The Effect of Institutional Quality
on Agricultural Value Added in ASEAN–8

Zahria Zurrah[1], Aliasuddin[1], Muhammad Abrar[1] and Jumadil Saputra[2]

[1]Faculty of Economics and Business, University of Syiah Kuala, Banda Aceh, Indonesia
[2]Faculty of Business, Economics, and Social Development,
Universiti Malaysia Terengganu, Malaysia

For correspondence: aliasuddin@usk.ac.id

Abstract

This study investigates the effect of institutional quality on agricultural value added in ASEAN. It uses a panel dataset from 2007 to 2021 from eight ASEAN countries. The data obtained from the World Bank was analyzed using the Random Effect Model (REM). The results show that regulatory quality, gross fixed capital formation, and arable land positively affect agricultural value-added. The results imply that institutional quality is vital in dictating the growth of agricultural value-added in ASEAN. In this region, regulatory quality increases agricultural value-added. Governments should thus work to strengthen and improve the performance of such institutions, which is essential for a sustained increase in agricultural value-added.

Keywords: agricultural value-added, governance, ASEAN

Introduction

The agricultural sector is important in reducing poverty in most developing countries (Gassner et al., 2019). For the underprivileged, the agricultural sector serves two purposes. It can provide food for the poor and can help them escape poverty. According to Gassner et al. (2019), increased agricultural yields can enable farmers to grow enough crops to feed their families. Once food needs are met, farmers can sell their surplus crops, which can help them escape poverty. However, this is less practical in most developing countries, especially in ASEAN. ASEAN is an international Southeast Asian organization with common goals in the economic, political, social, and cultural fields (Nathaniel, 2021). Most ASEAN countries are still considered developing and economically dependent on developed countries. The dominance

of developing countries in ASEAN causes the agricultural sector to play a significant role in the economy.

Figure 1 shows agricultural value added in selected ASEAN countries over 15 years. Based on the figure, it can be learned that all countries except Brunei Darussalam and Singapore experienced positive agricultural value added from 2007 to 2021. The agricultural sector contributes significantly to GDP and food security in ASEAN countries, contributing around 10-30% of the GDP of countries in the region. On the other hand, as the agricultural sector continues to play a strategic role in economic development, it is often a major victim of political manipulation that usually affects agricultural growth and the speed at which it reduces poverty (Deolalikar et al., 2002). Therefore, without understanding the political and economic institutions, the promising growth rates recorded in ASEAN countries over the past decade will likely be inadequate for poverty reduction. North (1991) argues that institutional development is important in shaping individual economic interests. Inadequate institutional quality will impede economic activity as it allows economic actors to engage in redistribution politics that generate meaningless economic benefits. According to North (1991), institutions of high quality effectively foster an incentive structure that can enhance economic growth.
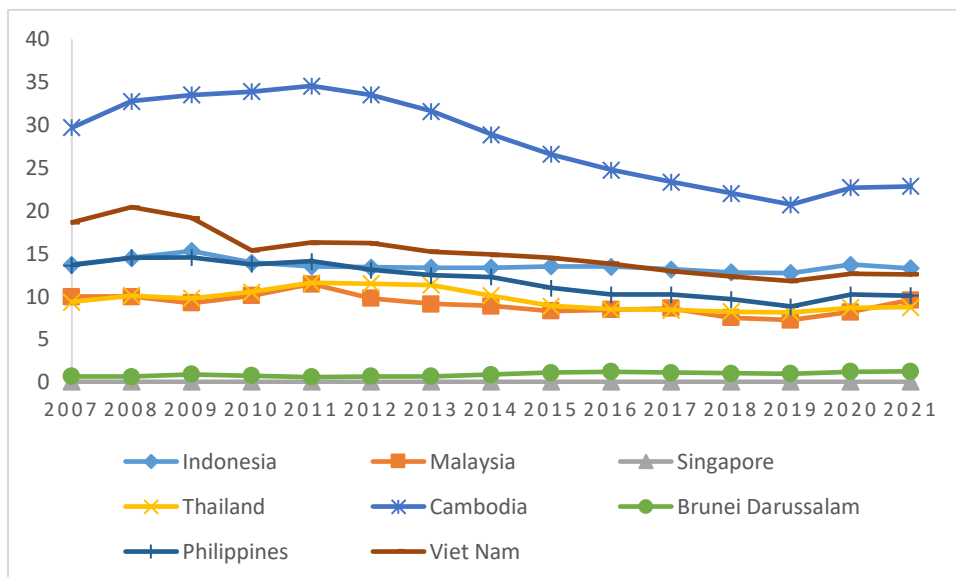
Source: World Bank, 2023.

