

THE EFFECT OF POPULATION GROWTH, FOREIGN INVESTMENT, EDUCATION AND HUMAN QUALITY ON THE SUSTAINABLE DEVELOPMENT INDEX IN INDONESIA

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ABSTRACT

This study aimed to investigate the effect of moderating in relation of organisational culture, Comprehensive management control system and corporate governance in Indonesia. The respondents were 758 companies listed in the Indonesia Stock Exchange. Collecting data using sampling method of 188 respondents returned a complete used in data analysis. Analysis of data using Structural Equation Model (SEM) with the help of WarpPLS 3.0. The theory used in this research is the organizational culture concept by (Hofstede 1980) The results show that the moderating effect of the relation comprehensive management control system and good corporate governance in Indonesia is significant and indicates as a Homologiser Moderator.

KEYWORDS: Population growth, Foreign Investment, Education, Quality of Human Resources, Sustainable Development Index



Introduction

Sustainable development is a concept of the development process with the principle of meeting the needs of the present but not compromising the needs of future generations. Sustainable development as a priority concept for countries in the world, including national development in Indonesia, has targets for the Sustainable Development Goals (TPB). During the administration of President Joko Widodo, these targets became the reference for the national development agenda in Indonesia, which were listed in NAWACITA. These targets are aligned with the 2015-2019 and 2020-2024 medium-term development plans (RPJMN) in the form of measurable activities and programs along with cost indications to support these programs.

Sustainable Development has the aim of increasing quality economic, social, environmental welfare, inclusive development, and the implementation of a structuring or management system that is able to maintain and improve the quality of life between generations of a community system (Bappenas, 2020). These objectives are organized into four dimensions, namely economic, social, environmental and institutional dimensions. In carrying out these objectives, a synergy of planning policies is needed, starting at the district or city level, province, to the national level.

Indonesia as a pluralistic country has become an interesting study country related to its sustainable development index where with Indonesia which has a large area, there will be a tendency for uneven development to occur due to the tendency to concentrate development around the capital city area. Therefore, this study aims to analyze the factors that influence sustainable development which includes four dimensions in 34 provinces in Indonesia and to evaluate which variables affect sustainable development on each island in Indonesia.

LITERATURE REVIEW

This research uses four pillars in forming the Sustainable Development Index. The Sustainable Development Index is carried out by optimizing the use value of natural resources and human resources in the development process.

The Effect of Population Growth on the Sustainable Development Index

The first variable used to see the effect is the Total Population. According to the United Nations (2022) since the mid-twentieth century, the world's population has more than tripled, reaching nearly 8 billion people by 2022. Projections by the United Nations suggest that the global population size could grow to nearly 11 billion by around 2100. Rapid population increase could exacerbate the challenges of ensuring that future development is sustainable and inclusive. According Akhirul et al. (2020) rapid population growth will have serious consequences for the balance of natural resources. Some economists consider the complex population as an obstacle in the development process. According to Ehrlich and Holdren (1971) population size and growth is a problem related to the use and depletion of resources and environmental degradation collectively and globally.

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R. Becker & Barro (1998) support the theory of Malthus which regards population as a threat to development. This assumption is due to the assumption that if it is not fixed and does not vary in economic resources, sources of technical progress are not available, population growth is too fast so that it becomes pressure for food production to be unfulfilled. As a result, part of the investment will be used to meet the increasing needs of the population. Developing countries are where most of the growth takes place. According to Mulyadi (2003) the high rate of population growth and occurring in developing countries such as Indonesia is an obstacle to the process of a development. Therefore, population and development are two entities and cannot be separated. Where development is not possible without the population, as well as the welfare of the population is impossible to achieve without a development. A productive and consumptive population is the trigger of a development, but if the population is uncontrolled and the consumptive population is more than the productive population, then it can be said that the population is an obstacle to a development.

Based on the topics that have been described, a hypothesis can be formulated for the influence of population on sustainable development as follows:

H₁: There is a negative influence between population on sustainable development in Indonesia.

