

Agricultural Sector FDI as a Driver of Tourism Sector FDI for a Sustainable Economy

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Abstracts: This study aims to see whether FDI (Foreign Direct Investment) from the Agricultural Sector can be able to encourage FDI from the Tourism sector in Sumatra Island in the short and long term are supporting the Sustainable Economy in the future. The first analytical method used in this research is the descriptive method and the second method is the panel data regression method with the Vector Error Correction Model (VECM) in 8 regions on the island of Sumatera-Indonesia for 20 years. FDI from the Agricultural Sector is expected to be able to encourage the growth or increase of FDI in the Tourism sector; because several developed countries have changed or developed other service sectors to lead a Sustainable Economy. And the results of this study prove that in the long term and short term FDI in the agricultural sector and FDI in the Tourism services sector influence Gross Domestic Product Regional (GDPR).

Keywords: FDI, Tourism, Agricultural, Sustainable growth.

1. BACKGROUND

The agricultural sector is a primary sector that contributes quite significantly to the Indonesian economy. The sector's contribution to Indonesia's Gross Domestic Product (GDP) in 2017 was 13.7 percent. However, this contribution is smaller than the contribution of the industrial sector which is 41 percent, and the service sector which has a distributed contribution of 45.4 percent. The start of the dominance of the service sector in the economy is also experienced by countries in the world, especially developed countries (Fig. 1). The contribution of the service sector in developed countries has reached more than 70 percent of the economy. Several countries realize that the development of the service sector in the future will be the main key to sustainable economic growth. Thus, the focus of countries in the world today is to develop their service sector and reduce dependence on the primary sector which is oriented to natural wealth.

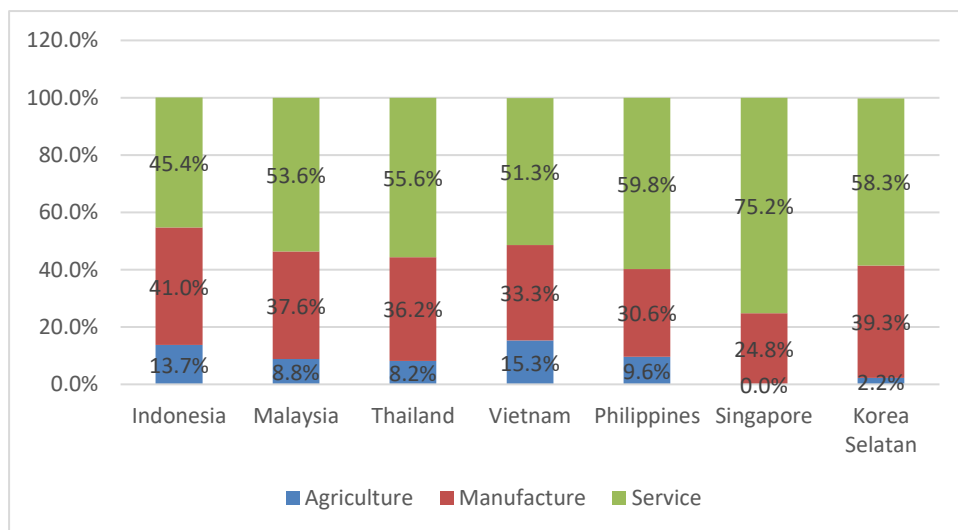


Figure 1. Composition of GDP by Sector in 6 Countries (The Year 2017).

Source: <https://www.cia.gov/>

One of the countries that focus on developing its service sector is the United Arab Emirates (UAE) (Khan et al., 2018) (Reisinger et al., 2019). This country is a country whose economy in the past few decades was supported by oil production (Usman et al., 2021). But now, the UAE has changed its perspective toward sustainable economic growth by developing financial services, tourism, transportation, construction, and other services (Reisinger et al., 2019). It is realized that natural wealth such as oil will not last long, so it is necessary to look for other sectors that can support the economy in the future.

