variance of $D (\ln (W (?)))$ was the contribution of the independent variable $\ln (AGY (?))$, $\ln (BLAFF (?))$, $\ln (EAGEXP (?))$, $\ln (RGNS (?))$, $\ln (RGDP (?))$, $\ln (BDI (?))$ and $\ln (LR (?))$ mutually. As for the contribution of the change on independent variables on the error variance $D (\ln (W (?)))$ as follows:

- a. 22.21% due to the effect of $\ln (?)$ variable itself
- b. 7.17% due to the effect of $\ln (RGNS (?))$ variable
- c. 12.45% due to the effect of $\ln (AGY (?))$ variable
- d. 11.09% due to the effect of $\ln (BLAFF (?))$ variable
- e. 8.01% due to the effect of $\ln (EAGEXP (?))$ variable
f. 33.72% due to the effect of Ln (RGDP (?)) variable

g. 2.36% due to the effect of Ln (BDI (?)) variable

h. 3.00% due to the effect of Ln (LR (?)) variable

VECM method analysis results with FEVD above numerically explained the role or contribution of each independent variable on the dependent variable of error variance. In well being equation, W (?) function with all other variables have the numbers induced knowledge, the numerical size did not explain the content of the ethics, moral and social as it was intended as the essence of value the independent variable. Existing independent variable was still open to interpretation value attached.

CONCLUSIONS

From the research there were several things to be identified empirically from policy of national savings, financing the agricultural sector, the results of the agricultural sector and investments in the agricultural sector as part of the development on the financial sector which affected the economic development of the farming community.

Based on the calculation result of the factors affecting public welfare, namely factor from Ln (?) variable of 22.21%, LnRGDP (?) variable factors of 33.72%, LnAGY (?) variable factors of 12.45%, LnBLAFF (?) variable factors of 11.09%, LnEAGEXP (?) variable factors of 8.01%, LnRGNS (?) variable factors of 7.17%, LnLR (?) variable factors of 3.00% (?) and LnBDI (?) variable factors of 2.36%.

In developing the Tawhidi String Relations (TSR) model, based on the simulation results historically was quite well developed in the economic development framework of the poor by using agreements contained in the sharia economic system. Agriculture was an important sector in economic development for job creation and public incomes.

Empirical results shown that the provision of financing for agriculture has a positive and significant effect on the real national savings, agriculture output. Thus, the government should focus on investment and financing in the agricultural sector because the agricultural sector became the development of the financial sector improving agricultural performance in Indonesia.

REFERENCES

Adelman, Irma. 1999. “Fallacies in Development Theory and Their Implication for Policy”, California Agriculture Experiment Station, working Paper, No. 887

Afangideh, Udomah J. 2009. “Financial Development and Agricultural Investment in Nigeria: Historical Simulation Approach”, Journal of Economic and Monetary Integration, Vol. 9, No. 1, June 2009, Hal. 74-97.

Ariffin, B. 2003. Spektrum Kebijakan Pertanian Indonesia: Telaah Struktur, Kasus, dan Alternatif
Strategi, Jakarta: Penerbit Erlangga.

Elbadawi, I. 2001. “Economic Performance and Effectiveness of Adjustment Lending in Sub-Saharan Africa”, World Bank.

Fitriana dan Nawawi. 2002. “Pembangunan Pertanian dan Marjinalisasi Petani: Dengan Fokus pada Pertanian Tanaman Pangan”, Jurnal Pendiduk dan Pembangunan”, Vol. XIII, No. 2. Hal. 39-57.

Goldsmith, R. W. 1969. Financial Structure and Development, New Haven: Yale University Press.

Gujarati, D. N., Porter, D. C. 2009. Basic Econometrics, 5th edition, Singapore: McGraw Hill International Edition.

Judiseno, Rimsky K. 2002. Sistem Moneter dan Perbankan di Indonesia, Jakarta: PT. Gramedia Pustaka Utama.

