Asia Pasific Journal of Management and Education (APJME)
Vol. 5 No. 2, pp.26-37, July, 2022
E-ISSN: 2655-2035
https://ejournal.aibpmjournals.com/index.php/APJME/index

Value-added Agriculture, Investment, and Infrastructure Development in the Indonesian Economy: VECM Approach

Budi sasongko[1], Sri Harnani[2], Suryaning Bawono[3]
STIE Jaya Negara Tamansiswa Malang, Indonesia[1,2,3]
Jl. Tumenggung Suryo No. 17, Bunulrejo, Malang, East Java, 65123, Indonesia
Correspondence email: ninobalmy@gmail.com
ORCID ID: 0000-0001-6617-276X

ARTICLE INFORMATION

Publication information
Research article

HOW TO CITE

Sasongko, B., Harnani, S., Bawono, S. (2022). Value-added agriculture, investment, and infrastructure development in the Indonesian economy: VECM approach. *Asia Pasific Journal of Management and Education*, *5*(2), 26-37.

DOI:
https://doi.org/10.32535/apjme.v5i2.1548

Received: 30,JUNE,2022
Accepted: 01,JULY,2022
Published: 20,JULY,2022

ABSTRACT

This study aimed to determine the impact of the relationship between agricultural value-added on investment and infrastructure development in Indonesia. This study uses data from a period of 36 years, from 1985 to 2020, with vector modeling. This research is based on secondary data from the world bank. We use the variables of value-added agriculture, investment, and infrastructure in Indonesia. The findings of this study indicate that macroeconomic factors such as value-added agriculture, non-financial investment, and infrastructure are all interrelated. Changes in one variable will have an impact on other variables. As the value of agriculture declines, the Indonesian government will boost infrastructure spending. This happens because the decline in the value-added of agriculture in Indonesia can hamper infrastructure growth because the existing infrastructure is considered sufficient to support the needs of the agricultural sector. Increased investment, on the other hand, will increase the value-added of agriculture, which implies that agriculture is still receiving a sizeable investment and will continue to play a significant role in non-financial investment.

Keywords: Agriculture, Indonesia, Infrastructure, Investment, VECM.

INTRODUCTION

Indonesia is an agrarian country because most of its population lives in agriculture. As an agricultural country, Indonesia produces various agricultural products, including rice, cassava, sweet potatoes, corn, vegetables, and fruits (Hamilton-Hart, 2019). Sirat, Hadady, and Ali (2020) found that the most significant contribution to the agriculture sector was contributed by food crops and estate crops sub-sectors with their largest contribution of 6.29% and 44.90%, respectively. Not only that, but Indonesia also produces various plantation products, including oil palm, rubber, sugar cane, cocoa, and coffee. In their utilization, these agricultural products require adequate processing to obtain high added value. This is what underlies the basic concept of agriculture-based industry, or agroindustry (Suparno, Machfud, Marimin, & Indra, 2018). Agroindustry is an industry that processes agricultural products. Agroindustry was popularized in Indonesia in the 1980s, although, in fact, it has been applied in Indonesia since the Dutch colonial era (Otten, Hein, Bondy, & Faust, 2020). The definition of agroindustry is a company that processes vegetable (derived from plants) or animal (derived from animals) materials (Drean & Bawono, 2021). The processes applied include conversion and preservation through physical or chemical treatment, storage, packaging, and distribution. These agro-industrial products can be final products that are ready to be consumed or used by humans or products of other industrial raw materials (Lillford & Hermansson, 2021).

The position of the agroindustry is very strategic, namely as a bridge that connects the agricultural sector on the upstream side and the industrial sector on the downstream side (Drean, 2021). This role is shown, for example, by the palm oil agroindustry, which connects the cultivation of oil palm agriculture and the food, chemical, pharmaceutical, and energy industries that use palm oil as raw material. The same role can be shown by starch and other polymer agroindustries (Garritano, de Oliveira Faber, De Sá, & Ferreira-Leitão, 2018). This role is also shown by the leather agroindustry, namely leather produced from leather tanning to be further processed into finished leather goods, such as shoes and footwear, garments, gloves, sofas (upholstery leather), and heavy leather horse saddles (Tesfaw, 2021).