When viewed from the area of Indonesia, Sumatera Island is one of the largest islands in Indonesia with an area of 473.605 square kilometers (factsanddetails.com, 2015). Figure 2 shows that the plantation area has increased from year to year, dominated by rubber plantations, coconut plantations, and oil palm plantations. And Sumatera Island contributes to plantation production in Indonesia by 63 percent for oil palm, 71 percent for rubber, and 63 percent for coffee. Looking at some examples carried out by several developed countries such as Dubai, for the island of Sumatera it is interesting to study whether the agricultural sector on the island of Sumatera can encourage the tourism sector; because to make sustainable economic growth in Indonesia, especially the island of Sumatra, it is necessary to develop other sectors.

Table.

Types of Smallholder Plantation Plants	Area of Smallholder Plantation by Plant Type (Thousands of Hectares)		
	2019	2020	2021
Rubber	3269.10	3305.40	3421.90
Coconut	3369.90	3365.80	3343.60
Palm oil	5896.80	6003.80	6088.70

Source: Directorate General of Plantations, the year 2020

Issues related to Sustainable Economic Growth are becoming which is very important for a country to do. Sustainable Economic Growth so far has only been seen from the Renewable Energy used by a country (Solarin et al., 2021) (Uduji et al., 2021) (Xu et al., 2021), and several studies relate it to other things. Seeing the Sustainable Economy in terms of investment is something that is still little done in various studies, especially in Indonesia, especially FDI (Foreign Direct Investment). This article presents research conducted in two directions between Agricultural FDI, Tourism FDI, and GDP, to see which variables have an influence. This is interesting because Indonesia has experienced a significant increase in FDI, especially in agriculture on the island of Sumatera, and this is expected to be one of the pillars of the sustainable economy on the island of Sumatera.

2. LITERATURE REVIEW

2.1. Agriculture and Tourism

Research between agriculture and tourism has been carried out, although with different perspectives. From an economic perspective (Di-Clemente et al., 2020) (Alola & Alola, 2018) (Dubois et al., 2017) (Liang et al., 2020) (Genovese et al., 2017) (Kim & Kang, 2020) (Anderson, 2018). From these studies, it can be concluded that the relationship between Agriculture and Tourism from an economic perspective is shown in Figure 1.

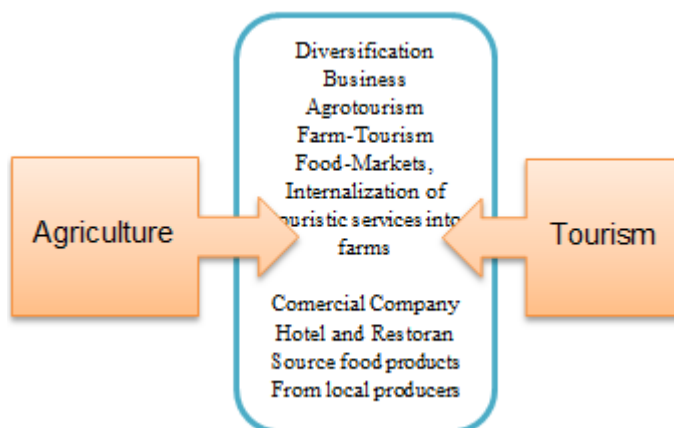


Figure 1. Relationship between Agriculture and Tourism.
Source: (Di-Clemente et al., 2020).

Business diversification is a strategy used by several companies today (Busby & Rendle, 2000). In some countries, agricultural tourism or turning the agricultural sector into a tourism sector is nothing new (Kizos & Iosifides, 2007) (Khanal & Shrestha, 2019)(Retheshh & Varghese, 2020)(Cioca et al., 2018)(Lawal et al. , 2018)(Mancilla & Ferrada, 2021) (Vourdoubas, 2020)(Vukotić & Mirčetić, 2020)(Eshun & Tichaawa, 2020)(J. Wang et al., 2022).

