

Original Article

The Impact of Economic Recovery Budget and Innovative Disaster Financing Schemes on Indonesia's Sustainability of Disaster-Affected Businesses

Mukhdasir ^{a,*}, Syaifuddin Yana ^a, Nelly ^a, Radhiana ^a and Cut Rusmina ^a

^a Department of Management, Faculty of Economics, Universitas Serambi Mekkah, Lueng Bata, 23245 Kota Banda Aceh, Aceh, Indonesia; (S.Y.), (N.N.), (R.R.), (C.R.)

* Correspondence: mukhdasir4@gmail.com (M.M.)

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Abstract: This study investigates the impact of implementing an economic recovery budget and innovative disaster financing schemes on Indonesia's disaster-affected businesses' sustainability. Indonesia is one of the countries that has many areas with high risk of natural disasters. Business resilience is crucial so that business institutions can immediately recover after a disaster; some efforts that can be made include the availability of an adequate economic recovery budget and innovative disaster impact financing schemes to adjust to the needs of disaster-affected businesses so that disaster-affected businesses recover quickly. This research was designed using quantitative analysis with a survey through a questionnaire. This study involved 180 MSE actors with sampling techniques using probability sampling. Data analysis was done using multiple linear regression analysis with the help of IBM Statistical software SPSS. The results found that the economic recovery budget significantly affects the sustainability of disaster-affected businesses in Indonesia. Then, the Innovative Disaster Financing Scheme significantly affects the sustainability of disaster-affected businesses in Indonesia. In addition, this study also found that the Innovative Disaster Financing scheme has the greatest effect on the sustainability of disaster-affected businesses in Indonesia. In conclusion, this study successfully investigated the impact of implementing the economic recovery budget and the effect of the innovative disaster financing scheme, which is 18.8 percent, which can contribute to increasing the sustainability of disaster-affected businesses in Indonesia.

Keywords: Economic recovery budget; Innovative disaster financing; Sustainability; Disaster affected businesses; MSMEs growth.



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1. Introduction

Indonesia has a high risk due to the impact of natural disasters that result in economic losses, physical losses, and many casualties (Padli et al., 2018). Indonesia is included in the list of 35 countries with a high risk of casualties due to the impact of various disasters (Dartanto, 2022). The high risk is because more than 200 million people live in

disaster-prone areas. The risk is also partly due to the quality of public and non-public infrastructure that is not disaster resilient. Almost all regions in Indonesia are exposed to the risk of nine major natural disasters, namely earthquakes, tsunamis, floods, landslides, volcanic eruptions, fires, extreme weather, extreme waves, and drought (De Priester, 2016). Some natural disasters occur with a high intensity of occurrence, such as floods and landslides the distribution of disaster risk in Indonesia and the high risk of disasters in various parts of Indonesia. According to data from the Office of Cooperatives and MSMEs, the number of MSMEs in the Indonesian provinces is currently 64.2 million.

Overall, in Indonesia, financing for MSMEs is growing positively. Based on data from the Bank Indonesia Representative of Indonesia, in the December 2021 period, the value of financing for MSMEs throughout Indonesia reached IDR 8.3 trillion, with the value of KUR distribution reaching IDR 2.4 trillion or 61.83 percent of the distribution ceiling of IDR 3.9 trillion. Of the 74,810 MSMEs in Indonesia, there are 11,760 MSMEs in the working area of KPPN Meulaboh which includes West Indonesia (2,010 MSMEs), Indonesia Jaya (1,212), Nagan Raya (6,451 MSMEs), and Simeulue (2,087 MSMEs). KPPN Meulaboh also oversees the financing program for the MSME sector in the region, namely in the distribution of People's Business Credit (KUR) and Ultra Micro (UMi). KUR and UMi financing are special government programs part of the state budget instrument for empowering the MSMEs sector (<https://djjpb.kemenkeu.go.id/>). One major natural disaster event, such as the earthquake and tsunami in northern Sumatra Island in 2004, caused economic losses of approximately IDR 51.4 trillion.

