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Impact of Disaster on Economic Performance of ASEAN-9: Does Philanthropy Help?

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Abstract: This study aims to determine the moderating role of religious philanthropy in reducing the impacts of disasters to economic problems, namely inequality, poverty, and economic growth of ASEAN-9 over the period from 2000 to 2020. By using a panel moderated regression analysis, the study found that disasters significantly contributed to higher levels of economic growth, income disparity, and poverty. In addition, philanthropy is found to have a negative moderating role in the effects of disasters on economic growth, inequality, and poverty. The findings showed an effective role of philanthropy in reducing the impacts of disasters on economic growth, income disparity, and poverty in ASEAN-9. Our findings provide an important benchmark for the formulation of government policies to mitigate disaster risks on economic problems through the enhancement of religious philanthropic institutions.
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Introduction

Sustainable economic growth accompanied by a reduction in the level of poverty and income disparity has been a target of economic development worldwide. Sustainable development mainly aims to promote the quality of life of both present generation and future generation on the globe without exploiting the use of natural resources that exceeds their capacity (Majid & Mahrizal 2007; Griggs, Nilsson, Stevance, & McCollum , 2017).

A sustainable development agenda so-called Sustainable Development Goals (SDGs) has been initiated during the conference held in Rio de Janeiro, Brazil in June 2012 by the United Nations as a prolongation of the Millennium Development Goals (MDGs) that have been implemented by countries since 2001 until the end of 2015. The SDGs have set goals, targets, and indicators for global sustainable development to be achieved by 2030. Generally, the SDGs unequivocally aim to exterminate poverty and hunger, lessen inequality within and between countries, advance water and energy management, and impose imperative steps to embark upon climate change.

In contrast to the eight MDGs goals, the 17 SDGs goals highlight the crucial efforts to halt poverty through an increase in economic growth by implementing social policy dealings to meet a mixture of social desires and environment-related policy to tackle climate change and environmental destruction (Majid, Dewi, Aliasuddin, & Kassim, 2017). The SDGs goals are very much related to the objectives of the national development of ASEAN countries, including Indonesia (Dewi, Majid, Aliasuddin, & Kassim, 2018). For example, the fourth paragraph of the 1945 Indonesia's Constitution Preamble stated that the objective of Indonesia's development is to promote public welfare nationwide.

Public welfare is a condition of fulfilling the material, spiritual, and social needs of the country's population to live properly, develop themselves, and perform their social and economic functions smoothly (Qureshi et al., 2019; Atsalakis, Bouri, & Pasiouras, 2020). One of the easiest ways to assess the realization of public welfare in the country is by looking at the poverty and income disparity levels of the population, as they have an opposite direction. Public welfare has a negative relationship to the poverty and income disparity levels. A higher public welfare level causes a reduction in poverty and income disparity levels, and vice versa (Dewi et al., 2018).

Economic growth, which is generally measured by changes in gross domestic product (GDP), has been commonly utilized to portray an overall public welfare (Midgley & Tang, 2001). However, an increase in economic growth does not necessarily improve public welfare and reduce poverty rate, and income inequality. The effect of economic growth on improvement in public welfare, poverty, and income inequality reduction is very much depending on the extent to which the benefits of economic growth are spread across the society (Cerra et al., 2021). If the benefits of economic growth are enjoyed proportionately by all citizens, it would improve the public welfare, followed by the reduction in their poverty and income inequality, and vice versa.

A non-inclusive economic growth often leads to an increase in economic inequality and poverty levels. An increase in economic growth is not fully followed by improving job opportunities, reducing poverty level and income disparity, promoting decent life for all the people and their public welfare. For example, Lin (2003) and Ravallion (2005) found an insignificant effect of high economic growth on poverty and income disparity reduction. Economic growth failed to reduce or even eliminate absolute poverty and income disparity. Therefore, rapid economic growth does not automatically increase people's standard of living and just income distribution. In other words, the so-called trickle-down effects of the economic growth for the poor did not happen as expected. Thus, any effort to combat poverty and income disparity through economic growth should be designed expansively, covering diverse aspects of the public life and executed in an integrated and inclusive manners (Faradiba & Zet, 2020).