The Effect of Foreign Investment on the Sustainable Development Index

The role of capital owned by a country is the emphasis of the development of the Neo-classical theory of economic growth. Capital sourced both from within and from abroad will help become an economic driver for a country. Investment is considered as a driver of economic growth to the creation and enhancement of development in a country. The rapid development of economic growth in Indonesia is related to the growth of the main investment factor, namely the formation of foreign capital (Yesika, 2015). According to Thomas (2015) investment is a key that can contribute well to economic growth. This is because investment is able to increase job opportunities so that it leads to the creation of welfare for the community. Sarwedi (2002) in his research also states that foreign investment is even more important for the sustainability of the development process when compared to the flow of aid or portfolio capital. This happens because with the investment, there will be a transfer of technology, knowledge, management skills, the risk of a company is relatively small and more *profitable*.

Shoib and Limam (2015) also argue about the important role of foreign investment in sustainable development because it provides benefits in creating a more prosperous economy. Investment is a resource that has the ability to create to increase the capacity of the production system so that it can affect future income. Increasing the availability of funds for investment recipient countries is a positive impact of foreign investment (Athukorala, 2003). With this position, it can be concluded that foreign capital investment is an opening step in a development process.

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Based on the explanations of several experts above, the authors formulate a hypothesis for the influence of the human development index on sustainable development as follows:

H₂: There is a positive influence between foreign investment on sustainable development in Indonesia.

The Effect of Education on the Sustainable Development Index

Citra (2014) states that education is the main capital in the implementation of a sustainable development concept. According to Priyanto, et al. (2013) education is a means of changing human views, attitudes and actions that are achieved through the educational process to create sustainable development. The United Nations General Assembly at its 57th session in 2002 declared the time span for 2005-2014 as the Decade of Education for Sustainable Development (DESD). This decade was guided by UNESCO as an effort for UNESCO to be able to give its main role in the development of quality standards of education for development with a sustainable concept (Kemdiknas, 2010a).

This discourse received a positive response from Indonesia which was called the Decade of Education for Sustainable Development (DESD). Furthermore, the Ministry of National Education has placed education as one aspect of sustainable development (*Education for Sustainable Development*) where humans pay attention to intergenerational needs (intergenerational sustainability). Education will bring up values, critical understanding, and good interventions on environmental sustainability in the development process. The education sector also plays a complex role in the formation of a developing country in relation to the ability to absorb technological modernization and the development of production quantities in order to realize sustainable growth and development (Todaro, 2006).

Based on the literature review that has been submitted, the hypothesis formulated for the effect of education on sustainable development is as follows:

H₃: There is a positive influence between education on sustainable development in Indonesia.

The Influence of the Quality of Human Development on the Sustainable Development Index

The last indicator used in the sustainable development index is the human development index. According to Sasmita et al. (2021) a high chance of achieving sustainable development goals will be realized if you have high quality human resources and have insight into the environment and sustainable development. This will be reflected evenly through the sustainable development index. According to Yixin Zhangs and Zhijie Wuc (2022) the Human Development Index (HDI) is a widely adopted indicator to measure sustainable development in the socio-economic and environmental fields.

According to the United Nations Development Program (UNDP), the Human Development Index is a benchmark for the level of welfare of a region and even a country. This index is measured based on dimensions such as life expectancy, literacy rate, average length of

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schooling, and purchasing power. The dimensions of these indicators affect each other such as the number of job opportunities which are influenced and determined by economic growth, the availability of infrastructure and the effectiveness of government policies so that the human development index will increase. These variables will affect the value of the human development index, which indicates the success or failure of the economic development of a country. Where the higher the value of the human development index indicates the success of development in the country.

According to Suriadi (2019), the Human Development Index plays an important role because good human development will be able to maximize production factors in modern economic development.

Based on the explanations of several experts above, the authors formulate a hypothesis for the effect of the human development index on sustainable development as follows:

H₄: There is a positive influence between the human development index on sustainable development in Indonesia.