Meanwhile, the earthquake in the Special Region of Yogyakarta in 2006 caused economic losses worth IDR 26.1 trillion. The recorded economic losses usually do not reflect the actual losses incurred. The World Bank estimates that identifiable economic losses from natural disasters represent only about 60% of the actual economic losses. The process of handling disasters in Indonesia has experienced budget constraints. Due to various types and scales of disasters, especially natural disasters, according to a study by the Ababa (2024), the average value of direct damage experienced by Indonesia in the last 15 years has reached around IDR 20 trillion per year. For example, major natural disasters such as the earthquake, tsunami, and liquefaction in Central Sulawesi in September 2018 resulted in damage and economic losses of around IDR 18.5 trillion. However, the Disaster Reserve Fund in the State Budget to fund emergency response activities and rehabilitation and reconstruction grants to local governments is still below the value of these damages and losses, around Rp5-10 trillion per year since 2004.

In order to accelerate post-pandemic economic recovery and as a community economic stimulus to increase community resilience and independence, in 2022, a National Economic Recovery Budget (PEN) of IDR 455.62 trillion has been allocated for handling the health sector pandemic, protecting the community, and strengthening economic recovery (<https://ekon.go.id/publikasi/detail/3743/>). Disaster Pooling Fund (PFB) is present to close the financing gap and accelerate the disaster management process. PFB is part of the Disaster Risk Financing and Insurance (DRFI) Strategy. The DRFI strategy allows the government to set up disaster risk funding strategies through APBN/APBD and transfer the risk to third parties by insuring government and community assets. PFB is the main funding instrument under the DRFI Strategy, which is a scheme to collect funds from various sources, namely from the Central Government, local governments, private sectors, communities, and development partners, to be accumulated and developed for disaster management funding, both natural and non-natural.

The government has also encouraged the development of Innovative Disaster Financing schemes, including disaster insurance and pooling funds. Presidential Regulation Number 75 of 2021 concerning the Joint Fund for Disaster Management has been stipulated and will be completed with its implementing regulations this year to be utilized immediately. In addition, economic stimulus for communities in disaster-prone areas needs to be well planned with a perspective to build resilience and community independence in facing disasters. In this case, the Village Fund can be empowered to mitigate and handle aspects, recover, and strengthen the community's economy. Collaboration and synergy of all stakeholders is key in disaster management and post-disaster economic recovery. A regional approach in planning economic strengthening patterns also needs to be carried out, considering that each region has different characteristics, both in terms of disaster risk, as well as the social characteristics of the community (<https://ekon.go.id/publikasi/detail/3743/>).

In order to build economic resilience, business strengthening, especially in critical sectors, including MSMEs, continues to be encouraged by implementing a Business Continuity Management System to minimize potential economic losses due to various disruptions, including from disasters, so that post-disaster business recovery can be faster. Budget is one of the key factors in the implementation of various programs related to disaster management. The budget for response, emergency response and rehabilitation is much larger than for Disaster Risk Reduction (DRR). Disaster risk reduction is an investment needed to protect the entire community and develop important assets for national economic growth. Thus, the DRR budget needs to be increased in the APBN and APBD through various other alternative disaster financing innovations to achieve the target of reducing potential GDP losses due to disasters by 0.1% in 2024.

This research emphasizes what efforts can be made to maintain the sustainability of disaster-affected businesses in Indonesia where the optimization of the implementation of economic recovery budgets and innovative disaster financing schemes can be considered by the government in maintaining the resilience of disaster-affected businesses,

which is different from previous research conducted by Alifa & Nugroho, (2019) which examines the role of local community businesses in the economic recovery of disaster-affected communities in Indonesia, where this study only explains that local entrepreneurial efforts are not only supported by strong social capital but also by the implementation of community organizing. Community-centred development is considered very effective in restoring the socio-economic conditions of the community after experiencing severe damage due to natural disasters. Furthermore, other research conducted by Singh et al. (2017), which investigates the role of the corporate sector and industry in corporate social responsibility for disaster management, in this study only explains that the role of the Corporate / Company / Industry Sector in Disaster Management under the head of CS if services in disaster-affected areas are facilitated by one particular company or industry it will be less effective than a group of companies or industries working in different businesses. The purpose of this study is to investigate the impact of the implementation of economic recovery budgets and innovative disaster financing schemes partially on the sustainability of disaster-affected businesses in Indonesia as well as to examine the impact of the implementation of economic recovery budgets and innovative disaster financing schemes simultaneously on the sustainability of disaster-affected businesses in Indonesia.

