Economic Growth, Export, Debt, and FDI: The Agriculture Case of Indonesia

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Economic Growth, Export, Debt, and FDI: The Agriculture Case of Indonesia

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***Abstract*—This study discusses the effect of export in agriculture, FDI in agriculture, and debt in agriculture to economic growth in agriculture in Indonesia. Analysis of data using *Vector Error CorrectionModel*with the help of an application program using the E-views 8.0. Based on the statistical data testing through the regression coefficient test, the conclusion of the analysis showed that increase of 1 percent in exports in the agriculture sector caused an increase in the level of GDP in the agricultural sector by 0.024 percent. FDI in the agricultural sector and debt in the agricultural sector have a negative impact in the long run during the observation period.**

Keywords*: *export, FDI, debt, agriculture

I. INTRODUCTION

The agriculture sector is an important sector for the economy of Indonesia. Agricultural sector development directed at increasing agricultural productivity to meet the food needs of the community and the needs of the domestic industry, increase exports, increase farmers' income, expand employment opportunities and promote employment. Agricultural productivity growth is an important component of economic transformation, [2], but in some cases, the agricultural sector is not the main driver of economic growth in a country [3],

Statistics show that the development of agricultural land in Indonesia continues to decline but the value of agricultural GDP, especially food crops continues to increase. In the span of 2011 to 2013, the land area in Indonesia is still increasing. A drastic reduction of the land area occurred in 2015 amounted to 8,087,393 hectares, there is a difference of 24,200 hectares compared with 2014. The agricultural GDP value tends to increase, recorded in 2015 amounted to 397,408.6 billion rupees. Critically, the rate of growth in crop yields has slowed down; besides, the ongoing climate change is expected to reduce crop yields in many parts of the world [13], [10]. On the supply side, increased degradation of land resources in many parts of the world.

Statistics show that the foreign debt position of Indonesia in agriculture, livestock, forestry, and fisheries in April 2019 amounted to 10,228 Million USD. [12] external debt is an important financial source that is primarily used to supplement domestic resources to support the development and other needs of a country. Typically, the foreign debt incurred by a country which suffers from a lack of domestic savings and foreign exchange needed to achieve development and other national objectives. However, if the external debt is not used in income-generating activities and productive, the ability of debtor countries to pay off debts is significantly reduced.

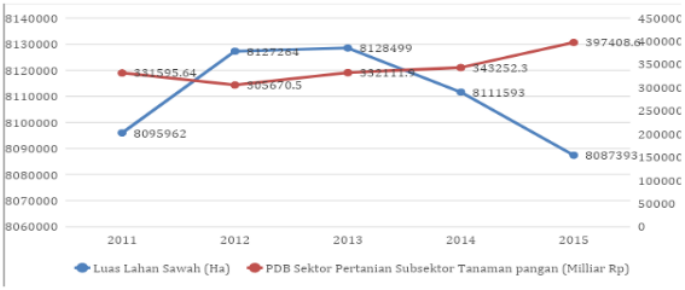


Fig. 1. Land (Ha) and a GDP of food crops subsector Agricultural Sector (Billion USD)

a. Source: Statistics

The flow of foreign investment is in demand to assist the process of development in a country. Based on data from Bank Indonesia, in 2018 the amount of foreign investment flows agriculture, livestock, forestry and fisheries in Indonesia amounted to 3248.51 million USD. The investment value has decreased when compared to 2017 with a total investment of 3613.9 million USD. Agriculture is a risky financial investment compared to other economic sectors such as manufacturing or services. As a result, private capital has been reluctant to invest without a guarantee from the state, such as contract enforcement, bankruptcy laws, and warranties set back. The financial benefits of the asset transfer to the host country may be small, but the flow of foreign investment is deemed potentially beneficial development through technology transfer, job creation, provision of infrastructure, increased production, food security and export earnings. Do the potential benefits of foreign debt and foreign investment in the agricultural sector is possible realized a major problem in the current discussion.

Formulation of the problem

1. How to influence foreign debt agricultural, foreign investment agriculture, export in agricultural sector to economic growth

A. URGENCY RESEARCH

Statistics show that the development of agricultural land in Indonesia continues to decline but the value of agricultural GDP, especially food crops continues to increase. Increased degradation of land resources in many parts of the world. severely limit land productivity and its ability to provide goods and services in the agricultural sector. Research would like to see the role of the foreign debt and the flow of foreign investment in the agricultural sector to economic growth in Indonesia.

II. LITERATURE REVIEW

A. THEORETICAL

Land degradation is a global problem that affects us all through higher food prices, the potential for conflict and forced migration, and also through the provision of global ecosystem services are lower [7]. Interaction natural processes, human activities, and social systems play a considerable role in land degradation [11].