Moreover, the realization of an inclusive economic growth to reduce poverty and income disparity target has been becoming more challenging due to more frequent and recurring unexpected natural disasters globally (Tselios & Tompkins, 2019; Lim, 2019), including ASEAN. The increasing trend of disasters has slowed down economic growth and has even led to deaths of the population (Masiero & Santarossa, 2019). The total number of

disasters in the world and ASEAN, including several man-made disasters over the period 2010-2020 showed an increasing trend (Center of Research of Epidemiology Disaster – CRED, 2019). Most disasters occurred in the world in 2010 (12.43%) and ASEAN in 2020 (15.46%) were dominated by earthquakes and typhoons. These disasters caused economic losses of nearly USD900 billion, more than 15 million deaths, and more than 2 million injured worldwide. Previous studies have documented an adverse impact of disasters on the livelihood of the local population in the disastrous areas (Phong, Mai, & Aditto, 2020), national economic growth (Hochrainer, 2009; Hsiang & Jina, 2014; Hamori & Kume, 2018; Tselios & Tompkins, 2019; Tangkudung, 2019; Faradiba & Zet, 2020), poverty (Silbert & Useche, 2011; Noy, 2015; Parida et al., 2020), household consumption (Lim, 2019), and income inequality (Hsiang & Jina, 2014; Yamamura, 2015; Feng, Liu, & Gong, 2016; Scheidel, 2018; Ryu & Slottje, 2020).

Various efforts have been made to mitigate disaster risks on the economy (Athukorala & Resosudarmo, 2005; Tselios & Tompkins, 2019; Hsiang and Jina, 2014; Brown & Minty, 2008; Brown, Harris, & Taylor, 2012). Philanthropy has been viewed as an initial and quick response to mitigate the disaster risks on the economy. The World Giving Index (2019) showed an increase in numbers of philanthropy during disasters from 20% in 2000 to 79% in 2020. Additionally, from a religious perspective, philanthropy has been viewed as one of the essential public voluntary efforts to lessen the impact of disasters on the economy. For example, Islam obliges its followers to pay zakat (Islamic tax) and encourages them to give voluntary donations (infaq, sadaqah, and waqf) to help those really in need (Holy Qur'an, at-Taubah: 71).

Limited previous studies have explored the role of philanthropy in lessening the negative impact of disasters on the economy. For example, Wu and Chang (2018) found an important role of non-profit organizations (NPOs) participation in disaster relief in two major catastrophes of the 2008 Earthquake in Wenchuan, China and 2009 Typhoon in Morakot, Taiwan. Their engagements in short- and long-term disaster services were crucial to mitigate immediate and long-term disaster risks to the economy. Similarly, Shoutherland (2019) showed a crucial role of the Chinese Military in Overseas Humanitarian Assistance and Disaster Relief to mitigate various global disasters on the economy worldwide. However, these studies only described the role of philanthropy on the economy qualitatively without precisely measuring its moderating role in reducing the influences of disasters on economic growth, poverty, and income disparity quantitatively.

Motivated to fill up the existing gaps in the previous literature, this study, therefore, seeks to examine the moderating role of philanthropy in reducing the impact of disasters on economic growth, poverty, and income disparity in the ASEAN-9. Different from previous studies that assessed the contribution of philanthropy to the economy, our study measures empirically the impact of philanthropy on economic growth, poverty, and income disparity. In addition, unlike previous studies that only examined the direct effect of philanthropy on the economy, our study empirically measures and analyses the effect of philanthropy on economic growth, poverty, and income inequality. Finally, our study also enriches the existing empirical literature by empirically measuring and analyzing the

moderating effects of philanthropy in mitigating the impacts of disasters on economic growth, poverty, and income disparity in ASEAN-9.