From the 1980s until today, Indonesia's agroindustry's role has been very important, including creating added value for domestic agricultural products and jobs. Especially attracting workers from the agricultural sector to the agricultural sector (agroindustry), increasing income foreign exchange through increasing exports of agro-industrial products, improving income sharing, and attracting development in the agricultural sector (Rusliyadi & Libin, 2018). Increasing the added value of agricultural products and turning these agricultural products into superior products that are able to compete in domestic and international markets is a challenge in the development of the agroindustry in Indonesia today. To face these challenges and for the development of agroindustry towards advanced and sustainable agroindustry, appropriate, effective, and efficient strategies are needed (Jaelani, Handayani, & Karjoko, 2020)

Measurement of the success rate of a development carried out in a country or region can be seen from the level of economic growth achieved. Economic growth illustrates the impact of development policies implemented by a country and region, especially in the economic field (Widarni & Bawono, 2021). Various economic sectors make up the rate of economic growth, which will indirectly represent the amount of economic change in a nation or area. To attain these development aims and objectives, different economic and non-economic variables must be supported. Infrastructure is one of the economic variables that both supports and impacts the path of growth. In a social and economic context, infrastructure refers to the physical system that provides roads, transit, telecommunications, buildings, and other public amenities to support fundamental human requirements. The availability of infrastructure is also very much needed in agricultural development. Therefore, agricultural development has always been an important agenda in Indonesia's development plan. It is based on the assumption that agricultural development is a prerequisite for Indonesia's economic development (Liang & Yang, 2019).

In order to achieve the desired agricultural development, the five main requirements for agricultural development must be focused on its implementation, also supported by the five facilitating conditions. A market for agricultural goods, ever-changing technology, local production facilities and equipment, production incentives for farmers, and transportation are among the five major prerequisites for agricultural growth. Meanwhile, agricultural growth is aided by five factors: development education, production credit, farmer group activity, agricultural land improvement and expansion, and national agricultural development planning (Farooq, Riaz, Abid, Abid, & Naeem, 2019).

The basic requirements and conditions for facilitating agricultural development cannot run smoothly without being supported by adequate transportation conditions. Economics is essentially connected with the production, distribution, and consumption of humans. This is also the case with the role of transportation in the economy. Thus the availability of adequate road infrastructure is necessary for the realization of agricultural development. Roads and bridges are infrastructures needed in the process of agricultural development. Not only connecting one area to another or connecting one village to another or a city, but the benefits are more pronounced in the distribution of information, distribution of production facilities, distribution of products or production, and ensuring smooth transportation and communication (Pratiwi, Harianto, & Daryanto, 2017). According to Purwansyah, Tan, and Achmad (2013), when combined, the factors of road, irrigation, and market infrastructure have a favorable and substantial influence on agricultural added value. Meanwhile, if viewed partially, the variables of road infrastructure and irrigation have a significant effect on the added value of the agricultural sector, but the market variable, although it has a positive effect, is not significant. Variations up and down the value-added variable in the agricultural sector can be explained by the variables of road infrastructure, irrigation infrastructure and market infrastructure.

Iek's (2013) research confirmed that the development of road infrastructure has a positive and significant impact on changes in people's economic business income, as well as a greater social impact than the economic impact in Inland May Brat, West Papua Province. The research conducted by Irawan (2005) found that the response of foreign investment to the agricultural sector was elastic to the infrastructure of provincial roads and irrigation. Meanwhile, the infrastructure that is important to spur Indonesia's agricultural exports in the long term is state roads.

Prasetyo and Firdaus (2009) show that there is a significant effect of network infrastructure investment in one region on economic activity (sectoral) in the region and surrounding areas, also finding that infrastructure, both electricity, roads and clean water, has a positive influence on the economy in Indonesia. Based on these studies, this research strongly suspects the positive role of a number of important infrastructures such as the construction of the Construction, Electricity, Highways (State, Provincial and Regency/City roads), Transportation and Telecommunication sectors towards oil palm expansion which is approached through the variables of production and land area.

The government must establish a complete set of laws and regulations that will give incentives for the agroindustry and infrastructure enterprises. According to an agreement with the business community, these laws might take the shape of tax policies, export taxes, labor regulations, licenses, land, and other types of restrictions. Exceptional consideration is given in order to provide the business community with a long-term perspective when it comes to the establishment of new centers of economic growth (Agusalim, 2017).