Figure 1. Agricultural value added in selected ASEAN countries (percentage)

A number of frameworks and declarations have been developed in ASEAN in the past decade to address the growing demand for food. the Strategic Plan of ASEAN Cooperation in Food, Agriculture and Forestry 2016-2025 defines the vision and goals for the food, agriculture and forestry sector, such as ensuring food security, food safety and better nutrition then alleviating poverty and eradicating hunger. While most of these goals have progressed, several others, including institutional strengthening appear to have regressed. Institutional support for agricultural development has been inconsistent and inadequate. Weak administrative capacity has limited the government's ability to effectively implement agricultural policies. Hence, understanding the role of institutional performance in agricultural growth is critical for designing future agricultural policies, which motivated the initiation of this study.

Empirically, many studies have tried to examine the role of institutions in economic growth (Anne et al., 2020; Garedow, 2022; Gjerde, 2019). However, given the fact that developing economies are heavily dependent on agriculture, improving the quality of institutions that facilitate value addition will be crucial for the overall development of ASEAN countries. In addition, the influence of institutional quality on agricultural value-added in ASEAN has been little established.

This study contributes to fill the mentioned gap by using panel data obtained from eight ASEAN countries that span from 2007 to 2021. Focusing on ASEAN countries, this study provides contextual findings by using a Random Effect Model (REM). In addition to relying on agricultural value added (AVA), enhanced with institutional quality indicators, this study provides timely information to the existing heterogeneous literature on institutional growth linkages.

Literature Review

Classical economists put a strong emphasis on competitive market behavior when explaining output growth by ignoring the role of institutions. The classical growth model presents productive accumulation and investment as the main forces behind economic growth (J.Harris, 2007). In neoclassical theory, Solow (1956) used capital, labor and knowledge as key variables to explain output. The new growth theory known as endogenous growth theory attempts to overcome the major weaknesses of conventional growth theory (Lucas, 1988). This theory

explains the role of endogenous factors such as human capital stock and research and development as the main drivers of economic growth. However, the role of institutions in shaping economic growth is largely ignored.

The development of effective institutions is crucial in shaping individual interests in the economy that determine aggregate growth. In the agricultural sector, as the agricultural value-added process becomes more complex, the need for legal and stronger institutions increases to protect the parties involved in the production process. The actors in the value chain can be protected from the risk of opportunism through institutional arrangements (Trienekens, 2011). According to Lin et al. (2020), institutions facilitate contractual agreements at various stages along the value chain. This creates an enabling environment for a country's agricultural competitiveness as good governance is essential for expanding the demand base. In addition, processed agricultural products require quality standards that can be enforced through quality institutions. Countries with low institutional quality may not be able to fulfil these requirements and will earn low incomes (Martincus & Gallo, 2009).

In general, institutions form a framework within a given society that has the potential to enhance or hinder economic activity within it. Inadequate institutional quality may hinder economic activities as it allows economic actors to engage in redistribution politics that result in valueless economic benefits. Therefore, the AVA process can be under serious threat under situations of poor governance (Anwana et al., 2019). The induced innovation hypothesis treats institutions and technology as endogenous responses to the forces of factor supply and product demand in the production process. The theory argues that institutions are key factors in agricultural productivity and value addition.

A study by Gjerde (2019) underlines the importance of institutions for economic growth in developing and developed countries. He investigated the role of institutions in economic growth by addressing adverse impacts and inequality by constructing three alternative institutional threshold index using principal component analysis. The threshold index has been higher among developed countries compared to developing countries. When institutions are below the estimated threshold level, inequality has a negative effect on growth. When institutions develop above that level, growth is more likely to occur.

Wandeda et al. (2021) noted that exclusively in East Africa, the coefficient of voice and accountability as well as political stability and absence of violence are negative and insignificant to economic growth. While regulatory quality, rule of law and government effectiveness are insignificant. Similarly, Garedow (2022) studied the impact of political institutions including the level of democracy, political violence, regime durability and accountability on economic growth in Ethiopia. Democracy has no effect on growth in the short run, while political violence has a significant negative effect.