Progress private financial investment in this sector in recent decades as a result of the change may have long-term consequences for the sustainability of agriculture and food systems. Previous state policy to support and secure lending to agriculture as a long-term investment, recognizing the important role of agriculture in developing countries. However, countries are now supporting and securing contemporary credit for financial actors operating in the agricultural sector, which alone make a profit next financial interests. This shift only strengthens the short-term incentives usually push the decision in the financial sector and is often at odds with the long-term sustainability goals.

Greater oversight of financial market activities in this sector is an important component for building more sustainable agrarian livelihoods and the food system, in addition to a more robust policy for environmental protection. The financial markets are regulated more strictly alone is not always sufficient for sustainability in the agricultural sector, as shown by the ecological effects of agricultural industrialization in the twentieth century.

[4] Export considered the engine that drives economic growth and therefore increases the remuneration of the factors of production. Besides, export opportunities for investment in the economies of all countries and as a result, the level of income and high savings created leads again on growth. The importance of exports and the impact on economic growth raises questions about the nature of the relationship between these two macroeconomic variables. However, he left some other relevant variables such as government debt, inflation, exchange rates, etc. Which can have a significant relationship with the two variables mentioned above.

Government debt can have a positive or negative impact on economic growth depends on its use. This can affect the economy positively when governments use it for projects oriented investments such as infrastructure, electricity, and agriculture sectors. However, it could have a negative impact when used for private and public consumption. In general, the level of total government debt lower positively affects economic growth, but this relationship becomes negative at a high level.

In the first two decades of the 21st century Brazil, Russia, India, and China (BRIC) appears as traders and investors are very visible. Visibility was mainly recorded in the flow of interest in agricultural investment after the global surge in commodity prices in 2008.

III. PREVIOUS STUDIES

[9] African countries are rich in resources is often burdened with high external debt. However, the management of their resource endowment, the logical source of debt repayment, also remains a challenge, in addition to the characteristics of their weak institutions. In short, we found that low-income countries are rich in resources development positions of (welfare) less economic due to their high level of external debt.

Expanding trade in agricultural commodities for countries exporting surplus grain market, worldwide through export financing and subsidies. Canada and Australia formed a marketing board to manage commodity trading grains, partly to limit the manipulation of the grain market and to provide stable prices and marketing were organized for export, while also offering credit to the importing countries, For example, the US state support industrial agriculture, which is based on agriculture aimed at providing mortgage capital to purchase inputs and equipment.

The relationship between financial investors and trade in agricultural commodities has a long history. In the eighteenth century and the nineteenth, creating commodity exchanges worth of agricultural commodities through a combination of technological innovation and regulation of the state and the market. These markets provide a means where buyers and sellers can buy and sell contracts of agricultural commodities for delivery at a future date and can protect them against the risk of agricultural production and the uncertainty of long-distance trade. During the mid to late nineteenth century, the practice of agricultural

futures trading for grain widespread in the US and then in Canada.

Private speculative capital has long been active in the marketing and trading of agricultural commodities, even before the formal commodity exchanges, and in turn, has become a contested site. Speculation is trade based on a prediction of price movements by the uncertainty of the prize. As a result, trade 'futures' likened to gambling. However, proponents claim that centralize and regulate the commodity exchange market, commercialize agriculture and provide services such as price information and risk protection.

[6] There has been a recent revival of interest in international investment in agricultural land. Purchase and rental of farmland in Africa by investors in various Gulf countries for food production in support of food security strategies they might have attracted much attention until now, although this is only one of a variety of investment flows actual or planned with a different motivation. Other countries outside Africa are also being targeted and substantial investments have also been made or are being planned by China. Some argue that this investment could mark the beginning of a fundamental shift in the geopolitics of international agriculture. Of course, complex and controversial issues - economic, political, institutional, legal and ethical - raised concerning food security, poverty reduction, rural development, technology and access to resources, especially land. On the other hand, the low level of investment in the agriculture of developing countries, especially in sub-Saharan Africa, for decades has been highlighted as an issue of concern and the root causes underlying the world food crisis recently that the possibility of their resources additional investment can not be dismissed just like that.

IV. METHOD

A. The Scope Of Research

This study analyzed the relationship between agricultural GDP, agriculture external debt, foreign direct investment in agriculture and agricultural export commodity in Indonesia in 2010-2018 using monthly data.