The results of this study are expected to shed some light for policymakers in formulating holistic disaster mitigation policies to promote economic growth and reduce poverty and income disparity. In addition, by knowing the number of the overall loss of disasters, the findings of the study provide important policy recommendations for disaster management budget planning and disaster policy measures to relieve the impact of disasters on the economy. Finally, the findings of the study are expected to enrich the existing literature, particularly the empirical evidence on disaster risk mitigation and economic development from the perspective of ASEAN countries.

In the next sections, the study provides the relevant selected literature in Section 2 and followed by the research methods and data in Section 3. Section 4 provides the findings, discussion, and their implications. Finally, Section 5 concludes the study.

Research Method

This research focuses on the moderating role of philanthropy in reducing the effect of disasters on economic performance, including economic growth, poverty, and income inequality in ASEAN-9 countries. Due to data unavailability, the study only examined 9 out of 10 ASEAN countries, namely Indonesia, Malaysia, Thailand, Singapore, the Philippines, Laos, Cambodia, Vietnam, and Myanmar. An annual secondary data during the period 2000-2020 were utilized and analyzed using a Moderated Regression Analysis (MRA) model. The proposed econometric technique is suitable to analyze the direct effect of disasters and philanthropy on economic performances and the moderating effects of philanthropy in strengthening or weakening the effect of disasters on economic performances.

A total of five variables were examined in this study, namely economic growth, poverty, income disparity (endogenous variables), disasters (exogenous variable), and philanthropy (moderating variable). Economic growth is measured by changes in real GDP per capita. Poverty is calculated by the percentage of the population living under the poverty line. Income disparity is measured by the Gini index. Disasters are computed by the number of losses caused by disasters in USD. Finally, philanthropy is measured by the number of donations for humanitarian in USD. The data for economic growth, poverty, and income disparity are sourced from the International Monetary Fund (IMF), while the data for philanthropy and disasters are collected from the World Giving Index and EM-DAT (Emergency Events Database), respectively.

To empirically measures and analyzes the moderating role of philanthropy in mitigating disaster risks on economic growth, poverty, and income inequality in ASEAN-9 countries, the study proposes the following panel MRA equations:

$$ECG_{it} = \gamma_0 + \gamma_{11}DIS_{it} + \gamma_{12}PLT_{it} + \gamma_{13}DIS*PLT + \varepsilon_{1it} \qquad (1)$$

$$ICD_{it} = \gamma_0 + \gamma_{21}DIS_{it} + \gamma_{22}PLT_{it} + \gamma_{23}DIS*PLT + \varepsilon_{2it} \qquad (2)$$

$$POV_{it} = \gamma_0 + \gamma_{31}DIS_{it} + \gamma_{32}PLT_{it} + \gamma_{33}DIS*PLT + \varepsilon_{3it} \qquad (3)$$

where *ECG* is the economic growth; *ICD* is the economic disparity level; *POV* is the poverty level; *DIS* is the disasters; *PLT* is the philanthropy; γ_0 is a constant; γ_{ii} is the estimated regressors, *i* is ASEAN country; *t* is the year of the study; and ε is the error term.

Because the data examined in this study is panel data, which is a mixture of time-series data (2000-2020) and cross- section (9 ASEAN countries), thus the data analysis is conducted using a panel regression model. To identify the most appropriate panel regression model to be adopted in this study from three-panel regression models, namely: common effect model (CEM), fixed-effect model (FEM), and random effect model (REM), series of statistical tests are conducted. The Chow test is performed to decide either the CEM or FEM is the most suitable, while the Hausman test is conducted to determine which model is most appropriate to use between the REM and the FEM. Meanwhile, the Lagrange test is performed to find out whether the REM is more suitable as compared to the CEM to analyze the data in the study.