Method

The indicator in describing the achievement of public welfare in general is the population index (Fauzi and Oktavianus, 2014). The foreign investment index is one of the keys in creating economic growth (Wiagustini, et al. (2017). The education index is one of the important investments in the development process (Umi Rahayu, 2014). The Development Index is a widely adopted indicator to measure the status of development (Umi Rahayu, 2014). Strezov, et al., (2017). In the Sustainable Development Index, indicators are more comprehensive both from a socio-economic and environmental point of view, and governance is formed in a composite. This

research was conducted with a quantitative approach to test and analyze the influence of the Population Index, Plantation Foreign Capital, Education, and Human Development on IPB in 34 provinces in Indonesia and each island in Indonesia, in order to identify variables that require special strengthening of IPB in each island in Indonesia. In

this study using panel data, data for independent variables includes population growth data, realization of foreign investment investment, education allocation funds, human development index, while the sustainable development index data uses per capita GRDP growth data based on constant 2000 prices, the percentage of households that have access to adequate and sustainable drinking water sources, data on the percentage of total population living below the national poverty line, and Indonesia's democracy index during the 2015-2020 period. The data was obtained through the publication of the Central Statistics Agency. The analysis phase includes the collection of panel data in an aggregated manner in 34 provinces, and the selection of a regression method for the panel data.

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The following is the equation used in this study

$$IPB_{it} = \alpha_0 + \alpha_1 \text{Population}_{it} + \alpha_2 \text{PMA}_{it} + \alpha_3 \text{Educ}_{it} + \alpha_4 \text{IPM}_{it} + \epsilon_{it} \quad (1)$$

Where α_0 is a constant/intercept, ϵ_{it} is the error value, i represents province, and t is the year, and from 1-4 as the coefficient of each independent variable.

Variables	Measurement	Scale
Population	Quantitative	Ratio
Foreign Investment	Quantitative	Ratio
Education	Quantitative	Ratio
Human Development Index	Quantitative	Ratio
Sustainable Development Index	Quantitative	This

Result

Study aims to examine the effect of population, foreign investment, education, and HDI on IPB on an aggregated basis in 34 provinces in Indonesia and further analysis is carried out per island in Indonesia. The results of panel data testing with multiple linear regression analysis obtained the estimation results as shown in table 1 below:

Tabel 1 Uji Pemilihan Model

Model	Chow Test		Hausman Test		LM Test		Keputusan
	Cross-section Chi-square	Pro Chi-square	Cross-section random	Prob Chi-square	Breusch-Pagan Stat	Prob Both	
Agregat	236.256930	0.0000	4.190634	0.3808	213.2696	0.0000	REM
Sumatera	60.972686	0.0000	4.641394	0.3261	39.44915	0.0000	REM
Jawa	9.125498	0.1042	3.138258	0.5350	12.93198	0.0003	REM
Bali-Nusa Tenggara	5.774317	0.0557	0.966367	0.9149	0.247936	0.6185	CEM
Kalimantan	16.322226	0.0026	15.183262	0.0043	5.608449	0.0179	FEM
Sulawesi	5.738189	0.3325	0.898127	0.9248	8.933277	0.0028	REM
Maluku-Papua	26.774001	0.0000	0.000000	1.0000	2.514205	0.1128	REM

Sumber: Data diolah, 2022 (Excell & Eview's 9.0)

Based on the model selection test in table 1, the *Chow Test* at an early stage for testing both aggregated and individual islands in Indonesia. The results of the aggregate processing show that the probability value of chi square is 0.0000 where the value is less than 5% alpha, the model chosen is the *fixed effect model*. Furthermore, the *Hausman* produce a probability value of 0.3808 which was greater than 0.05, so the next model that was accepted was the *random effect model*. The last test was conducted to determine which estimate is the best and based on a probability of 0.0000, it can be concluded that the model used is a *random effect model* for testing in an aggregated manner.

Testing for each island of Indonesia, for Sumatra Island and Maluku Island, Papua, in the first stage of testing, the selected model is the *fixed effect model* with the prob of the *chi square cross-section* of both $0.0000 < 0.05$. The next test, the probabilities are 0.3261 and 1.0000

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respectively, which are greater than 5% significance, so that the next model chosen is the *random effect model*. For the island of Sumatra, proceed to the LM test, which produces a value of $0.0000 < 0.05$, meaning that the model to be selected is a *random effect model*.

Table 1 shows that in the first test for the island of Kalimantan, the probability of the *chi square cross-section value* was 0.0026 model was selected *fixed effect* and for further testing the probability was 0.0043. So that consistently the best model for Kalimantan Island is the *fixed effect*.

For model testing in Java and Sulawesi, the probability of *the chi-square cross-section* is 0.1042 and $0.3325 > 0.05$, so that the first model chosen is *the common effect model*. Based on this decision, the test was continued with the LM test which resulted in the probability-both magnitude of the *Breusch Pagan-Stat* 0.0003 and 0.0028 < 0.05 , so the model chosen from this test was the *random effect model*. The inconsistent results indicate that the last stage of testing is required, namely the Hausman test and *the cross-section* with values respectively 0.5350 and 0.9248. Then the last model chosen is the *random effect*.