2.2. FDI (Foreign Direct Investment)

International investment emerged after the formation of a customs union (Balassa, 1967), by changing the pattern of trade between countries that joined the union and between union blocs and other countries, could change the pattern of international trade flows. It begins with a debate about trade patterns influenced by two forces: the creation of trade between union partners and the diversion of trade between the union bloc and outside countries (Dunning, 1973). International investment has various motives, but it is not far from economic motives (D'Arge, 1969).

FDI (Foreign Direct Investment) is influenced by many variables, some studies look at the factors that affect FDI. Such as market size, labor, infrastructure, GDP, labor wages (Mohanty & Sethi, 2019) (Artige & Nicolini, 2006) (Ranjan, 2011) (Journal et al., 2017) (Škuflic & Botric, 2006), openness economy and location (Buckley, 2007) (Ali, 2015) (Kyrkilis & Pantelidis, 2014) (Abimbola & Oludiran, 2018), economic stimulus (Sakali, 2013) (Razmi & Behname, 2012) (Kolstad & Villanger, 2004) (Fontoura, 2005), exchange rates, literacy rates, and domestic credit (Hasli et al., 2015). FDI support is indispensable for agricultural enterprise development strategies (Ishchenko et al., 2020).

FDI is an important factor in determining economic growth (Pradhan et al., 2019) (Q. Wang & Zhang, 2020) (Peshkov, 2020) (Suliman et al., 2018) (Nguyen et al., 2020) (Shittu et al., 2020) (Shittu et al., 2020), good FDI control will increase economic growth in Mediterranean countries (Tecel et al., 2020).

2.3. The linkage of FDI and GDP to sustain a Sustainable Economy

Sustainable economic growth has always been interesting to study, such as how the challenges and strategies are applied (Juhro, 2018) (Saidi et al., 2020). The importance of FDI for a sustainable economy can be seen from the analysis conducted on a small country in Serbia, which shows the result that there must be a policy stimulus to attract FDI into Serbia (Aničić et al., 2019). The decision to open FDI greatly determines the economic sustainability of a country (Perepelitsa et al., 2016) (Buhari et al., 2020) (Phuyal & Sunuwar, 2019) (Solarin et al., 2021). From these studies, it can be seen that FDI can be one of the sectors that can encourage sustainable economic growth in a country.

2.4. Relationship between Agriculture Sector FDI, Tourism Sector FDI, and GDP

The relationship between variables can be explained in Figure 2. FDI is included in the agricultural, construction, energy, manufacturing, mineral, tourism, and service industry sectors. Businesses that develop from these sectors, especially the agricultural and tourism sectors, will increase a country's GDP. A simpler explanation can be seen in Figure 3.