LITERATURE REVIEW

Agroindustry is defined as any operation that uses agricultural products as raw materials, creates, manufactures, or offers equipment or services for these activities. These tasks include conversion and preservation by physical or chemical treatment, as well as storage, packing, and distribution. This agroindustry product may be a finished good ready for consumption or may be derived from other industrial raw materials. Agroindustry is a subset of the agricultural industrial complex, including activities ranging from the production of raw agricultural commodities to their processing or transformation for use by consumers. Agroindustry is a term that refers to the interconnected activities of agricultural product production, processing, transportation, storage, financing, marketing, and distribution. Agroindustry, according to socioeconomic specialists, is one of the five agreed-upon agribusiness subsystems, which include the provision of production facilities and equipment, farming, product processing, marketing, and coaching (Prianto, 2011).

Agroindustry is derived from the terms agricultural and industry and refers to an industry that relies heavily on agricultural goods as a raw material or that produces a product utilized as a method or input in agricultural companies. Agroindustry can be defined as industrial activities that use agricultural products as raw materials, design, manufacture, and provide equipment and services for these activities. Thus, agroindustry includes agricultural product processing industries, agricultural equipment and machinery manufacturing industries, agricultural input manufacturing industries (fertilizers, pesticides, herbicides, and others), and agricultural service industries (Bourquard, Berenguer, Gray, & Preckel, 2022). Agroindustry, when viewed through the lens of the agribusiness system, is a subsystem of agribusiness that processes and transforms agricultural products (food, wood, and fiber) into semi-finished goods that can be consumed directly and goods or industrial production materials used in production processes such as tractors, fertilizers, pesticides, and agricultural machinery. According to the definition above, the agroindustry is a large subsector that encompasses everything from the agriculture sector to the downstream industry. The upstream industry manufactures agricultural tools and machinery, as well as industrial production facilities used in agricultural cultivation, whereas the downstream industry converts agricultural products into raw materials or finished goods suitable for consumption or is a post-harvest industry that processes agricultural products (Aguilar-Rivera, 2019).

The characteristics of the agroindustry that have advantages over other industries, among others, are having a strong relationship with both upstream and downstream industries, utilizing existing and renewable natural resources, and having a comparative and competitive advantage in the international market. Furthermore, in the domestic market, which can accommodate a large workforce, agroindustry products are generally quite elastic so that they can increase people's incomes which has an impact on the wider market, especially the domestic market (Wilkinson & Rocha, 2009). One way to accelerate a country's progress is to invest in its infrastructure. Economic development is highly dependent on the availability of adequate infrastructure, as Purwansyah et al. (2013) state the importance of infrastructure in encouraging economic growth and improving living standards.

According to Tarigan & Syumanjaya (2013), infrastructure includes three things: first, fundamental support for factories and industries, such as power, roads, and telecommunications networks; secondly, the ability to move goods and people around; and thirdly, the ability to communicate with other people. Second, raw material and complete product manufacturing and distribution expenses. Finally, there are connections between markets and the procedures of marketing. Better infrastructure may make it easier to move commodities, which in turn promotes economic growth by lowering the prices at which they can be purchased by the society as a whole. This, in turn, helps to stabilize the economy by reducing the price differences across nations. Regional produce is transferred and sold to the market as a result of infrastructure that supports transportation services. The relationship between road infrastructure and transportation costs is that if the quality of road infrastructure in an area is poor, it will result in an increase in transportation costs, thereby reducing the competitiveness of regional products compared to other regional products.

Agricultural products agroindustry is able to make a very real contribution to development in most developing countries for four reasons, namely: first, agricultural products agroindustry is the gateway to the agricultural sector. That is, a country cannot fully use its agronomic resources without the development of agroindustry. Second, the agroindustry of agricultural products is the basis for the manufacturing sector. Third, agro-industrial processing of agricultural products produces important export commodities, and fourth, food agroindustry is an important source of nutrition (Soekartawi, 2005). From here, to find out the impact of the linkages between the agricultural, agroindustry, investment, and infrastructure sectors in Indonesia and whether infrastructure development affects the added value of agriculture and agroindustry, this research was conducted. This study uses secondary data for 36 years, from 1985 to 2020, with research variables, namely the value-added variables of agriculture, agroindustry, investment, and infrastructure presented by government spending.