2. Literature Review

2.1. Economic Recovery Budget

The economic recovery of disaster-affected communities, especially for Micro, Small and Medium Enterprises (MSMEs), is very important. The National Economic Recovery programmed (PEN) is a government effort so that the national and regional economies can immediately recover from the recession caused by the impact of the Covid-19 pandemic ([https://ekon.go.id/ source/public's/Dampak%20PEN %](https://ekon.go.id/source/public's/Dampak%20PEN%20)). The PEN policy strategy is to save the health and national economy. The policy steps for handling and restoring the economy are directed both from the demand side, with a focus on maintaining consumption, encouraging investment and supporting exports and imports, as well as supply with a focus on keeping the business world operating or running, including groups of micro, small and medium enterprises (MSMEs). (Howell, 2024) explains that it is important that economic recovery through temporary cost-sharing relief stimulates short-term income growth in villages receiving the program. The same thing was also conveyed by Goniewicz et al. (2023), the importance of solidarity, cooperation, and resilience in crisis management by implementing various strategies and policies to reduce the impact of the pandemic, including the availability of recovery funds.

Panwar et al. (2022) explored the possibilities and challenges of introducing ex-ante or proactive disaster risk financing (DRF) solutions such as mitigation funds, credit arrangements, and risk transfer instruments to enhance disaster resilience at India's national and sub-national levels. A structured questionnaire survey was conducted considering a select group of respondents who are directly involved in the development and implementation of various disaster risk reduction (DRR) and risk financing strategies. The respondents were from government and non-government agencies, identified as key stakeholders on the assumption that the views obtained reflect the disaster-related financing needs of government and supporting organizations. Identifying the factors was based on systematic aggregation and analysis of the responses. As such, the study provides insights into respondents' understanding of DRR, existing gaps and coverage in disaster prevention and management policies, their limitations, and implementation challenges. The analysis yields important policy recommendations for governments at various levels in India that can drive initiatives to build disaster resilience. The study supports the call for developing a mix of ex-ante and ex-post disaster financing measures in India rather than relying solely on the latter. A diversified approach can protect human and economic assets, control short and long-term fiscal consequences and minimize overall development losses due to disasters.

Oulehlova et al. (2021) explain that mitigating disaster impacts and increasing resilience is an integral part of regional competitiveness that cannot be implemented without an adequate framework of necessary resources. Focuses on the issue of financing each stage of disaster management at the regional level in Czech conditions. It assumes that public authorities do not systematically plan funds for dealing with crises in the expenditure part of the budget, thus not supporting the structural and functional conditions of territorial attractiveness, security and sustainability. The purpose of this article is to propose a unique calculation of the minimum allocation of funds for each stage of disaster risk reduction at the regional level. The calculation concept is based on the value of the property owned by the region, the number of predicted crises in the region, the number of predicted crises in the Czech Republic, the administrative area of the region, and the total budget expenditure of the region. Based on the previously described calculations, a comparative analysis of the expenditure share of 13 regional budgets for 2013-2019 was carried out. The premise of insufficient financing of disaster management was confirmed.

Kamepalli (2019) explains that finance commissions have guided the central government to assist state governments in providing relief to disaster-affected communities over the years. It started with the prescription of margin money by the Second Finance Commission, which was modified into the Disaster Relief Fund by the Ninth Finance Commission, and further evolved into the current State Disaster Response Fund. As well as research conducted by

Bourdeau-Brien & Kryzanowski (2019) documented the response of local government bond markets to major floods and assessed several explanations for the response. The results showed that bonds sold after the flood yielded about 7% higher than bonds sold at other times. Issuance costs, selection bias, and liquidity costs do not explain the higher yields, and credit risk does not seem to explain most of the increase. Consistent with behavioural explanations, abnormal returns fade over time and are confined to first-time disaster areas, where flooding is least expected.