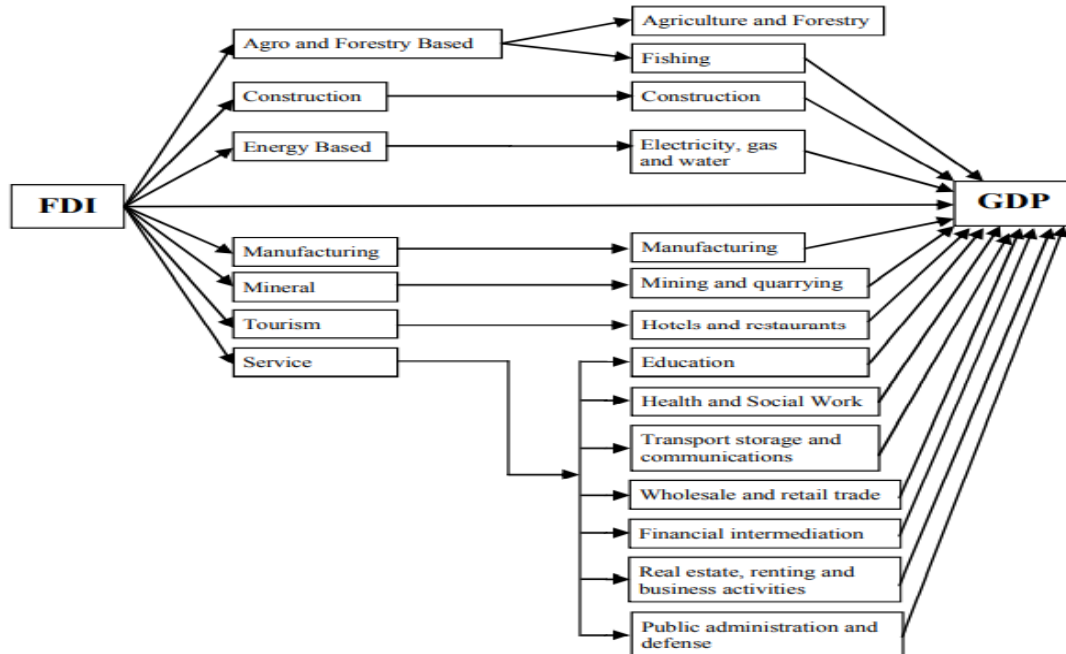


Figure 2. Conceptual Framework.

Source: (Phuyal & Sunuwar, 2019).

3. DATA AND RESEARCH METHODS

Data used in this study are secondary data in the form of FDI in the agricultural sector and FDI data in the tourism sector sourced by Indonesia Ministry of Investment and data on the growth of Gross Domestic Regional Product (GDPR) sourced from BPS. When viewed from the form of the data, this research data is panel data covering 8 (eight) provinces on the mainland of Sumatra Island (Nanggroe Aceh Darussalam, North Sumatra, West Sumatra, Riau, Jambi, Bengkulu, South Sumatra and Lampung) from 2001 to with 2020 (20 years).

The first analytical method used in this research is the descriptive method and the second method is the panel data regression method with Vector Error Correction Model (VECM). For descriptive analysis, this study will discuss the development of foreign investment in the agriculture and tourism sectors and GDPR growth in the research area. As for the VECM analysis, there are several stages of research as follows:

3.1. Unit Root Test

The test aims to determine whether the data still contains a unit root. It aims to obtain stationary data in a certain order so that the estimate becomes accurate. The unit root test in this paper uses Augmented Dicker-Fuller.

3.2. Cointegration Test

This test aims to analyze the long-term relationship between variables. Furthermore, based on the results of this test, it can be seen whether there is a long-term relationship. If each variable has a long-term relationship, then the estimate uses the Vector Error Correction Model, and vice versa if there is no long-term relationship then the estimate uses the Vector Autoregressive (VAR) model.

- Augmented Dickey-Fuller (ADF) Unit Root Test

The Unit Root Test is used to analyze the stationary or non-stationary state of a variable from time-series data. There are several types of Unit Root tests, such as the Phillips-Perron (PP) Unit Root Test, Kwiatkowski-Phillips-Schmidt-Shin Unit Root Test, and others, but the most common Unit Root test is the Augmented Dickey-Fuller (ADF) Unit. Root Test. The hypothesis of this ADF test is:

$$H_0: = 0$$

$$H_1: < 0$$

If the probability value of the test results is greater than the critical value then the null hypothesis will be accepted (1%, 5%, or 10%), and if the probability value of the test results is smaller than the critical value then the null hypothesis is rejected. The requirement needed to proceed to the next method is that the variable must be stationary at Level, 1st difference, or 2nd difference, meaning that the Null hypothesis must be rejected or the probability value must be less than the critical value.

- Johansen's Cointegration Test

Cointegration Test is a method used to see the cointegration relationship on time-series data variables. In this test, there are several approaches to test the cointegration relationship, such as the approach of Engel and Granger (1987), Johansen and Juselius (1990), and Johansen (1991). Johansen's approach is the most frequently used cointegration test approach in the VECM method. The cointegration test hypothesis on the Johansen approach is:

$$H_0: r = r^* < k$$

$$H_1: r = k$$

The Null hypothesis will be accepted if the critical value is at 1%, 5%, or 10% which is greater than the Trace Statistics and Max-Eigen Statistics values. Conversely, it will be rejected if the Null hypothesis is at a critical value of 1%, 5%, or 10% and is lower than the Trace Statistical value and the Max-Eigen Statistical value. The result in this test is that the null hypothesis is rejected which means that the equation being tested has a cointegration relationship.