B. Data Analysis Technique

Data analysis was performed through a series of stages of testing using the Vector Regression (VAR). The VAR model was first introduced by Sims as an alternative model approach to the double equation with consideration of minimizing the theoretical approach that aims to capture the economic phenomena well. Sims believes that if there is a simultaneous relationship between the variables studied, the use of the structural approach on modeling the simultaneous equations typically apply economic theory in his attempt to describe the relationship between variables to be tested [5]

V. RESULTS AND DISCUSSION

A. Optimal Lag Estimation

The issue of determining the length of the lag is also increasingly important along with the assumption that the selection of the right lag will produce a Gaussian residual (free from problems of autocorrelation and heterokedastisitas). For determining the optimal lag level, the value of Akaike Information Criteria (AIC), Final Prediction Error (FPE), Hannan-Quinn Information Criterion (HQ), and the smallest Schwarz Information Criterion (SC) are used. The amount of lag selected is the lag that produces the smallest SC value. The calculation of SC value for each lag indicates that the minimum value of SC is obtained at lag 2 for the variables in the payment efficiency function.

TABLE I. OPTIMAL LAG ESTIMATION

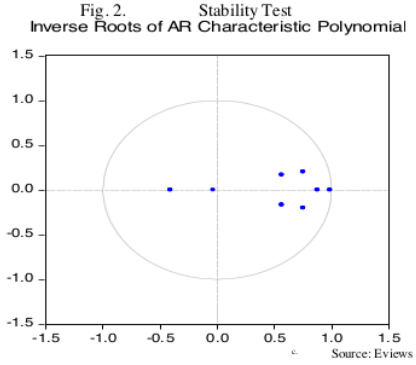
LAG	SC	HQ
0	82.03792	81.97589
1	73.18912	72.87895
2	72.83579*	72.27750
3	73.42782	72.62140
4	73.60575	72.55120
5	73.95525	72.65257
6	74.49164	72.94082
7	73.87453	72.07559*
8	74.39747	72.35040

[b.] indicates lag order selected by the criterion
Source: Eviews

B. Stability Test

Before entering into further stages of analysis, the estimation results of the VAR equation system that have been formed need to be tested for stability through the VAR stability condition check in the form of roots of a characteristic polynomial on all variables used multiplied by the number of lags of each VAR. VAR stability needs to be tested because if the results of the estimated VAR stability are not stable then the IRF and FEVD analyze become invalid. Based on the results of the test, a VAR system is said to be stable if all the roots or roots have a modulus smaller than one, the modulus range <1. The results of the Roots of AR Characteristic Polynomial indicate the model is in a circle.

Fig. 2. Stability Test



Stability Test

C. Cointegration Test

Cointegration is a long-term relationship used to determine whether two or more variables have a long-term equilibrium relationship. Based on the cointegration test there is a cointegration equation at a significant level of 5 percent. Then it can be concluded that the data are cointegrated. The form of the equation can be written as follows:

$$\begin{aligned}\text{GDP\_Agriculture} = {} & -0.431149\ \text{GDP\_Agriculture}\ (-1) \\ & - 0.024762\ \text{Export\_Agriculture}\ (-1) + \\ & 9.998567\ \ \text{FDI\_Agriculture}\ (-1) \\ & + 0.653220\ \text{Debt\_Agriculture}\ (-1)\end{aligned}$$

The Ln Cons adjustment coefficient of -0.431149 is at the value $-1 < \alpha < 0$, indicating a correction process that affects fluctuations in the GDP variable in the agricultural sector. The existence of the process of correction of GDP against the long-term trend of E [GDP_Agriculture] will affect GDP growth in the agricultural sector.

D.Vector Error Correction Model Results

The estimation results of the long-term equation can be formulated as follows:

$$\begin{aligned}\text{GDP\_Agriculture} = {} & 537449.0 + -3223.431_t + 0.024762 \\ & \text{Export\_Agriculture} \\ & - \ 9.998567\ \text{FDI\_Agriculture} - 0.653220 \\ & \text{Debt\_Agriculture}\end{aligned}$$

VECM test results of the payment efficiency function model can be said to lead to long-term balance. This can be seen from the negative Error Correction Term (ECT) value (-) that is equal to -0.43. The increase in GDP in the agricultural sector, in the long run, is influenced by exports, FDI, and debt. All of these variables are data in the agricultural sector. Results in the 2010-2018 period found that an increase of 1 percent in exports in the agriculture sector caused an increase in the level of GDP in the agricultural sector by 0.024 percent. This shows that productivity in the agriculture sector has a positive impact and encourages economic growth in the agricultural sector. Inversely proportional to the variable FDI in the agriculture sector and debt in the agriculture sector. The results show that both of these variables have a negative impact in the long run during the observation period.

VI. CONCLUSION

Based on the statistical data testing through the regression coefficient test, the conclusion of the analysis showed that an increase of 1 percent in exports in the agriculture sector caused an increase in the level of GDP in the agricultural sector by 0.024 percent. FDI in the agricultural sector and debt in the agricultural sector have a negative impact in the long run during the observation period

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