Asia Pasific Journal of Management and Education (APJME)
Vol. 5 No. 2, pp.26-37, July, 2022
E-ISSN: 2655-2035
https://ejournal.aibpmjournals.com/index.php/APJME/index

RESEARCH METHOD

This study took 36 years, from 1985 to 2020, by modeling "autoregressive vectors" to understand the causal relationship between variables. This research is based on secondary data from the world bank. We use the variables of agriculture value-add, investment, and infrastructure in Indonesia. The following multivariate regression model was used to evaluate the causal relationship between agriculture value-add, investment, and infrastructure in Indonesia.

$A_t = \beta_0 + \beta_1 I_t + \beta_2 IN_t + e_t$ eql 1
$I_t = \beta_0 + \beta_1 A_t + \beta_2 IN_t + e_t$ eql 2
$IN_t = \beta_0 + \beta_1 A_t + \beta_2 I_t + e_t$ eql 3

Description :
A: Agriculture
I: Investment
IN: Infrastructure
E: error term
t: time series
β: the magnitude of the effect of causality
eql: equation

This study uses vector calculations where each regression relationship will be brought together so that each variable will alternately become the dependent variable and the independent variable. The zero theory of Dickey-Fuller, taken from the PP test, and p=1 is the formula in Δyt = (ρ – 1)yt-1 + ut, in which Δ – for the first time different operators. This research used the following equation for the "unit root test":
$\Delta Y_1 = \alpha_0 + \beta_0 T + \beta_1 Y_{t-1} + \sum_{i-1}^{q} \alpha_1 \Delta Y_{t-1} + e_t$

Description:
Y as the variable is being examined for unit root
T as the variable which indicates the “linear trend,” the “lag difference” means is $\Delta Yt-1$,
$\alpha 0$ are shown as “constant term,” with the
"t" as a "time trend" indicator.

The null and alternative hypotheses for the "unit root test" are as follows:
H_0: α=0
H_1: α≠0

RESULTS

A stationarity test must be done before a causality or vector assumption may be met. By studying the error term, which includes the potential of autocorrelation if the series is non-stationary. The Augmented Dickey-Fuller test (ADF) may identify whether a series is non-stationary. The following are the results of the unit root test:

Asia Pasific Journal of Management and Education (APJME)
Vol. 5 No. 2, pp.26-37, July, 2022
E-ISSN: 2655-2035
https://ejournal.aibpmjournals.com/index.php/APJME/index

Table 1. ADF's Unit Root Test on A, I, and IN data in Indonesia

Variable	Unit Root	Include in the examination Equation	Statistics for the ADF Test	5% Critical Value	Description
Agriculture (A)	Level	Intercept	-1.866468	0.3436	
	First Diff	Intercept	-4.964410	0.0003	Stationer
Investment (I)	Level	Intercept	-2.672406	0.0895	
	First Diff	Intercept	-9.683934	0.0000	Stationer
Infrastructure (IN)	Level	Intercept	-2.889108	0.0568	
	First Diff	Intercept	-4.863371	0.0004	Stationer

Data A, I, and IN are stationary at the first difference. This is shown by the Augmented Dickey-Fuller Test, with a probability of 0.0003, a probability less than 5%. In this case, data A shows stationary at the first difference compared to the original data. The same thing happened to data I and IN, which were stationary at the first difference from the original data. From here, we can take the next step in determining vector analysis.

A proper notion of the lag duration is necessary for causality and vector testing. Before doing a VAR analysis or a causality test, you must determine the ideal pause period. The shortest or lowest Akaike Information Criteria (AIC) is utilized to determine the appropriate time lag in this experiment. Because the data used in this test include yearly data with a 36-year period, the gap length runs from 0 to 8. This lag is thought to be long enough to explain A, I, and IN over a year.

Table 2. AIC value at Lag 0 to 8 A, I, and IN data in Indonesia

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-129.2893	NA	2.548979	9.449233	9.591969	9.492869
1	-71.39051	99.25500	0.077983	5.956465	6.527410	6.131009
2	-56.86579	21.78708	0.053971	5.561842	6.560996	5.867293
3	-55.04338	2.343106	0.096297	6.074527	7.501889	6.510886
4	-32.26124	24.40943	0.041061	5.090089	6.945659	5.657355
5	-27.30946	4.244381	0.069592	5.379247	7.663026	6.077421
6	13.26331	26.08250*	0.011084*	3.124049	5.836037	3.953131
7	30.20151	7.259225	0.013432	2.557035	5.697232	3.517025
8	63.38786	7.111361	0.011959	0.829439*	4.397844*	1.920336*

Table 2 shows the findings of the Optimum Lag test. The AIC value at Lag 0 to 8 indicates that the variable lengths of Lag A, I, and IN are at AIC, SC, and HQ at Lag 8. Since the results of the three criteria are both at lag 8, then lag eight will be chosen. The interactions between A, I, and IN are shown in the table during this period. Based on these data, there is no preliminary effect for the four variables, so according to FPE requirements, the best lag is at lag 8.

