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IMPACT OF DISASTER ON ECONOMIC PERFORMANCE OF ASEAN-9: DOES PHILANTHROPY HELP?

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.

Keywords: religious philanthropic institution; disaster risk mitigation; poverty; income inequality; economic development.
JEL Classification: D63, D64, H84, 015, I32

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 improve 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 et al., 2017).

A sustainable development agenda 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 continuation and expansion of the Millennium Development Goals (MDGs) that have been carried out by countries from 2001 to the end of 2015. The SDGs have set goals, targets, and indicators for global sustainable development to be achieved by 2030. Generally, the SDGs explicitly aim to eradicate poverty and hunger, reduce inequality within and between countries, improve water and energy management, and impose urgent steps to tackle climate change.

In contrast to the eight MDGs goals, the 17 SDGs goals emphasize the importance of efforts to end poverty through an increase in economic growth by implementing social policy measures to meet various social needs and environment-related policy to tackle climate change and environmental destruction (Majid et al., 2019). The SDGs goals are very much related to the objectives of the national development of ASEAN countries, including Indonesia (Dewi et al., 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 et al., 2020). One of the easiest ways to assess the realization of public welfare in the country is by looking at the poverty level of the population, as the two have an opposite direction. Public welfare has a negative relationship to the poverty level. A lower poverty rate reflects a higher public welfare level, and vice versa (Dewi et al., 2018).

High economic growth is not always accompanied by an increase in public welfare and a reduction in the levels of poverty and income disparity in Indonesia. 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. These facts are documented in the studies by Lin (2003) and Ravallion (2005), who found that high economic growth had an insignificant effect 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. In other words, the so-called trickle-down effects of the economic growth for the poor did not happen as expected, even though it tended to be very slow. This shows that poverty and income disparity are inde[19] complex and multidimensional problems. Thus, any effort to combat poverty and income disparity must be designed comprehensively, covering various aspects of community life and implemented in an integrated manner (Faradiba & Zet, 2020).

Moreover, the realization of the economic growth 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, 2020). This can be seen from the number of incidents of disasters and the number of victims. 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%), which 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 economic growth (Hochrainer, 2010; Hsiang & Jina, 2014; Tselios & Tompkins, 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 et al., 2016; Scheidel, 2018).

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 et al., 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 reli[33]us perspective, philanthropy has been viewed as one of the essential public voluntary efforts to reduce 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 [48] role of philanthropy in reducing the negative impact of disasters on the economy. For example, Wu and Chang (2018) found an important r[26] of non-profit organizations (NPOs) participation in disaster relief in two major catastrophes of the 2008 Wenchuan Earthquake in China and 2009 Typhoon Morakot in Taiwan. Their engagements in short- and long-term disaster services were crucial to mitigate immediate and l[29]g-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 impact on economic growth, poverty, and income disparity quantitatively.

Motivated [8] to fill up the existing gaps in the previous literature, this study, therefore, aims to examine

the moderating role of philanthropy in reducing the impact of disasters on economic growth, poverty, and income inequality in the ASEAN -9. Different from previous studies that assessed the contribution of philanthropy to the economy, our study measures empirically comprehensively 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 hoped to shed some light for policy-makers in designing 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 mitigate 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 discusses the findings and their implications. Finally, Section 5 concludes the study.

Research Methods

This research focuses on the moderating role of philanthropy in reducing the impact 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, Philippines, Singapore, Thailand, Cambodia, Laos, Myanmar, and Vietnam. 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 four variables were examined in this study, namely disasters (exogenous variable), Philanthropy (moderating variable), economic growth, poverty, income disparity (endogenous variables). Philanthropy is measured by the number of donations. Disasters are measured by the number of losses due to disasters in USD. Economic growth is measured by change in Gross Domestic Product (GDP). Meanwhile, poverty and income disparity are measured by the number of the population living below the poverty line and the Gini Index, respectively. The data for philanthropy is gathered from the World Giving Index, the data for disasters are collected from the EM-DAT (Emergency Events Database), while the data for economic growth, poverty, and income disparity are sourced from the International Monetary Fund (IMF).