In general, the effectiveness of political and economic institutions depends on the political will of the government (Garedow, 2022). Many elements of economic growth are considered to depend on governance and institutions. However, effective institutions can take very different forms in different countries and regions. Hence, region-specific studies are relevant, and in general, studies in this area tend to be biased towards economic growth in general, while little is known about the impact of such institutions on AVA growth, particularly in ASEAN.

Research Method

The data for the study spans 2007-2021 for eight of the eleven ASEAN countries with the exclusion of Myanmar, Lao PDR and Timor Leste holding to data unavailability. Detailed information on the variables is presented in Table 1.

Table 1. Units of measurement and sources of data

Variables	Units of measurement	Sources	Symbols
Agriculture value added	constant 2015 US$	WDI	AVA
Regulatory Quality	scores -2.5 to +2.5	WDI	REG
Gross fixed capital formation	% of GDP	WDI	GFC
Arable land	% of land area	WDI	AL

Sources: Author's compilation

In this study, the panel data for ASEAN were considered. Just like time series data, panel data may also appear to be nonstationary. In order to achieve the consistency and reliability of the estimation by standardizing the data scale, AVA variable is transformed into the logarithms. A form of the equation is expressed as follows:

$$lnAVA_{it} = \alpha + \beta_1 REG_{it} + \beta_2 GFC_{it} + \beta_3 AL_{it} + \varepsilon_{it} \tag{1}$$

Where α denotes the intercept term; β is the undetermined coefficient; ε is the error term; i represents countries ($i = 1, 2,\ldots,n$) and t represents time (t = 1,2,\ldots,n). Model as specified in Eq.1 is referring to the panel model. Holding the classical linear regression model assumptions, the panel model is estimated by using ordinary least square (OLS). Since the heterogeneity of the countries occurs, the homogeneity of the variance assumption cannot be held. The fixed effect (FE) model is therefore employed by incorporating the countries' specific effect to indicate the different intercept among countries to allow the heterogeneity in the model. The coefficients of all variables in the FE model are estimated by using within regression. On the other hand, the variance may be heterogeneous among countries. Hence, the random effect (RE) model uses two components of variance by allowing the country specific effect variance and the residual in the error term.

To investigate either model is preferred, the F-test is used to test the null hypothesis of the intercept of countries' specific effects is homogenous. If the P-value of the F-test is rejected, it means that the heterogeneity of the countries is allowed and the FE model is preferred. Meanwhile, the Breusch Pagan (BP) LM test is used to test either RE model is preferred. If the p-value of the BPLM statistic is <0.05, it means that the null hypothesis of the panel model is rejected at the 5% significance level, indicating that the variance of the countries are various and the RE model is preferred. If both p-value of the F-test and BPLM test are <0.05, a Hausman test is conducted to test whether the FE model or RE model is preferred. If the Hausman statistic is significant, it means that the FE model is preferred over the RE model.

Findings and Discussion

This section begins with the characteristics of the variables in terms of their mean, standard deviation, maximum, and minimum values. Table 2 reveals that gross fixed capital formation has the highest average, while regulatory quality has the lowest. This further shows that the ASEAN countries have witnessed unprecedented capital formation in the past few decades. Regulatory quality happens to be the least volatile of the variables. All the variables exhibit a positive correlation with AVA. It shows the possibility of a link between the variables and the AVA.

Table 2. Descriptive statistics

Statistics	LNAVA	REG	GFC	AL
Mean	9.85	0.31	25.95	14.08
Std. D.	1.10	0.81	25.42	15.87
Minimum	7.91	-0.69	12.99	0.76
Maximum	11.14	2.25	40.89	35.12
Skewness	-0.83	0.99	0.33	0.21
Kurtosis	2.06	3.10	2.92	1.87
Correlation				
LNAVA	1			
REG	-0.753	1		
GFC	0.004	-0.003	1	
AL	0.617	-0.707	-0.150	1

Source: Author's Computations

Table 3. Unit root results

Variables	Intercept		Intercept and Trend	
	Level	First Difference	Level	First Difference
LNAVA	0.8045	0.0000	0.3741	0.0001
REG	0.8606	0.0003	0.5412	0.0238
GFC	0.1282	0.0005	0.7238	0.0004
AL	0.7368	0.0000	0.4630	0.0018