2.2. Innovative Disaster Financing

Indonesia is indeed a country with a huge potential for natural disasters. Indonesia's geographical location in the Pacific Ring of Fire area makes the risk of disasters in Indonesia high and unpredictable. Even the World Risk Index 2023 data also shows Indonesia's position, ranked 2nd out of 193 disaster-prone countries. After 2019, the government built sustainable funding alternatives and innovations by involving funding sources outside the APBN and APBD. The goal is for Indonesia to have fiscal resilience to disaster risk. In addition, from this proactive strategy, we also mitigate disaster management so that it can reduce life and economic losses (<https://mediakeuangan.kemenkeu.go.id>). (Zuo et al., 2024) explained that implementing new policies, technological developments, and increased financial accessibility have effectively reduced negative environmental impacts while facilitating equitable wealth distribution and enhancing economic resilience. This research highlights the importance of continuous innovation and effective policy adjustment for a fair and environmentally friendly economic recovery.

Peters et al. (2019) explain that without good data on the comparative costs and benefits of investing in health and disaster emergency risk management (EDRM), governments are reluctant to invest adequately in systems to reduce the risks and consequences of emergencies and disasters. However, they spend heavily on emergency response and discuss the need to create adaptive institutions, strengthen the capacity of the state, communities, and health systems to manage emergency risks, use a "whole of society" and "whole of state institutions" approach, and apply lessons learned about rules and regulations, behavioural norms, and organizational structures to implement health DRR better. The economic and social value and feasibility of institutional options for implementing health DRR systems should encourage governments to invest in common goods for health that strengthen national health security.

Collier & Babich (2019) explain that credit provides uninsured households and businesses with a means to manage disaster losses, but access to credit may be weakened after severe events. Using a lender fixed effects model, we examine how natural disasters affect the amount of credit community lenders extend in developing and emerging economies. We find that disasters reduce the amount of lending. We consider two potential causes of the decline in lending: (1) disasters reduce the expected profitability of loans made after the event or (2) capital constraints (lenders' difficulty in replacing equity lost during the event). We develop a dynamic model that informs our empirical identification of these causes, conclude that capital constraints cause the observed loan contraction, examine the impact of insurance market developments, and find evidence that insurance preserves the creditworthiness of borrowers. Our results indicate widespread disaster-related credit supply shocks in emerging and developing economies and identify new insurance market opportunities.

2.3 Sustainability of Disaster-Affected Businesses

During crisis and disaster conditions, both natural and non-natural disasters, the impact faced is also felt in the economic sector. As many as 51 per cent of MSME players believe that it is likely that the business they are running will only last for the next 1 to 3 months. As many as 67 per cent of MSME players experience uncertainty in obtaining access to emergency funds, and 75 per cent do not understand how to make policies in times of crisis (<https://www.bnbp.go.id/>). For this reason, maximum preparedness is needed as an early effort to maintain business processes if they are still running or revive business processes immediately after a disaster occurs. In addition, the readiness also aims to regain the assets lost or damaged by the disaster to support the running of business processes.

The Great East Japan Earthquake 2011 impacted many business firms in the tsunami-affected Tohoku region (Li & Zhou, 2021). Although the number of disaster-related bankruptcies has increased in tsunami-affected areas since 2011, one small shopping district in Natori city, Miyagi, has successfully made an early recovery from the disaster. Yuri age Port Morning Market (YPMM), operated by Yuri age Port Morning Market Cooperative (YPMCM), successfully resumed business operations at its original location just two years and two months after the disaster, and YPMM now attracts more visitors than it did before the disaster. The results obtained from the survey revealed that the creation and adaptation of a new business model, social capital, and leadership seem to have played an important role in the early recovery of YPMM.

Taupo (2019) examines the financing of disaster risk management. Future climate risks and disasters are expected to put increasing financial pressure on the governments of low-lying atoll countries. The aftermath of disasters, such as hurricanes, requires funding for rapid response and recovery. We quantified the appropriate level of financial support for expected disasters in Tuvalu and Kiribati by building on the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI) - which quantifies the likely costs of disasters. This research focuses on the potential

contribution of Tuvalu and Kiribati's sovereign wealth funds (SWFs) in reducing reliance on foreign aid for post-disaster disaster risk management. It estimates the future size of SWFs using Monte Carlo simulations and examines the long-term sustainability of SWFs and the feasibility of expanding their mandates for disaster recovery.