Asia Pasific Journal of Management and Education (APJME)
Vol. 5 No. 2, pp.26-37, July, 2022
E-ISSN: 2655-2035
https://ejournal.aibpmjournals.com/index.php/APJME/index

The variables in the VECM model must have a cointegration connection, which is one of the distinctions between it and the VAR model. The Johansen Cointegration test is used to determine the cointegration of all variables.

Table 3. Johansen Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.495503	45.51978	29.79707	0.0004
At most 1 *	0.385329	22.25719	15.49471	0.0041
At most 2 *	0.154608	5.710469	3.841466	0.0169
The trace test indicates three cointegrating eqn(s) at the 0.05 level				

Table 3 shows the results of the cointegration test. The findings reveal that there is a long-term reciprocal link or cointegration between the three variables. The VECM model may be used to continue the model estimating step based on these findings.

DISCUSSION

The VECM model is a restricted VAR model in which the variables are limited to long-term connections (cointegration) while still accounting for short-term dynamics.

Table 4. Vector Error Correction Model

Cointegrating Eq:	CointEq1		
A(-1)	1.000000		
I(-1)	-1.937879		
	(0.18773)		
	[-10.3227]		
IN(-1)	0.524752		
	(0.34073)		
	[1.54006]		
C	-13.64635		
Error Correction:	D(A)	D(I)	D(IN)
CointEq1	0.107867	0.291684	0.113634
	(0.10402)	(0.08020)	(0.06574)
	[1.03703]	[3.63711]	[1.72866]
D(A(-1))	0.156554	-0.398924	0.055313
	(0.21196)	(0.16342)	(0.13395)
	[0.73860]	[-2.44106]	[0.41293]
D(A(-2))	-0.201853	-0.140083	-0.069909
	(0.15958)	(0.12303)	(0.10085)
	[-1.26493]	[-1.13856]	[-0.69321]

D(I(-1))	0.546064	-0.382852	0.142754
	(0.20802)	(0.16038)	(0.13146)
	[2.62510]	[-2.38713]	[1.08590]
D(I(-2))	0.023687	-0.088323	-0.084911
	(0.20344)	(0.15685)	(0.12857)
	[0.11643]	[-0.56310]	[-0.66043]
D(IN(-1))	-1.344941	-0.292096	-0.164286
	(0.28894)	(0.22278)	(0.18261)
	[-4.65469]	[-1.31116]	[-0.89968]
D(IN(-2))	0.394445	-0.120150	-0.037637
	(0.34819)	(0.26846)	(0.22005)
	[1.13284]	[-0.44756]	[-0.17104]
C	-0.229418	-0.564535	-0.005266
	(0.19368)	(0.14933)	(0.12240)
	[-1.18450]	[-3.78043]	[-0.04303]
R-squared	0.578851	0.582520	0.214062
Adj. R-squared	0.460929	0.465626	-0.006001
Sum sq. resids	16.67404	9.911883	6.659500
S.E. equation	0.816677	0.629663	0.516120
F-statistic	4.908767	4.983308	0.972733
Log likelihood	-35.56117	-26.97921	-20.41733
Akaike AIC	2.640071	2.119952	1.722262
Schwarz SC	3.002861	2.482742	2.085052
Mean dependent	-0.291606	-0.235585	-0.004108
S.D. dependent	1.112314	0.861361	0.514579

The presentation of the VECM model can be seen in Table 4. The results shown in Table 4 can be seen that the table above shows a long-term relationship between the three variables (agriculture, investment, and infrastructure). While at the bottom of the table is the interpretation of the short-term relationship between the three variables. In the table above, it can be seen that the investment and infrastructure variables have an effect on agriculture. The estimation results show values of -10.3227 and 1.54006. The investment coefficient of -1.937879 means that an increase in investment of 1% will affect agriculture by -1.937879%. Likewise, the Infrastructure variable has a coefficient of 0.524752, meaning that every 1% increase in infrastructure will affect the increase in agriculture by 0.524752%. Meanwhile, in Table 4 below, it can be seen the short-term relationship between the three variables. In Table 4, it can also be seen that the largest R-square value is found in the investment variable, namely 0.582520.