Note: Using ADF –Fisher Chi-Square Method
Source: Author's computation

Table 3 shows unit root results. The variables appear not to be integrated in their level form (that is I(0)) but integrated after the first difference (that is I(1)). The relationship between institutional quality and agricultural value added as specified in Eq. (1) is shown in Table 4, Table 5 and Table 6. The P-value of the Hausman test in the interaction model is greater than 0.05, and the P-value of the LM test in the interaction model is smaller than 0.05. Hence, the alternative hypothesis is accepted indicating that the interpretation of the results for both of the baseline and interaction models must be based on the RE model.

Table 4. Redundant Fixed Effects Test Result

Effects Test	Statistic	d.f.	Prob.
Cross-section F	8028.354585	(7,109)	0.0000
Cross-section Chi-square	749.668178	7	0.0000

Source: Author's computation

Table 5. Correlated Random Effects-Hausman Test Result

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.

Cross-section random	4.812887	3	0.1860

Source: Author's computation

Table 6. Lagrange multiplier (LM) Test Result

Null (no rand. effect) Alternative	Cross-section One-sided	Period One-sided	Both
Breusch-Pagan	758.3290 (0.0000)	6.693170 (0.0097)	765.0222 (0.0000)

Source: Author's computation

In the Table 7, the impact of regulatory quality (REG) on agricultural value added is positive (0.1475) and statistically significant at the 5%. Similarly, the coefficient of gross fixed capital formation (GFC) and arable land (AL) is also positive (0.0021 and 0.0272) and statistically significant at the 5% level.

Table 7. Regression results on static panel analysis

Dependent Variable lnAVA					
Variables	Coefficient	Std. Error	t-Stat	t-Table	Prob
REG	0.1475	0.0214	6.8638	1.9833	0.0000
GFC	0.0021	0.0007	2.7195	1.9833	0.0075
AL	0.0272	0.0055	4.9346	1.9833	0.0000
C	9.3661	0.3527	26.5488	1.9833	0.0000
R^2	0.4855				
Adj R^2	0.4722				
F-Stat	36.4902				
Prob F-Stat	0.0000				

Source: Author's computation

This study analyses the effect of institutional quality on agricultural value added in ASEAN. The results show that institutional quality has a significant effect on agricultural value added. This implies that institutional quality can generate substantial changes in AVA. The analytical results obtained are in line with those obtained by Wandeda et al. (2021) that an improvement in institutional quality is more likely to improve the economic performance of low income SSA countries than the middle income SSA countries.

Regulatory quality promote AVA indicating the existence of effective regulatory quality in policy formulation and implementation is essential for hastening agricultural growth in the ASEAN region. In this field, as the AVA procedure becomes more intricate, there is a greater necessity for robust institutions to overcome information asymmetry and safeguard the interests

of all parties involved in the value addition process. According to Lin et al. (2020), institutions facilitate contractual agreements at various stages of the value chain. This creates an enabling environment for a country's agricultural competitiveness and value addition. Good governance is crucial for expanding demand bases. Additionally, gross fixed capital formation and arable land serve to slightly enhance AVA.

The findings suggest that enhancing institutional quality is vital to increasing agricultural value addition. It is essential to comprehend the various dimensions of institutional qualities to enhance value addition in the agricultural sector. The theoretical support of North (1991) underpins the positive correlation of the institution with AVA in this study. Nevertheless, limitations associated with the use of secondary data exist, which affects the study's contributions. For instance, the study exclusively relies on secondary data, therefore presenting certain restrictions. Furthermore, an issue related to the research is that governance data is a collection of subjective institutional quality perceptions, which may serve as a potential limitation. The adequacy of perception data in capturing relevant reality remains uncertain. Additionally, the majority of the labor force in developing economies, which rely heavily on agriculture, is situated in rural areas where farming is practiced. In such economies, farming activities such as AVA are likely to be significantly influenced by informal institutions. However, none of the institutional quality proxies employed in this study account for this. Future studies should be directed towards agriculture-related institutions. Quality institutions are of great importance, thus it is imperative to comprehend the role informal institutions play on AVA, given the heterogeneity of formal institutions' effect. Investigating the potential competition between formal and informal institutions is also crucial in deciphering their impacts on AVA. Moreover, our findings do not suggest that institutional quality is the sole determining factor in AVA. Nonetheless, we have not taken into consideration the potential interplay of various agricultural policies that also impact agricultural value addition. Future studies may consider this aspect. Additionally, due to the inadequacy of long-term time-series data, the current study relied on a shorter time period, restricting our ability to conduct comprehensive country-specific time-series analysis. While attempts were made to address potential biases through model selection, future studies should utilize advanced panel data models that incorporate data over a longer period to ensure the robustness of the current findings.