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:

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

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

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

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 combination of time-series data (2000-2020) and cross- section (9 ASEAN countries), thus the data analysis is conducted using a panel regression model. To determine the most suitable panel regression model to be used in this study from three-panel regression models (common effect model, fixed-effect model, and random effect model), series of statistical tests are conducted. The Chow test is performed to determine either the common effect model or fixed effect model is the most suitable, while the Hausman test is conducted to determine which modelis most appropriate to use between the random effect model and the fixed effect model. Meanwhile, the Lagrange test is conducted to find out whether the random effect model is more suitable as compared to the common effect model to analyze thedata 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 ensure robust findings. To check for normalcy, a Jarque-Bera (JB) test is utilized. The data is deemed to be normally distributed if the p-value of the JB test is greater than the set significant level. 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 check for autocorrelation, and if the D-W value is less than 2, the data is said to be free of autocorrelation. Finally, the heteroscedasticity is tested using the Breusch-Pagan (PG) test. The data are free of heteroscedasticity (homoscedastic) if the Chi-squared value is significant with a p-value above the set significance level.

Results and Discussion

Statistics descriptive

Table 1 illustrates the descriptive statistics of the 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. Statistic descriptive

	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 slowingconstruction 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 American Friends Service Committee, Mennonite Central Committee, and Save the Children UK 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 deaths 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 fixed effect model should be adopted as a suitable panel regression model as opposed to the common effect model. The finding of the Hausman test showed the rejection of the alternative hypothesis, indicating the suitability of the random effect model as compared to the fixed-effect model. Finally, the Lagrange test is conducted to determine the most appropriate panel regression model between the random effect model and the common effect model. Table 2 indicated that the random effect model is the most appropriate panel to estimate the data in the study. Thus, in the next section, the study reported the effect of disasters on the ASEAN-9 economy and the role of philanthropy in reducing the impacts of disasters on the ASEAN-9 economy based on the random effect model.

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

Table 3 reported the findings of the random panel effect model on the impacts 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
ECG	0.563*** (4.733)	R^2 = 0.107; Adj-R^2= 0.102; F-stat = 22.410; F-stat (p-value) = 0.000; JB (p-value) = 0.134; VIF = 1.352; BP (p-value) = 0.118; DW=1.890.
ICD	0.039*** (5.656)	R^2 = 0.146; Adj-R^2= 0.141; F-stat = 32.000; F-stat (p-value) = 0.000; JB (p-value) = 0,165; VIF = 1.792; BP (p-value) = 0.118; DW=1.876.
POV	3.374*** (6.311)	R^2 = 0.175; Adj-R^2= 0.171; F-stat = 41.888; F-stat (p-value) = 0.000; JB (p-value) = 0,111; VIF = 1.843; BP (p-value) = 0.124; DW=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 significant positive effect on economic growth at the 1% level of significance with the estimated coefficient value of 0.563. More specifically, the results of this study indicated that an increase in 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 contributed to mitigate 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 2004 Indian Ocean earthquake and tsunami struck ASEAN countries and hit hardest Aceh Province of 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 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 is in harmony with a previous study by Huho et al. (2016) who found is a positive relationship between normal flood disasters and 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%. When a natural disaster strikes, the poor are likely to become victims and even lose their jobs, which finally causes a decrease in their income in the short run. As a result, income inequality between the rich and the poor is expected to widen during a disaster. If poor households are less prepared for disasters and live in disaster-prone areas, 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 line with research conducted by Bui et al. (2014) which found that natural disasters cause an increase in income inequality among households in Vietnam.