The most suitable panel regression model is then selected for further analysis to answer the research objectives. However, before the data analysis, the study conducts the classical assumption tests of normality, multicollinearity, heteroscedasticity, and autocorrelation to ascertain robust findings. To check for normalcy, a Jarque-Bera (JB) test is utilized. The data is deemed to be normally distributed if the JB test's p-value is larger than the assigned significance level. Meanwhile, the Variance Inflation Factor (VIF) is utilized in the multicollinearity test. The data are free of the multicollinearity problem if the VIF is less than 10. The Durbin-Watson (DW) test is used to verify autocorrelation problem, and if the D-W value is less than 2, the data are free of autocorrelation. Finally, the heteroscedasticity is tested using the Breusch-Pagan (PG) test. The data are free of heteroscedasticity (homoscedastic) if the value of estimated Chi-square is significant where its p-value is above the assigned significance level.

Result and Discussion

Descriptive statistics

Table 1 illustrates the descriptive statistics of the investigated variables. Of the ASEAN-9, Singapore recorded the lowest economic losses (USD0.22 million), while Thailand recorded the highest economic losses (USD7.73 million) due to disasters. Since 1965,

Singapore experienced the smallest number of disasters, while Thailand suffered enormous losses due to floods that hit the Northern, Northeast, and Central parts of Thailand, particularly the Mekong and Chao Phraya rivers and parts of the capital city Bangkok in 2011 (Asian Disaster Reduction Center – ADRC, 2017).

Table 1 Descriptive statistics

	DIS	ECG	ICD	POV	PLT
Mean	4.770	0.064	0.410	0.158	78.588
Median	4.970	0.063	0.401	0.142	23.630
Maximum	7.730	0.158	1.351	0.453	754.860
Minimum	0.220	-0.024	0.031	0.040	0.020
Std. Dev.	1.312	0.023	0.136	0.106	122.096

In terms of economic growth, Singapore recorded the lowest economic growth (-2.4%) in 2001 (The National Archive Singapore, 2002) due to lower external demand, weak household consumption, and low business investment. Meanwhile, Laos recorded the highest economic growth (15.80%) in 2000 due to an increase in the contribution of the agriculture sector (60%) and mining and mineral exports (Asian Development Bank, 2001).

Of the ASEAN-9, Myanmar experienced the lowest income disparity (0.031) in 2016, while Laos recorded the highest income disparity (1.351) in 2000 due to economic structural change (economic activity in the agricultural sector), increase in years of schooling, increase in education, health, road access, and electricity expenditures (Chanthavong, 2017). Additionally, in view of poverty rate, Malaysia recorded the lowest poverty (0.40%) in 2017, while Vietnam experienced the highest poverty level of 45.3% in 2000, contributed mainly by an increase in rice price and unemployment rate due to slowing construction activities in several regions in Vietnam (Kang & Imai, 2012).

Finally, in terms of philanthropic data, the smallest amount of philanthropy is recorded by Singapore (USD0.02 million) in 2003, while the highest amount of philanthropy is recorded by Laos (USD754.8 million) in 2000. Channel News Asia – CAN (2014) reported that the incidence of disasters that hit most of Southeast Asia was in 2013, Singapore contributed USD200,000 to humanitarian assistance. On the other hand, 3 NGOs in Laos, namely the Save the Children UK, Mennonite Central Committee, and American Friends Service Committee have successfully raised philanthropic funds to mitigate disaster impacts nationwide.