Based on the results of data processing to estimate the Bali-Nusa Tenggara Island model, the selected Chow test is the *common effect model* which is determined based on the probability of $0.0557 > 0.05$. Further testing, namely the LM probability test, is 0.0003 < 0.05 , so consistently, the model chosen for the Bali-Nusa Tenggara island model selection test is the *common effect model*.

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Tabel 2 Hasil Estimasi Model Indeks Pembangunan Manusia

Variabel	Teori	Aggregat (REM)		Sumatera (REM)		Jawa (REM)		Bali-Nusa Tenggara (CEM)		Kalimantan (FEM)		Sulawesi (REM)		Maluku-Papua (REM)	
		Beta	Prob (2 Tail)	Beta	Prob (2 Tail)	Beta	Prob (2 Tail)	Beta	Prob (2 Tail)	Beta	Prob (2 Tail)	Beta	Prob (2 Tail)	Beta	Prob (2 Tail)
Konstanta		- 93.2715	0.0002	- 228.8543	0.0003	- 137.1616	0.0038	-37.2578	0.5691	- 94.0249	0.3661	22.8643	0.6431	- 203.7555	0.0233
POP	-	-7.5738	0.0001	-7.6121	0.0224	-4.6881	0.0365	-26.4760	0.1911	-1.8376	0.7271	-9.7444	0.0185	-6.5605	0.3034
PMA	+	3.1124	0.0213	3.3258	0.0676	4.0015	0.0983	7.5985	0.2265	-1.9646	0.6424	4.8254	0.0132	6.7711	0.0040
EDUC	+	0.1110	0.0080	0.0008	0.9954	0.1178	0.4213	0.0378	0.7972	0.2310	0.0106	0.0920	0.4192	0.0868	0.6876
IPM	+	2.1809	0.0000	4.0608	0.0000	2.6441	0.0000	1.7214	0.0327	2.3179	0.0935	0.5489	0.4083	3.6610	0.0025
Goodness of Fit															
R ²		0.4289		0.4763		0.5500		0.8297		0.6997		0.5440		0.6237	
Adj R ²		0.4174		0.4383		0.4919		0.7773		0.5854		0.4852		0.5445	
Fstatistik		37.3577		12.5078		9.4704		15.8380		6.1176		9.2462		7.8739	
Prob Fstat		0.0000		0.0000		0.0000		0.0001		0.0004		0.0000		0.0006	

Sumber: Data diolah, 2022 (Excell & Eview's 9.0)

Discussion

According to the United Nation (2022) since the mid-twentieth century, the world's population has more than tripled, reaching nearly 8 billion people by 2022. Projections by the United Nations suggest that the global population size could grow to nearly 11 billion in about by 2100. Rapid population increase could exacerbate the challenges of ensuring that future development is sustainable and inclusive. This growth will be most influential in low-income and lower-middle-income countries.

In line with previous research conducted by Anto (2012) showed that the number of people who have a large productive age interval will be an advantage if the population with productive age is of high quality. However, it can be a disaster when the productive age population has low education and skills, poor health conditions, and cannot produce optimally.

Foreign investment has a positive effect on the sustainable development index in the aggregate test in 34 provinces of Indonesia, while for the test on each island in Indonesia, foreign investment has a negative effect on the island of Kalimantan. Based on the theory, foreign investment has a positive influence on sustainable development. In accordance with the results of data processing which shows that population growth indicators have a negative influence on IPB in the aggregate in 34 provinces in Indonesia. However, there are differences in the results of data processing based on each island in Indonesia.

Research conducted by Yonani (2019) shows that there are two effects of foreign investment for development. The positive influences include the opening of new opportunities to work for the community, technological transitions, an increase in state income from the tax sector, the convenience of the community in fulfilling their needs, and encouragement for the progress of domestic producers. The negative influence of foreign investment must also be carefully considered because it can cause environmental damage as a result of environmental pollution such as waste that is not managed properly, reduced productive land because areas that should be productive land are transformed into industrial factories, abandoned agricultural sector as a result of the sucking of agricultural labor into the industrial sector due to income that is considered more promising, the occurrence of excessive exploitation of natural resources to damage habitats, and the large amount of business results brought to the investors' home countries.