Model Estimation

$$\Delta \text{FDIP} = \beta_1 + \beta_2 * \text{ECT} + \beta_3 * \Delta \text{FDIP}(-1) + \beta_4 * \Delta \text{FDIP}(-2) + \beta_5 * \Delta \text{FDIA}(-1) + \beta_6 * \Delta \text{FDIA}(-2) + \beta_7 * \Delta \text{PDRB}(-1) + \beta_8 * \Delta \text{GDRP}(-2) \quad (1)$$

$$\Delta \text{FDIA} = \beta_9 + \beta_{10} * \text{ECT} + \beta_{11} * \Delta \text{FDIP}(-1) + \beta_{12} * \Delta \text{FDIP}(-2) + \beta_{13} * \Delta \text{FDIA}(-1) + \beta_{14} * \Delta \text{FDIA}(-2) + \beta_{15} * \Delta \text{PDRB}(-1) + \beta_{16} * \Delta \text{GDRP}(-2) \quad (2)$$

$$\Delta \text{GDRP} = \beta_1 + \beta_2 * \text{ECT} + \beta_3 * \Delta \text{FDIP}(-1) + \beta_4 * \Delta \text{FDIP}(-2) + \beta_5 * \Delta \text{FDIA}(-1) + \beta_6 * \Delta \text{FDIA}(-2) + \beta_7 * \Delta \text{GDRP}(-1) + \beta_7 * \Delta \text{GDRP}(-2) \quad (3)$$

4. RESULTS

In this study, to get good research results, the first step will be stationary testing using the unit root and cointegration tests as follows.

4.1. Root Unit

In table.1 the Augmented Dicker-Fuller (ADF) test shows the results that the FDIA, FDIP, and GDPR variables are not stationary, which means they still contain unit roots. So the next step is to do a unit root test on First Difference

in order to remove spurious regressions or regressions that appear to have a relationship but in fact have no relationship.

Table 1. ADF Unit Root Test Result at Level.

Method	FDIA		FDIP		GDPR	
	t-stat	prob.	t-stat	prob.	t-stat	prob.
Levin, Lin & Chu t*	-2.62586	0.0043	-4.00128 0	-3.23468	0.0006	Im
Pesaran and Shin W-stat	-2.64916	-2.31897	0.0102	-2.64916	0.0040	0.0040
ADF - Fisher Chi-square	38.2190	33.0536	0.0073	38.2190	0.0014	0.0014
PP - Fisher Chi- square	78.8367	0.0000	58.5947	0.0000	78.8367	0.0000

Sourced: Processed Data, 2022.

Table 2. ADF Unit Root Test Result at 1st Difference.

Method	FDIA		FDIP		GDPR	
	t-stat	prob.	t-stat	prob.	t-stat	prob.
Levin, Lin & Chu t*	-16.2740	0.0000	1.58202	0.9432	-7.26404	0.0000
Im, Pesaran and Shin W-stat	-15.1920	0.0000	-15.1920	0.0000	-7.89559	0.0000
ADF - Fisher Chi-square	237.061	0.0000	237.061	0.0000	85.7474	0.0000
PP - Fisher Chi-square	950.303	0.0000	950.303	0.0000	123.034	0.0000

Sourced: Processed Data, 2022.

4.2. Cointegration Test

The next step is to find out the long-term relationship between each variable, a cointegration test will be carried out. This test is carried out in order to determine the next estimate, whether to choose VAR or VECM. Based on the cointegration test results in this study, it can be seen in table 3 that the FDIA, FDIP, and GDPR variables do not have cointegration or long-term relationships, so the next step will be to use the VAR model.

Table 3. Pedroni Cointegration Trace Test.