ASEAN is one of the regions with a relatively high disaster during the last few decades. International Federation of Red Cross and Red Crescent Societies – IFRC (2015) reported that demises from natural disasters in the region have more than tripled in the past decade, which is largely due to extreme disasters. ASEAN that consists of 10 member countries with 600 million inhabitants had experienced an average loss of approximately USD4.4 billion annually due to natural disasters. The various challenges to natural disasters faced by ASEAN countries are related to the potential for frequent natural disasters with different levels of exposure and vulnerability to different hazards, coupled with different capacities in dealing disasters. Disasters that hit ASEAN countries are categorized as small- and medium-scale disasters and only a few of them are categorized into the high-scale

disasters, such as the 2004 Indian Ocean Tsunami and the 2008 Typhoon Nargis (Athukorala & Resosudarmo, 2005).

Selected panel regression model tests

As discussed in the earlier section, the study first determines the suitable panel regression model using various panel data testsof Chow test, Hausman test, and Lagrange test. The findings of these tests are reported in Table 2.

Table 2 Testing suitable panel regression model

Tests of panel regression models		t-statistics	df	P-value
Chow test	Cross-section F	4.0743	(8.176)	0.000
	Cross-section Chi-square	32.112	8	0.000
Hausman test	Cross-section random	2.352	5	0.798
Lagrange test	Cross-section	72.416	0.632	0.000

As illustrated in Table 2, the finding of the Chow test showed the rejection of null hypothesis, which means that the FEM should be adopted as a suitable panel regression model as opposed to the CEM. The finding of the Hausman test showed the rejection of the alternative hypothesis, indicating the suitability of the REM as compared to the FEM. Finally, the Lagrange test is conducted to determine the most appropriate panel regression model between the REM and the CEM. Table 2 indicated that the REM is the most appropriate panel to estimate the data in the study. Thus, in the next section, the study reported the impact of disasters on the economies of ASEAN-9 and the moderating role of philanthropy in lessening the impacts of disasters on the economies of ASEAN-9 based on the REM.

The impacts of disasters on economic growth, poverty, and income disparity

Table 3 reported the findings of the REM on the influences of disasters on economic growth, poverty, and income disparity among ASEAN-9 countries over the period from 2000 to 2020.

Table 3 The impacts of disasters on economic growth, poverty, and income disparity in ASEAN-9

Variable	DIS	Diagnostic Test					
		Adj-R^2	F-Stat	JB	VIF	BP	DW
ECG	0.563*** (4.733)	0.102	22.410***	0.134	1.352	0.118	1.890
ICD	0.039*** (5.656)	0.141	32.000***	0.165	1.792	0.119	1.876
POV	3.374*** (6.311)	0.171	47.888***	0.111	1.843	0.124	1.862

Note: *** indicates significances at the 1% level. F-Stat is the F-statistics; Adj-R^2 is the adjusted R^2; JB is the Jarque-Bera test for normality; VIF is the variance inflation factor test for multicollinearity; BP is the Breusch-Pagan test for heteroscedasticity; and DW is the Durbin-Watson test for autocorrelation.

As illustrated in Table 3, surprisingly, the disasters had a positive and significant influence on economic growth at the 1% level of significance with the estimated coefficient value of 0.563. More specifically, the findings of this study indicated that an increasein the number of disasters by 1% has caused economic growth to increase by 0.563%. Disasters might adversely impact economic growth in the short-run but turned to become positive in the long-run. Increased national and international supports for mitigation disasters, enhanced effective preparedness measures, and improved environmental management had contributedto mollify the impacts of disasters on the ASEAN-9 economy. In addition, the small-scale majority of disasters that hit ASEAN-9 during the study period has only caused damage of USD1.125 million but had not slowed down the economy to grow.

For instance, when the Indian Ocean earthquake and tsunami of 2004 struck ASEAN countries and hit hardest Aceh Provinceof Indonesia, the province received a huge amount of financial aids from the Indonesian government and international communities, amounting to USD7.5 billion over five years after the 2004 Indian Ocean earthquake and tsunami, causing the economy to recover rapidly. Such financial aids were used to repair damaged infrastructures and build back public services better, which consequently contributed to sustainable economic growth in the long run. This empirical finding implies that if small- and medium-scale of disasters are well-managed and supported with sufficient disaster mitigation funds, the government could easily minimize disasters' impacts on the economy in the short-run and ensure long-run economic growth. This finding agrees with a previous study by Huho et al. (2016) who found is a positive influence of normal flood disasters on economic growth in Kenya.