The causality test is used to determine if endogenous variables may also act as exogenous variables. In other words, whether the two variables influence each other.

Table 5. The Granger Causality Analysis

Null Hypothesis:	Obs	F-Statistic	Prob.
I does not Granger Cause A	28	2.23608	0.1080
A does not Granger Cause I		5.74626	0.0048
IN does not Granger Cause A	28	3.64522	0.0254
A does not Granger Cause IN		2.34845	0.0951
IN does not Granger Cause I	28	2.86428	0.0545
I does not Granger Cause IN		0.86446	0.5714

The results of the Granger causality test analysis can be seen in Table 5. The results show that the causal relationship only occurs in value-added agricultural variables that affect investment, with a probability value of 0.0048. Likewise, the infrastructure variable affects the added value of agriculture with a probability of 0.0254. Meanwhile, the causality relationship between other variables is not significant.

CONCLUSIONS

The implications of this study's findings show that macroeconomic factors such as value-added agriculture, non-financial investment, and infrastructure (percentage of government expenditure) are all interconnected. Changes in one variable will have an impact on other variables. As agriculture's value contributes to declining, Indonesia's government will boost infrastructure expenditure. This occurs because the fall in the added value of agriculture in Indonesia might stifle infrastructure growth since the present infrastructure is judged enough to support the agricultural sector's demands. Increased investment, on the other hand, will boost the added value of agriculture, implying that agriculture is still receiving a considerable amount of investment and will continue to play a big role in non-financial investment. This study includes limitations, such as the use of secondary data, which means that data outside of the secondary data we utilized was not examined. Research conducted outside of our study period was not examined.

ACKNOWLEDGMENT
N/A

DECLARATION OF CONFLICTING INTERESTS
The authors declared no potential conflicts of interest

REFERENCES

Aguilar-Rivera, N. (2019). A framework for the analysis of socioeconomic and geographic sugarcane agro industry sustainability. *Socio-Economic Planning Sciences, 66*, 149-160. DOI:10.1016/J.SEPS.2018.07.006

Agusalim, L. (2017). Percepatan pertumbuhan agroindustri Indonesia melalui kebijakan pajak ekspor: Model CGE comparative static. *Jurnal Ekonomi Kuantitatif Terapan, 10*(2), 101-112. DOI:10.24843/JEKT.2017.v10.i02.p01

Bourquard, B. A., Berenguer, G., Gray, A. W., & Preckel, P. V. (2022). Raw material variability in food manufacturing: a data-driven snack food industry case. *Production & Manufacturing Research, 10*(1), 294-320. Doi: 10.1080/21693277.2022.2083030

Drean,B.(2021).Research on Influence Relationship Between Agriculture Performance, Human Capital, and Employment in Agriculture with Vector Analysis Method in Germany.Tamansiswa Management Journal International,2(1),6-10

Drean, B., & Bawono, S. (2021). *Learning with fun, agricultural economics and agri-business*. Singapore: Triple Nine Communication.

Farooq, M. S., Riaz, S., Abid, A., Abid, K., & Naeem, M. A. (2019). A Survey on the role of ioT in agriculture for the implementation of smart farming. *IEEE Access, 7*(1), 156237-156271. doi: 10.1109/ACCESS.2019.2949703.

Garritano, A. N., de Oliveira Faber, M., De Sá, L. R., & Ferreira-Leitão, V. S. (2018). Palm oil mill effluent (POME) as raw material for biohydrogen and methane production via dark fermentation. *Renewable and Sustainable Energy Reviews, 92*, 676-684. DOI: 10.1016/j.rser.2018.04.031

Hamilton-Hart, N. (2019). Indonesia's quest for food self-sufficiency: a new agricultural political economy? *Journal of Contemporary Asia, 49*(5), 734-758. Doi: 10.1080/00472336.2019.1617890

Iek, M. (2013). Analisis dampak pembangunan jalan terhadap pertumbuhan usaha ekonomi rakyat di pedalaman May Brat Provinsi Papua Barat studi kasus di Distrik Ayamaru, Aitinyo dan Aifat. *Jurnal Ekonomi Kuantitatif Terapan, 6*(1), 30-40.