Nababan et al. (2021) explain that government policy practices implemented in Indonesia, especially during the pandemic, by analyzing fiscal policy and monetary policy to anticipate the impact on the economy caused by the pandemic's greater influence on the Indonesian national economy. The results show that various efforts of the Indonesian government, namely fiscal policy, are needed to stabilize the economic system, which is supported by monetary policy by the national monetary institution, namely Bank Indonesia, and is also actively supported by the role of the Financial Services Authority in Indonesia. In this case, the Central Government of Indonesia has attempted to implement a combination of these policies in the national economic recovery program to alleviate the Indonesian Nation from a larger economic crisis. From the description of the foundation listed in the theory above, the framework of this research can be described in Figure 1.

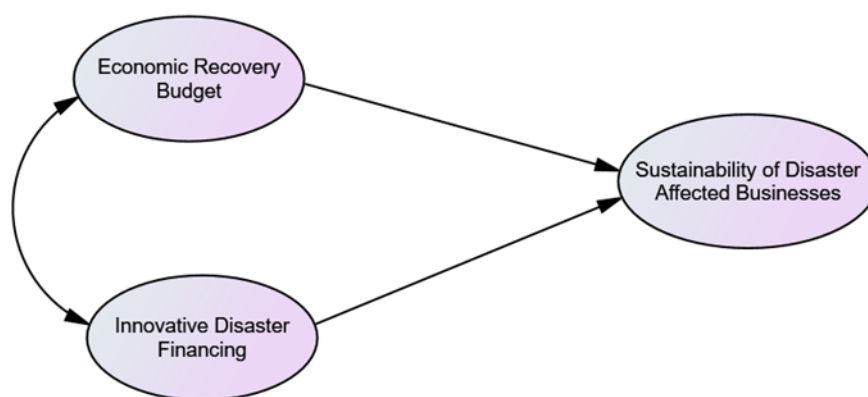


Figure 1. Research Framework

3. Materials and Methods

This study was conducted at MSMEs business actors located in Indonesia with the object of research being MSME business actors and this research is quantitative. This study uses a data collection tool in the form of a questionnaire with a Likers scale on the answer score. It uses primary data, namely the answers to the questionnaire distribution. The population of this study was all MSME actors spread across 18 provinces in Indonesia that were prone to earthquakes, and the sampling technique used probability sampling with the SLOVIN formula, obtaining a sample size of 180 MSME actors in each province in Indonesia. The data analysis equipment in this study uses statistical analysis through multiple linear regression analysis approaches, where multiple linear regression analysis is used to estimate how the state (up and down) of the dependent variable if two or more dependent variables as predictor factors are manipulated (increase and decrease in value) (Balaka, 2022). When described mathematically, the equation form of multiple linear regressions is $Y = \alpha + \beta_1X_1 + \beta_2X_2 + e$

Where: Y is the sustainability of disaster-affected businesses, α is intercept, X1 is the implementation of economic recovery budget, X2 is the implementation of innovative disaster financing, β_1 and β_2 is regression coefficients of X1 and X2 and e is an error term. This study also conducts validity and reliability tests and classical assumption tests, including linearity, normality, multicollinearity, heteroscedasticity and autocorrelation. Also, multiple linear regression analysis in this study consists of a t-test for partial and F test for simultaneous.

4. Results

The data analysis tools used multiple linear regression analysis to determine the functional relationship between the variables studied in this study. To see the sustainability of disaster-affected businesses in Indonesia, it is necessary to know the role of implementing the economic recovery budget and the implementation of innovative disaster financing in Indonesia. For data analysis in this study, multiple linear regressions were used to test the results of multiple linear regressions, as shown in Table 1.