Based on BPS data, Kalimantan Island has a foreign investment value of US\$ 1621.8 of the total value of foreign investment in Indonesia, which is 31,093.1. This shows that the value of foreign investment in Kalimantan is only about 5.22 percent of the total value of foreign investment in Indonesia. This figure is very small when compared to data on exploitation of natural resources, especially massive forest exploitation, the existence of investment points for oil palm plantations in riverbanks, to indications of companies entering forest areas that

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should not be used as industrial areas. According to WWF, Kalimantan Island will experience a loss of 75 percent of its forest, which is around 10-13 million hectares of forest between 2015-2020.

The third indicator that measures sustainable development is education. Based on the results of data processing in table 2, education has a positive influence both on an aggregate basis in 34 provinces in Indonesia and on testing each island in Indonesia. Indonesia which consists of Sumatra Island, Java Island, Bali Island-Nusa Tenggara, Kalimantan Island, Sulawesi Island, and Maluku-Papua Island. Based on the theory, education has a positive influence on sustainable development. This theory is in accordance with the results of data processing which shows that education indicators have a positive influence on IPB in the aggregate in 34 provinces of Indonesia and each of the islands in Indonesia.

Umi (2014) states that education is an important investment in development. Education is also considered a sector that has a major role in forming the capability of a developing country to absorb modern technology and develop production capacity as an effort to create sustainable development (Todaro, 2006).

Education has a big role in the 21st century in changing attitudes, behavior and lifestyles of individuals through awareness, capacity building, and other ways so that the need for educational reorientation is needed in the face of these pressures (Sarabhai, 2015; UNESCO, 2021). In countries with relatively high fertility rates today, investment in education can significantly increase the positive economic impact of the United Nations.

Marshall *et al.* (2017) stated that education can form an internal drive for each individual to carry out *pro-environmental behavior (pro-environmental behavior)*. This drive from within the individual autonomously forms an environmentally friendly character and character to make decisions and act that protects and sustains the environment. Qi (2016), concludes that the allocation of higher education funds will encourage an increase in income through the growth of human capital. Guo *et al.* (2018) states that sustainable development is positively related to education.

The last indicator that measures sustainable development is the human development index which is measured by the quality of human resources. Based on this research, the quality of human resources has a positive effect on sustainable development, both on an aggregate basis in 34 provinces in Indonesia and testing each island in Indonesia. Based on the theory, the quality of human resources has an influence. This theory is in accordance with the results of data processing which shows that indicators of the quality of human resources have a positive influence on IPB on an aggregate basis in 34 provinces of Indonesia and each of the islands in Indonesia.

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According to Strezov, et al. (2017) said that the human development index is a widely adopted indicator to measure the status of development in the socio-economic field. *Human Development Index* is widely used to measure the level of human well-being of sustainable development through the lens of human capacity by the United Nations Development Program (UNDP). HDI can be applied to many different research scales, from small, medium to large scale, including districts (Singh and Keshari, 2016), provinces (Zuo et al., 2017) and countries (UNDP, 2016; Zang et al., 2017).

Based on BPS data, the human development index in Indonesia has continued to increase from 2015 to 2020. Although the human development index experienced a slowdown in growth in 2020, the index value reached 71.94. This value increased by 0.03 percent compared to the previous year. The Human Development Index (HDI) broadly defines development, namely from the dimensions of the quality of the population and education which are the goals in a sustainable development. A country that has a high population, but has a low level of quality of human resources will affect the quality of sustainable development in that country.

Conclusion

Conclusions

The results of this test conclude that population growth has a negative effect, while foreign investment, education, and the human development index (quality of human resources) have a positive influence on the sustainable development index on an aggregated basis in 34 provinces of Indonesia. In addition, the results of this test conclude that there is a negative effect of foreign investment on the sustainable development index on the island of Kalimantan which is concluded based on the test results where the beta coefficient of the PMA variable is negative.

Suggestions

From the results of the research that has been carried out, the researchers suggest the need for supervision and review by the government regarding foreign investment such as paying attention to CSR so that foreign investment can have a positive effect in supporting sustainable development running as expected

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