Irawan, A. (2005). Mengimplementasikan strategi revitalisasi pertanian secara efektif. *Jurnal Agrisep, 3*(2), 136-151.

Jaelani, A. K., Handayani, I. G. A. K. R., & Karjoko, L. (2020). Development of tourism based on geographic indication towards to welfare state. *International Journal of Advanced Science and Technology, 29*(3s), 1227-1234.

Liang, W., & Yang, M. (2019). Urbanization, economic growth and environmental pollution: Evidence from China. *Sustainable Computing: Informatics and Systems, 21*, 1-9. DOI: 10.1016/j.suscom.2018.11.007

Lillford, P., & Hermansson, A. M. (2021). Global missions and the critical needs of food science and technology. *Trends in Food Science & Technology, 111*(1), 800-811. Doi: 10.1016/j.tifs.2020.04.009

Otten, F., Hein, J., Bondy, H., & Faust, H. (2020). Deconstructing sustainable rubber production: contesting narratives in rural Sumatra. *Journal of Land Use Science, 15*(2-3), 306-326. Doi: 10.1080/1747423X.2019.1709225

Prasetyo, R. B., & Firdaus, M. (2009). Pengaruh Infrastruktur pada Pertumbuhan Ekonomi Wilayah di Indonesia. *Jurnal Ekonomi dan Kebijakan Pembangunan, 2*(2), 222-236.

Pratiwi, N. A., Harianto, H., & Daryanto, A. (2017). Peran agroindustri hulu dan hilir dalam perekonomian dan distribusi pendapatan di Indonesia. *Jurnal Manajemen & Agribisnis, 14*(2), 127-127. Doi: 10.17358/jma.14.2.127

Prianto, F. W. (2011). Pola pengembangan agroindustri yang berdaya saing. *Jurnal Ekonomi Akuntansi dan Manajemen, 10*(1), 1-15.

Purwansyah, F. E., Tan, S., & Achmad, E. (2013). Pengaruh Pembangunan Infrastruktur terhadap Pengembangan Sektor Pertanian di Kabupaten Muaro Jambi. *Jurnal Perspektif Pembiayaan dan Pembangunan Daerah, 1*(1), 34-45. Doi: 10.22437/ppd.v1i1.1339

Rusliyadi, M., & Libin, W. (2018). Agriculture development programs for poverty reduction evidences from Indonesia and China-comparative study case. *Asian Journal of Agriculture and Rural Development, 8*(2), 104-118. DOI:10.18488/journal.1005/2018.8.2/1005.2.104.118

Sirat, A. H., Hadady, H., & Ali, I. M. A. (2020). Strategy for the development of processed food products based on local wisdom in South Halmahera. *Journal of International Conference Proceedings, 3*(3), 108-119. Doi: 10.32535/jicp.v2i5.933

Soekartawi. (2005). *Agroindustri dalam perspektif sosial ekonomi*. Jakarta: PT Raja Grafindo Persada.

Suparno, O., Machfud, Marimin, & Indra, N. (2018). *Strategi pengembangan agroindustri maju dan berkelanjutan.* Bogor: PT Penerbit IPB Press.

Tarigan, S., & Syumanjaya, R. (2013). Analisis pengaruh kualitas infrastruktur jalan terhadap harga-harga hasil pertanian di Kecamatan Dolok Silau. *Jurnal Ekonomi dan Keuangan, 1*(6), 70-83.

Tesfaw, D. (2021). Labor-intensive focused industrial policy in Ethiopia: Potentials, latecomer's advantage and binding constraints. *Journal of Economics and International Finance, 13*(2), 64-84. DOI:10.5897/JEIF2021.1112

Widarni, E., & Bawono, S. (2021). Human capital, technology, and economic growth: A case study of Indonesia. Journal of Asian Finance,

Wilkinson, J. and R. Rocha, 2009. *Agroindustry trends, patterns and development impacts.* In C. da Silva, D. Baker, A.W. Shepherd, C. Jenane, S. Miranda-da-Cruz (eds.), Agroindustries for Development, Wallingford, UK: CABI for FAO and UNIDO, pp. 46-91.