Conclusion and Policy Implications

The results indicate that institutional quality plays an important role in dictating the growth of agricultural value-added in ASEAN. Effective policy implementation is thus deduced to be the most important institutional dimension to enhance the growth of agricultural value-added in this region. Nevertheless, to accelerate regional agricultural growth, governments and other development partners should be selective of the type of institution they target and consider effective implementation of the existing related institutions in this region.

References

Anne, I., Michael, E., & Braimah, O. (2020). The Role of Political Institutions in Economic Growth and Development of Nigeria. *Journal of Economics and Sustainable Development*, *11*(4), 151–156. https://doi.org/10.7176/jesd/11-4-17

Anwana, E. O., Udo, A. B., & Affia, S. E. (2019). Agricultural Value Added, Governance and Insecurity in Nigeria: An Empirical Analysis. *Asian Business Research Journal*, *4*(1), 1–9. https://doi.org/10.20448/journal.518.2019.41.1.9

Deolalikar, A. B., Brillantes, A. B., Gaiha, R., Pernia, E. M., Racelis, M., Castro-Guevara, M. C., Lim, L. L., & Quising, P. F. (2002). Poverty reduction and the role of institutions in developing Asia. *ERD Working Paper Series*, *10*, 1–67.

Garedow, F. A. (2022). Political institutions and economic performance in Ethiopia: an auto regressive distributed lag bound approach to co-integration. *Journal of Economics and Development*, *24*(1), 2–17. https://doi.org/10.1108/jed-10-2020-0150

Gassner, A., Harris, D., Mausch, K., Terheggen, A., Lopes, C., Finlayson, R. F., & Dobie, P. (2019). Poverty eradication and food security through agriculture in Africa: Rethinking objectives and entry points. *Outlook on Agriculture*, *48*(4), 309–315. https://doi.org/10.1177/0030727019888513

Gjerde, A. (2019). *The Inequality and Growth Nexus : The Role of Institutions in Mitigating the Negative Effects of Income Inequality*. *June*.

J.Harris, D. (2007). *The Classical Theory of Economic Growth*. https://doi.org/10.2307/3438723

Lin, J., Flachsbarth, I., & von Cramon-Taubadel, S. (2020). The role of institutional quality on the performance in the export of coconut products. *Agricultural Economics (United Kingdom)*, *51*(2), 237–258. https://doi.org/10.1111/agec.12552

Lucas, R. E. (1988). On The Mechanics of Economic Development. *Journal of Monetary Economics*,*22*(February),3–42. http://linkinghub.elsevier.com/retrieve/pii/0304393288901687

Martincus, C. V., & Gallo, A. (2009). Institutions and export specialization: Just direct effects? *Kyklos*, *62*(1), 129–149. https://doi.org/10.1111/j.1467-6435.2009.00427.x

Nathaniel, S. P. (2021). Environmental degradation in ASEAN: assessing the criticality of natural resources abundance, economic growth and human capital. *Environmental Science and Pollution Research*, *28*(17), 21766–21778. https://doi.org/10.1007/s11356-020-

12034-x

North, D. C. (1991). *Douglass C. North*. 5(1), 97–112.

Solow, R. M. (1956). A Contribution to the Theory of Economic Growth Author (s): Robert M . Solow Source. *The Quartely Journal of Economics*, *70*(1), 65–94. http://www.jstor.org/stable/1884513

Trienekens, J. H. (2011). Agricultural Value Chains in Developing Countries A Framework for Analysis. *AgEcon Search*, *1*(3), 11.

Wandeda, D. O., Masai, W., & Nyandemo, S. M. (2021). Institutional quality and economic growth: evidence from Sub-Saharan Africa countries. *African Journal of Economic Review*, *9*(4), 106–125.