Finally, Table 3 also reported the significant positive effect of the disaster on the poverty level 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 had caused 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 a positive impact 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 has 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 finding 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 social psychological conditions, increasing economic capacity, and disclosing information and/or access to sources and potential for social welfare (Ministry of Social of the Republic of Indonesia, 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 et al., 2021). Zakat is effective to channel income from the middle to the lower groups of communities.

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

Variable	DIS	PLT	DIS*PLT	Diagnostic Test
ECG	0.256*** (2.072)	0.005*** (3.779)	-0.337** (1.963)	HT (p-value) = 0.135; JB (p-value) = 0.122; VIF = 2.362; BP (p-value) = 0.128; DW=1.882; R^2 = 0.259; Adj-R^2= 0.247; F-stat = 21.580; F-stat (p-value) = 0.000.
ICD	0.031*** (4.217)	0.0004*** (5.326)	-0.014** (1.869)	HT (p-value) = 0.136; JB (p-value) = 0.127; VIF = 2.118; BP (p-value) = 0.146; DW=1.928; R^2 = 0.271; Adj-R^2= 0.260; F-stat = 23.032; F-stat (p-value) = 0.000.
POV	1.644*** (3.105)	0.027*** (4.362)	-2.196*** (2.983)	HT (p-value) = 0.168; JB (p-value) = 0.210; VIF = 1.402; BP (p-value) = 0.172; DW=1.910; R^2 = 0.380; Adj-R^2= 0.370; F-stat = 37.29; F-stat (p-value) = 0.000.

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.

Furthermore, Table 4 also showed a significant negative moderating effect of philanthropy on the impact of disasters on poverty at the 1% significance level with an estimated coefficient of -2.196. This shows that philanthropy can reduce the impact of disasters on poverty 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 in line with previous researches conducted by Ryandono (2008) and Hafidhuddin (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.

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 healthcare. 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 were normally distributed and free from multicollinearity, autocorrelation, and heteroscedastic problems. Thus, these indicated that the overall findings of the study were robust and could be used for further inferences.

Conclusions

This study has measured and analyzed the moderating role of philanthropy in reducing the impacts of disasters on economic growth, income inequality, and poverty in ASEAN-9 during the 2000-2020 period using a panel moderated regression technique. The study found that disasters had a significant positive impact on economic growth and the significant negative 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 run and long run. Thus, it is extremely important for the policy-makers 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 onthis 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 into the analysis across the regions would also enrich the existing empirical evidence onthis topic.

References

Asian Development Bank. (2001). *ADB Annual Report 2001*. Manila: ADB.

Asian Disaster Reduction Center - ADRC. (2012). *Natural Disaster Data Book*. Japan: ADRC.

Athukorala, P.C., & Resosudarmo, B.P. (2005). The Indian Ocean tsunami: Economic impact, disaster management and lessons. *Asian Economic Papers*, *4*, 1–39. https://doi.org/10.1162/asep.2005.4.1.1

Atsalakis, G. S., Bouri, E., & Pasiouras, F. (2020). Natural disasters and economic growth: A quantile on quantile approach. *Annals of Operations Research*, 1-27. https://doi.org/10.1007/s10479-020-03535-6

Brown, P.H., & Minty, J.H. (2008). Media coverage and charitable giving after the 2004 tsunami. *Southern Economic Journal*, *75*, 9–25. https://doi.org/10.2307/20112025

Brown, S., Harris, M. N., & Taylor, K. (2012). Modelling charitable donations to an unexpected natural disaster: Evidence from the US panel study of income dynamics. *Journal of Economic Behavior & Organization*, *84*(1), 97-110. https://doi.org/10.1016/j.jebo.2012.08.005

Bui, A. T., Dungey, M., Nguyen, C. V., & Pham, T. P. (2014). The impact of natural disasters on household income, expenditure, poverty and inequality: evidence from Vietnam. *Applied Economics*, *46*(15), 1751-1766. https://doi.org/10.1080/00036846.2014.884706

Centre for Research on the Epidemiology of Disaster - CRED. (2019). *UNDRR, United Nations Office for Disaster Risk Reduction, 2016. The Human Cost of Weather Related Disasters 1995–2015*. Retrieved 12 August 2020, from: https://www.undrr.org/publication/human-cost-weather-related-disasters-1995-2015.