	Weighted <u>Statistics</u>	<u>Prob.</u>
Panel rho-Statistic	-2.643272	0.0041
Panel PP-Statistic	-5.310697	0.0000
Panel ADF-Statistic	-2.380589	0.0086

Sourced: Processed Data, 2022.

4.3. Model Estimation Results

The first formula produced by the VECM model is the effect of the entry of foreign direct investment in the agricultural services sector (FDIA) and Gross Domestic Regional Product (GDPR) on the entry of foreign direct investment in the tourism sector (FDIT). The model is presented as follows.

$$\Delta \text{FDIT} = 35,06831 + (-0,132472) * \text{ECT} + (-0.835548) * \Delta \text{FDIT}(-1) + -0.592090 * \Delta \text{FDIT}(-2) + 0.006987 * \Delta \text{FDIA}(-1) + 0.003729 * \Delta \text{FDIA}(-2) + 326.6088 * \Delta \text{GDPR}(-1) + 552.1786 * \Delta \text{GDPR}(-2) \quad (1)$$

To see the long-term Granger causality relationship in formula 1, then the Wald test is carried out on the coefficient β_2 . Meanwhile, to test the short-term relationship of the effect of FDIT on FDIA, the Wald test is carried out on coefficients 5 and 6. The test results are as follows.

Table 4. Results of the Wald.

Hypothesis	Long-Term	Short-term	
	FDIA and GDPR → FDIT	FDIA → FDIT	GDPR → FDIT
$\beta_2 = 0$	0,0787 (Rejected)		
$\beta_5 = 0$		0,3258 (Accepted)	
$\beta_6 = 0$		0,3621 (Accepted)	
$\beta_7 = 0$			0.2906 (Accepted)
$\beta_8 = 0$			0.0056 (Rejected)

Sourced: Processed Data, 2022.

From the results of testing the long-term relationship, it is known that FDIA and GDPR jointly encourage FDIT in the long term. However, each independent variable does not have a short-term relationship with the dependent variable.

4.4. VECM Panel Estimation with dependent variable FDIA

$$\Delta \text{FDIA} = -1440.492 + (-1.493100) * \text{ECT} + 2.337798 * \Delta \text{FDIT}(-1) + 0.609988 * \Delta \text{FDIT}(-2) + (-1.115186) * \Delta \text{FDIA}(-1) + (-0.706239) * \Delta \text{FDIA}(-2) + 6022.515 * \Delta \text{GDPR}(-1) + 4568.404 * \Delta \text{GDPR}(-2) \quad (2)$$

Table 5. Wald Test Results.

Hypothesis	Long-term	Short-term	
	FDIT and GDPR → FDIA	FDIT → FDIA	GDPR → FDIA
$\beta_{10} = 0$	0.1508 (Accepted)		
$\beta_{12} = 0$		0.1262 (Accepted)	
$\beta_{13} = 0$		0.6735 (Accepted)	
$\beta_{15} = 0$			0.1595 (Accepted)
$\beta_{16} = 0$			0.0935 (Rejected)

Sourced: Processed Data, 2022.

In the long term and short term the entry of FDI in the agricultural sector in the provinces on the island of Sumatera is not influenced by GDPR and FDI in the tourism services sector.

$$\Delta \text{GDPR} = 0.081144 + -0.000247 * \text{ECT} + 0.000125 * \Delta \text{FDIT}(-1) + 6.94E - 05 * \Delta \text{FDIT}(-2) + 5.47E - 06 * \Delta \text{FDIA}(-1) + 5.70E - 06 * \Delta \text{FDIA}(-2) + 0.534249 * \Delta \text{GDPR}(-1) + 0.222764 * \Delta \text{GDPR}(-2) \quad (3)$$

Table 6. Wald Test Results.

Hypothesis	Long-term	Short-term	
	FDIA and FDIT → GDPR	FDIA → GDPR	FDIT → GDPR
$\beta_{18} = 0$	0.0000 (Rejected)		
$\beta_{19} = 0$		0.0000 (Rejected)	
$\beta_{20} = 0$		0.0032 (Rejected)	
$\beta_{21} = 0$			0.0007 (Rejected)
$\beta_{22} = 0$			0.0012 (Rejected)

Sourced: Processed Data, 2022.