Table 1. Hypothesis Testing

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.200	2.801		7.567	0.000
Economic Recovery Budget	0.184	0.068	0.207	2.684	0.008
Innovative Disaster Financing	0.188	0.076	0.190	2.469	0.015

a. Dependent Variable: Sustainability of Disaster-Affected Businesses

Table 1 displays the constant value of sustainability of disaster-affected businesses in Indonesia is 2,200, explaining that if the implementation of the economic recovery budget (X1) and the implementation of innovative disaster financing (X2) do not change or remain constant, the sustainability of disaster affected businesses in Indonesia is only 2,200 units. The regression coefficient value of the effect of the economic recovery budget implementation variable (X1) is 0.184, with a significance value of 0.008 where the value is below 0.05, it means that every increase in the implementation of the economic recovery budget on crafters by 1 unit, it will be able to increase the sustainability of disaster affected businesses in Indonesia by 0.184 units. Thus, if the implementation of the economic recovery budget can be increased, MSME business actors in Indonesia will have a greater sustainability of disaster-affected businesses in Indonesia by 18.4%. The regression coefficient value of the variable influence and implementation of innovative disaster financing is 0.188, with a significance value of 0.015 where the value is below 0.05, it can be interpreted that the more and the implementation of innovative disaster financing in the products of MSME players by 1 unit, it will increase the sustainability of disaster affected businesses in Indonesia by 0.188 units. Thus, if the implementation of innovative disaster financing is higher, then MSME businesses in Indonesia will increase the sustainability of disaster-affected businesses by 18.8 percent.

5. Discussion

The results of the hypothesis shows that the variables of economic recovery budget implementation (X1) and the implementation of innovative disaster financing (X2) simultaneously and partially have a significant effect on the sustainability of disaster-affected businesses in Indonesia. This is because the sustainability of disaster-affected businesses in Indonesia requires maximum efforts from the government in implementing a sustainable economic recovery budget, As well as the development of Innovative Disaster Financing schemes through disaster insurance and pooling funds so that it will form strong perceptions among MSME actors which have an impact on the sustainability of disaster affected businesses with a diverse approach that can protect human and economic assets, control short-term and long-term fiscal consequences and minimize overall development losses due to disasters. Indonesia is one of the most disaster-prone countries in the world, where disaster events cause casualties and infrastructure damage and impact business continuity. Business resilience is crucial so that business institutions can immediately recover after a disaster. So, it is necessary to have maximum efforts from the government to maintain the sustainability of businesses affected by disasters. Then, the implementation of the economic recovery budget and Innovative disaster financing schemes can be used as a benchmark for maintaining the resilience of businesses affected by disasters. Based on the results of the study, it was found that the variables of economic recovery budget implementation and the implementation of innovative disaster financing significantly affect the sustainability of disaster-affected businesses in Indonesia.

The results of this study are supported by research conducted by Li & Zhou, (2021) what helps early recovery of disaster-affected small businesses: a case study of a local cooperative affected by the 2011 Great East Japan earthquake, where the results of this study revealed that revealed that the creation and adaptation of a new business model, social capital, and leadership seem to have played an important role in the early recovery of Yuri age Port Morning Market Cooperative (YPMMC). While these factors may not have been the only factors that contributed to YPMMC's early recovery, they should have made the difference between YPMMC and other shopping districts that failed to resume business operations after the disaster. As well as research conducted by Panwar et al. (2022) on introducing proactive sovereign disaster risk financing in India: Potentials and challenges. The analysis yields important policy recommendations for governments at various levels in India that can foster initiatives to build disaster resilience. The study supports the call for developing a mix of ex-ante and ex-post disaster financing measures in India rather than relying solely on the latter. A diversified approach can protect human and economic assets, control short- and long-term fiscal consequences and minimize overall development losses due to disasters. Furthermore, other research conducted by Singh et al. (2017) on the role of the corporate sector and industry in corporate social responsibility for disaster management results of this study state that the role of the Corporate / Company / Industry Sector in Disaster Management under the head of CS if services in disaster-affected areas are facilitated by one particular company or industry, it will be less effective than a group of companies or industries working in different businesses.

6. Conclusion

This study concludes that implementing the economic recovery budget and implementing innovative disaster financing simultaneously affect the sustainability of disaster-affected businesses in Indonesia. The implementation of the economic recovery budget partially affects the sustainability of disaster-affected businesses in Indonesia by 0.184, meaning that every 100% change in the implementation of the economic recovery budget will relatively increase the sustainability of disaster-affected businesses in MSMEs in Indonesia by 18.4%. The implementation of innovative disaster financing partially affects the sustainability of disaster-affected businesses in Indonesia by 0.188, meaning that every 100% change and implementation of innovative disaster financing will relatively increase the sustainability of disaster-affected businesses in MSMEs in Indonesia by 18.8%.

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