Channel News Asia – CAN (2014). *Singapore Food Trail Officially Opens at Singapore Flyer*. Retrieved 19 July 2020, from www.channelnewsasia.com/stories/singaporelocalnews/view/1112992/1/.html

Chanthavong, M. S. (2017). *Inequality and Economic Development in Lao PDR since the 1986 Economic Reform* (Doctoral Dissertation, Thammasat University).

Dewi, S., Majid, M. S. A., Aliasuddin, A., & Kassim, S. H. (2018). Dynamics of financial development, economic growth andpoverty alleviation: The Indonesian experience. *The South East European Journal of Economics and Business*, *13*(1), 17- 30. https://doi.10.2478/jeb-2018-0002

Esawe, A., Taher, K., & Esawe, N. (2018). Using zakat to build the resilience of communities to disasters: Evidence from Egypt. *Available at SSRN 3331506*.

Faradiba, F., & Zet, L. (2020). The Impact of climate factors, disaster, and social community in rural development. *Journal of Asian Finance, Economics and Business*, *7*(9), 707-717. https://doi:10.13106/jafeb.2020.vol7.no9.707

Feng, Q., J. Liu, and J. Gong. (2016). Urban flood mapping based on unmanned aerial vehicle remote sensing and random forest classifier – A case of Yuyao, China. *Water, 7,* 1437–1455. https://doi.org/10.3390/w7041437

Griggs, D. J., Nilsson, M., Stevance, A., & McCollum, D. (2017). *A Guide to SDG Interactions: From Science to Implementation*. International Council for Science, Paris.

Hafidhuddin, D., & Rahmat, P. (2008). *Kaya Karena Berzakat [Rich Because of Paying Zakat]*. Depok: Raih Asa Sukses. Hochrainer, S. (2009). *Assessing the Macroeconomic Impacts of Natural Disasters: Are There Any*? USA: The World Bank.

Hsiang, S. M., & Jina, A. S. (2014). The causal effect of environmental catastrophe on long-run economic growth: Evidence from 6,700 cyclones. *Working Paper* (No. w20352). National Bureau of Economic Research.

Huho, J. M., Mashara, J. N., & Musyimi, P. K. (2016). Profiling disasters in Kenya and their causes. *Academic Research International*, *7*(1), 290-305.

International Federation of Red Cross and Red Crescent Societies – IFRC. (2015). *World Disaster Report 2015: Focus on Local Actors, the Key to Humanitarian Effectiveness*. Retrieved 6 June 2021, from: https://ifrcmedia.org/interactive/wp- content/uploads/2015/09/1293600-World Disasters-Report-2015_en.pdf

Jehle, G. (1994). Zakat and inequality: some evidence from Pakistan. *Review of Income and Wealth*, *40*, 205-216. https://doi.org/10.1111/j.1475-4991.1994.tb00059.x

Kang, W., & Imai, K. S. (2012). Pro-poor growth, poverty and inequality in rural Vietnam. *Journal of Asian Economics*, *23*(5), 527-539. https://doi.org/10.1016/j.asieco.2012.04.004

Lim, D. (2019). The role of fiscal policy in a natural disaster-prone economy. *DLSU Business & Economics Review*, *28*(2), 26-29.