In the long term the inclusion of FDIA and FDIT can encourage the GDRP of each province. For short-term relationships, both FDIA and FDIT influence FDI. This means that in the long term and short term FDI in the agricultural sector and FDI in the tourism services sector will influence GDRP.

Based on the test results show that FDIA and GDRP jointly encourage the entry of FDIT in the long term. However, each independent variable does not have a short-term relationship with the dependent variable. In the long term and short term the entry of FDI in the agricultural sector in the provinces on the island of Sumatra is not affected by GDRP and FDI in the tourism services sector.

FDI is influenced by several variables including GDP, this is in line with research (Mohanty & Sethi, 2019) (Artige & Nicolini, 2006) (Ranjan, 2011) (Journal et al., 2017) (Škuflic & Botric, 2006) although the effect is not explained in the long term or short term.

Regarding Gross Domestic Regional Product (GDRP), the inclusion of FDIA and FDIT in the long term can encourage GDRP in each province. This indicates that the Government needs to encourage the entry of FDI in both the agricultural sector and the tourism services sector to increase GDP. For short-term relationships, both FDIA and FDIT influence FDI.

This means that in the long term and short term, FDI in the Agriculture sector and FDI in the tourism services sector will influence GDP separately. FDI is an important factor in determining economic growth (Pradhan et al., 2019) (Q. Wang & Zhang, 2020) (Peshkov, 2020) (Suliman et al., 2018) (Nguyen et al., 2020) (Shittu et al., 2020) (Shittu et al., 2020).

Based on research questions whether FDI in the agricultural sector can encourage FDI in the Tourism sector and the test results show that FDI in the agricultural sector can encourage FDI in the Tourism sector. In some countries; the creation of agricultural tourism or converting the agricultural sector into the tourism sector is nothing new to create a Sustainable Economy (Kizos & Iosifides, 2007).

Melkonyan et al., (2019) stated that one of the strategies in sustainable economic development is to utilize the environment efficiently. However (Uduji et al., 2021) reveal different things, namely; the tourism sector is able to encourage demand in the agricultural sector, one way is by promoting healthy and nutritious food which has an impact on increasing the use of local products; therefore, it is very important to create a link between the two, and to make policies regarding agro-tourism (UNCTAD, 2017).

The related linkages between agriculture and tourism not only have the potential to provide opportunities for increasing domestic agricultural incomes, creating improved products and new markets with sustainable economic growth; but also providing opportunities to assist in the development of visitor attractions and distinctive tourist destination brands through creative use and local product marketing (Bank, 2008).

In addition, the development of agriculture for tourism can reduce poverty (Anderson, 2018) which is commonly referred to as local community-based tourism where tourists can interact directly with agrarian rural communities (Anderson, 2018). A combination of tourism and agriculture, agro-tourism in many countries continues to develop (Emmanuel & Inikpi, 2014) (Retheshh & Varghese, 2020).

Agrotourism is defined as any habit that is developed on agricultural land with the aim of attracting tourists (Barbieri & Mshenga, 2008) in addition to enabling agricultural workers in rural areas to switch to the tourism sector (Mancilla & Ferrada, 2021).

5. CONCLUSION

Based on the test results show that FDIA and GDRP jointly encourage the entry of FDIT in the long term. For this reason, the government must make policies that can encourage FDI in agriculture and increase GDP so as to be

able to increase FDI in the tourism sector, because the tourism sector has become one of the effective ways of macroeconomic diversification (Khanal & Shrestha, 2019).

In addition, it combines agriculture and tourism in the agro-tourism sector so that any FDI between agricultural and tourism FDI that enters both can work together so that agricultural land use can be carried out efficiently.

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DOI: <https://doi.org/10.15379/ijmst.v10i2.1259>

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