On the other hand, as observed from Table 4, the disasters significantly and positively affected income disparity at the 1% significance level with an estimated coefficient of 0.039. The finding shows a 1% increased in the number of disasters had caused income inequality to increase by 0.039%. At the time a natural disaster wallops, the poor are potentially to become victims and even lose their jobs, which finally cause a decrease in their income in the short-term. As a result, income inequality is expected to widen during a disaster. In the event that poor family are less arranged for catastrophes and live in disaster-prone zones, they will bear income losses and cause greater income inequality. The availability of sufficient philanthropic funds to be allocated to the poor while disasters hit the countries could reduce income inequality. When a disaster happened is that donations or philanthropy must be given primarily to the poor (Liu et al., 2018). Our finding is in linewith research conducted by Bui, Dungey, Nguyen, and Pham (2014) which found that natural disasters cause an increase in t income inequality among the Vietnamese households.

Finally, Table 3 also reported the significant positive influence of the disaster on the poverty rate at the 1% level of significance with an estimated coefficient of 3.374. Specifically, this showed that a 1% increase in the number of disasters hadcaused a 3.374% increase in the poverty rate. The majority of poor households who live in disaster-prone areas experienced homes' damages during the 2000-2020 period contributed to a higher poverty rate across ASEAN-9 countries. Disasters caused the poor to incur higher income losses and lead to a larger poverty gap. This finding urges important disaster mitigation

policies focused on poor economic empowerment programs when disasters hit the countries. This finding is supported by Noy (2015) which found an affirmative influence of natural disasters on the poverty level globally.

The role of philanthropy in reducing impacts of disasters on economic growth, income disparity, and poverty

Furthermore, Table 4 reported the moderating role of philanthropy on the influences of disasters on economic growth, income disparity, and poverty in ASEAN-9 during the 2000-2020 period. The study found that philanthropy had a significant negative moderating effect on the influence of disasters on economic growth at the 5% significance level with an estimated coefficient of -0.337. This finding showed the ability of philanthropy to reduce the impact of disasters on economic growth. This empirical evidence is following the result of the study by Esawe et al. (2018) who said that philanthropy can be used to build community resilience to disasters.

As illustrated in Table 4, philanthropy is found to have a significant negative moderating role on the influence of disasters on income disparity at the 5% level with an estimated value of -0.014. This finding shows the ability of philanthropy to mitigate the impact of the disaster on income inequality. During a disaster, people who have savings would use them to repair the damaged assets and recover their health, while those who have no savings would be hard to survive without getting supports from philanthropic funds. Thus, the presence of philanthropy could help reduce income imbalances between the poor and the rich. Social or philanthropic assistance is provided to a person, family, group, and/or community experiencing social shocks and vulnerabilities due to disasters, aiming at fulfilling basic necessities to ensure their survival through the restoration of communal psychological circumstances, promoting economic capability, and unveiling information and/or retrieve to sources and prospective for social wellbeing (National Disaster Management Authority - BNPB, 2013). This finding is consistent with previous studies that found an effective role of Islamic philanthropy of zakat on income inequality in Pakistan (Jehle, 1994) and Malaysia (Zulkifli, Taha, Mohd Nor, & Ali, 2021). Zakat is effective to channel income from the middle to the lower groups of communities.