Lin, B. Q. (2003). Economic growth, income inequality, and poverty reduction in People's Republic of China. *AsianDevelopment Review, 20*(2): 105-124

Liu, L., Suh, A., & Wagner, C. (2018). Empathy or perceived credibility? An empirical study on individual donation behavior in charitable crowdfunding. *Internet Research*, *28*(3), 623-651. https://doi.org/10.1108/IntR-06-2017-0240

Majid, M. S. A., & Mahrizal, M. (2007). Does financial development cause economic growth in the ASEAN-4 countries?. *Savings and Development*, *31*(4), 369-398. https://www.jstor.org/stable/ 41406460

Majid, M. S. A., Dewi, S., & Kassim, S. H. (2019). Does financial development reduce poverty? Empirical evidence from Indonesia. *Journal of the Knowledge Economy*, *10*(3), 1019-1036. https://doi.org/10.1007/s13132-017-0509-6

Masiero, G., & Santarossa, M. (2020). Earthquakes, grants, and public expenditure: How municipalities respond to natural disasters. *Journal of Regional Science*, *60*(3), 481-516. https://doi.org/ 10.1111/jors.12462

Ministry of Social of the Republic of Indonesia. (2013). *Disasters in Indonesia Report 2013*. Jakarta. Ministry of Social of the Republic of Indonesia.

Noy, I. (2015). Natural disaster and economic policy for ASEAN and the Pacific Rim: A proposal for a disaster risk reduction 'seal of approval fund'. In *Resilience and Recovery in Asian Disasters* (pp. 219-237). Springer, Tokyo.

Parida, Y., Agarwal, G.P., Roy Chowdhury, J., Sahoo, P. K., & Nayak, T. (2020). Do economic development and disaster adaptation measures reduce the impact of natural disasters? A district-level analysis, Odisha, India. *Environment, Development and Sustainability*, 1-33. https://doi.org/10.1007/s10668-020-00728-8

Qureshi, M. I., Yusoff, R. M., Hishan, S. S., Alam, A. F., Zaman, K., & Rasli, A. M. (2019). Natural disasters and Malaysian economic growth: policy reforms for disasters management. *Environmental Science and Pollution Research*, *26*(15), 15496-15509.

Ravallion, M. (2005). A poverty-inequality trade-off?. *Journal of Economic Inequality, 3*(2): 169-181. https://doi.org/10.1596/1813-9450-3579

Ryandono, M. N. H. (2008). *The Economy of ZISWAQ (Zakat, Infaq, Shadaqah dan Waqaf)*. Surabaya*:* IFDI dan Cenforis. Scheidel, W. (2018). *The Great Leveler: Violence and the History of Inequality from the Stone Age to the Twenty-First*

Century. New Jersey: Princeton University Press.

Silbert, M. & Useche, M.D.P. (2011). *Repeated Natural Disasters and Poverty in Island Nations: A Decade of Evidence from Indonesia*. Gainesville: University of Florida.

Southerland, M. (2019). *The Chinese Military's Role in Overseas Humanitarian Assistance and Disaster Relief: Contributions and Concerns*. Washington, DC: US-China Economic and Security Review Commission.

Tselios, V., & Tompkins, E. L. (2019). What causes nations to recover from disasters? An inquiry into the role of wealth, income inequality, and social welfare provisioning. *International Journal of Disaster Risk Reduction*, *33*, 162-180. https://doi.org/10.1016/j.ijdrr.2018.10.003

World Giving Index. (2019). *CAF World Giving Index*. 10th Edition. America: CAF.

Wu, W. N., & Chang, S. M. (2018). Collaboration mechanisms of Taiwan nonprofit organizations in disaster relief efforts: drawing lessons from the Wenchuan earthquake and typhoon Morakot. *Sustainability*, *10*(11), 1-14. https://doi.org/10.3390/su10114328

Yamamura, E. (2015). The impact of natural disasters on income inequality: analysis using panel data during the period 1970 to 2004. *International Economic Journal, 29*(3), 359-374.

https://doi.org/10.1080/10168737.2015.1020323
Zulkifli, M. F., Taha, R., Mohd Nor, M. N., & Ali, A. (2021). Combating poverty in Malaysia: The role of zakat. *The Journal of Asian Finance, Economics and Business*, *8*(5), 505-513. https://doi.org/10.13106/jafeb.2021.vol8.no5.0505

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