Lewis, W. Arthur. 1954. “Economic Development With Unlimited Supplies of Labor”, Journal Manchester School of Economic & Social Studies, Vol. 22, Hal. 139-191

Lewis, W. Arthur. 1955. The Theory of Economic Growth, Oxford: University Press.

Nurkse, R. 1953. Problem of Capital Formation in Underdeveloped Countries, New York.

Pagano, M. 1993. “Financial Market and Growth: An Overview”, European Economic Review, Vol. 37, P. 613-622, WPS40, World Bank.

Pakpahan, A. 2004. “Hari Depan Pertanian dan Petani Indonesia”, Makalah Pembanding pada Kopernas XIV PERHEPI, 28-30 Mei 2004, Jakarta.

Rondan, Rosentein, Paul N. 1943., “Problem of Industrialization in Eastern and South Eastern Europe”, Economic Journal, Vol. 53, Hal. 202-211.

Saragih, B. 2000. “Kebijakan Pertanian untuk Merealisasikan Agribisnis sebagai Penggerak Utama Perekonomian Negara”, Paper on Panel Discussion, Center Policy for Agro Studies.

Snowdon, Brian. 2008. “Towards a Unified’s Theory of Economics Growth: Oded Galor on the Transition from Malthusian Stagnation to Modern Economic Growth”, Working Paper, Brown University Departement of Economic, No. 2008-4.

Steel, WF dan Charitonenko, S. 2003. Rural Finance Services: Implementing The Bank’s Strategy to Reach the Rural Poo, The World Bank Agriculture & Rural Development Departemen. March 2003. (http://www.ruralfinance.org/servlet/BinaryDownloaderServlet?Filename=1122821975489_RFI_worldbank.pdf).

Subejo. 2007. “Memahami dan Mengkritisi Kebijakan Pembangunan Pertanian di Indonesia”. Makalah Ilmiah pada Temu Nasional Mahasiswa Pertanian Indonesia dan LKMMM, UGM-Yogyakarta 15 Februari 2007.

Sumitro, Warkum. 2004. Asas-asas Perbankan Islam dan Lembaga-Lembaga Terkait BAMUL, Takatul dan Pasar Modal Syariah di Indonesia, Cet. 4, Jakarta: Raja Grafindo Persada.

Sumodiningrat, G. 2007. Ekonomi: Pengantar, Yogyakarta: BPFE.

Supardi. 2013. Aplikasi Statistika dalam Penelitian: Konsep Statistika yang Lebih Komprehensif, Change Publications, Jakarta.

Sutarno. 2005. “Perilaku Menabung Rumah Tangga di Pedesaan (Studi Kasus di Kec. Delangu Kab. Klaten)”, Tesis IESP tidak di publikasikan, UNDIP, Semarang.
Syukur, M. 2002. "Analisis Keberlanjutan dan Perilaku Ekonomi Peserta Skim Kredit Rumah Tangga Miskin". Disertasi, Program Pasca Sarjana, ITB

Uriarte, Jr., Filemon A. 2008. Executive Director, ASEAN Foundation, during the IEAP Regional Consultation on the World Bank Report, 15 April 2008, Makati City, Philippines.

Widarjono, A. 2007. *Ekonometrika*, Edisi 2, Yogyakarta: Penerbit Ekonisia, Fakultas Ekonomi Universitas Islam Indonesia

Widarjono, A. 2007. *Ekonometrika*, Edisi 2, Yogyakarta: Penerbit Ekonisia, Fakultas Ekonomi Universitas Islam Indonesia.

Yasin, Muhammad. 2008. "Kebijakan Kredit Panen Padi Sebagai Instrumen Guna Mengangkat Petani Padi dari Kemiskinan", *Jurnal Icsan Gorontalo*, Vol. 3. No. 1 Februari-April 2008. Hal. 1376-1387.

Yudohusodo, Siswono. 2006. Kebijakan, Pendidikan dan Hasil Penelitian Pertanian. Seminar Nasional dengan tema "Paradigma Baru Pembangunan Pertanian dan Masa Depan Bangsa", Lustrum XII Fakultas Pertanian UGM, 16 September 2006, Yogyakarta.