Furthermore, Table 4 also showed a negative and significant moderating effect of philanthropy on the effect of disasters on poverty rate at the 1% significance level with an estimated coefficient of -2.196. This shows that philanthropy can minimize the impact of disasters on poverty reduction across ASEAN-9. The availability of philanthropic funds during disasters could help the disaster victims to enter into the recovery period. The funds could be allocated to build back the affected areas better quickly and even more advanced than the pre-disaster period. Our finding is along the lines of previous research conducted by Ryandono (2008) and Hafidhuddin and Rahmat (2008) who found that the presence of Islamic philanthropic institutions of zakat in Islam is very helpful to strengthen the government efforts to alleviate poverty and overcome the economic marginalization of Muslim communities, especially during the disaster period that caused enormous flosses to the economy.

Table 4 The moderating role of philanthropy on the impacts of disasters on economic performance

Variable	DIS	PLT	DIS*PLT	Diagnostic Test					
				Adj-R^2	F-Stat	JB	VIF	BP	DW
ECG	0.256*** (2.072)	0.005*** (3.779)	-0.337** (1.963)	0.247	21.580***	0.122	2.362	0.128	1.882
ICD	0.031*** (4.217)	0.0004*** (5.326)	-0.014** (1.869)	0.260	23.032***	0.127	2.118	0.146	1.928
POV	1.644*** (3.105)	0.027*** (4.362)	-2.196*** (2.983)	0.370	37.829***	0.210	1.402	0.172	1.910

Note: See Table 3.

Overall, our findings are following the previous research conducted by Esawe et al. (2018) who recorded that Islamic philanthropy of zakat can be used to build community resilience to disasters in two stages. The first phase is the use of zakat in disaster emergency response to meet the basic needs of the community, including food, water, sanitation, shelter, and health care. Meanwhile, in the second phase, the zakat can be used to financially support the affected community and disaster- vulnerable people to work and earn income to support their families in the long run. Without getting financial aids, the poor would be at greater risk in the future due to their incapability to mitigate disaster risks. Thus, zakat could help to rebuild the lives and livelihoods of the disaster-affected groups in the long term. Finally, zakat could also be used to reduce disaster exposure by supporting communities with funds to import technology and expertise that help them improve disaster prediction, preparedness, response, and vulnerability to similar future catastrophic events.

With the presence of many religious-based social and philanthropic institutions globally, it is not surprising that these institutions have played active roles to assist various elements of society, both individually and collectively during natural disasters and social, economic, and political imbalances. Philanthropy is documented to be an effective way to mitigate the disasters' impacts to economic growth slowdown and increased income inequality and poverty rates.

Finally, Table 4 also reported the findings of classical assumption tests, comprising normality, multicollinearity, autocorrelation, and heteroscedasticity. The study found that the data analyzed in this study fulfilled all classical assumptions. Overall, the findings of the study were robust and could be used for further inferences.

Conclusion

This study has measured and analyzed the moderating role of philanthropy in reducing the impacts of disasters on economic growth, poverty, and income inequality in ASEAN-9 during the 2000-2020 period using a panel moderated regression technique. The study found that disasters had a positive and significant impact on economic growth and the negative and significant impacts of disasters on income inequality and poverty rate. In

addition, the study documented an effective role of philanthropy in reducing the impacts of disasters on economic growth, income disparity, and poverty.

Our findings showed the crucial role of the religious philanthropic institution during the catastrophic periods to strengthen the government efforts to mitigate disaster risks on the economy both in the short- and long-run. Thus, it is extremely important for the policymakers and communities to support the presence of religious philanthropic institutions locally, regionally, and globally. During the disastrous period, the philanthropic institutions have been always in the front line to assist communities to fulfill their basic needs to ensure survival and to build back their future lives better.

This study only focuses its analysis on the moderating role of philanthropy in reducing the impacts of disasters on economic growth, income inequality, and poverty in ASEAN-9. To enrich the existing literature and empirical evidence on this issue, further studies are suggested to evaluate the holistic impacts of disasters on economic performances, such as unemployment and inflation, and the role of philanthropy to mitigate the disastrous impacts on overall macroeconomic performances. Adding more countries from various regions into the analysis would also enrich the existing empirical evidence on the topic.

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