“Parametric insurance applicability in Zimbabwe: a disaster risk management perspective from selected practicing companies”

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ARTICLE INFO	Brighton Nyagadza and Tatenda Nyauswa (2019). Parametric insurance applicability in Zimbabwe: a disaster risk management perspective from selected practicing companies. *Insurance Markets and Companies*, *10*(1), 36-48. doi:10.21511/ins.10(1).2019.04
DOI	http://dx.doi.org/10.21511/ins.10(1).2019.04
RELEASED ON	Wednesday, 27 November 2019
RECEIVED ON	Sunday, 08 September 2019
ACCEPTED ON	Friday, 15 November 2019

JOURNAL	"Insurance Markets and Companies"
ISSN PRINT	2616-3551
ISSN ONLINE	2522-9591
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
40	7	2

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10, Sumy, 40022, Ukraine

www.businessperspectives.org

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PARAMETRIC INSURANCE APPLICABILITY IN ZIMBABWE: A DISASTER RISK MANAGEMENT PERSPECTIVE FROM SELECTED PRACTICING COMPANIES

Abstract

This study seeks to explore the possibility of adopting parametric insurance to manage disaster risk in Zimbabwe. The background of the research is caused by recurrent natural disasters and the failure of the government to offer disaster relief after such events. The main objective of the research is to come up with the success factors of adopting parametric insurance to manage disaster risk and its effectiveness in African countries. The study population consists of 32 employees from seven reinsurance companies and 5 from a regulatory body. Self-administered questionnaires and interviews were used to collect the data. The study assumes that Zimbabwe does not have sufficient infrastructure to establish parametric insurance, and the lack of financial capacity is another major problem. 61% of respondents confirmed that they were underwriting natural disasters and the remaining 39% were not. The natural disasters that are being covered in insurance market and under which insurance products are used were at 61%. About 39% of the reinsurance companies that are not underwriting natural disasters cited the major reasons why they do not. Most of respondents confirmed that there was no support from the government to underwrite catastrophic risks. 57% of the respondents indicated that it is not possible to adopt parametric insurance, whilst 43% of the respondents agreed that it was practical. Recommendations are made for the government and insurance providers, which include use of catastrophe bonds, government incentives and support, the creation of a clearing house and the involvement of international organizations and developing countries in adopting parametric insurance.

Keywords resilience, protection gap, Africa, catastrophe, pandemic insurance

JEL Classification G22, Q54

Received on: 8th of September, 2019
Accepted on: 15th of November, 2019

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INTRODUCTION

The rise in natural disasters throughout Zimbabwe is now threatening infrastructure, human life, property, agricultural produce and personal belongings. The disasters are caused by catastrophe perils such as droughts, floods, cyclones and landslides. The emerging of such devastating events is exacerbated by a dramatic change in global climate (Intergovernmental Panel on Climate Change (IPCC), 2007). Agriculture production was reduced by 60% of the forced drought in El Nino in 2016, which left 4 million people exposed to hunger. Due to heavy rainfalls in Zvishavane, Nkankezi Bridge on the Mbalabala road was washed away. Destroyed schools, bridges and road damages amounted to USD 100 million across Zimbabwe (The Herald, March 6, 2017). Developing countries like Zimbabwe are very exposed to natural disasters. They do not have a strong financial base to shoulder the losses caused by catastrophe perils. Tokwe Mukosi incident left 3,000 people at risk and 4,000 people in need of evacuation. The flood victims were forced to abandon their homes. They stayed in classrooms

http://dx.doi.org/10.21511/ins.10(1).2019.04

with their things. Several schools around Tokwe Mukosi were forced to discontinue lessons which affected many pupils in the school. More than 2,000 children were forced to drop out of classes since more than 20 schools in the basin were destroyed by floods. When such disasters strike, poor people, especially those who live in rural areas, are affected the most since they depend on subsistence farming (Newsday, February 7, 2014). When Tokwe Mukosi flood disaster occurred, the government failed to raise funds to offer relief to the affected families. It appealed for 20 million in dollars from international donor community (The Herald, December 29, 2014). Villagers in Bambazi in the south of Matebeland lost 64,000 goats, 17 donkeys and 2,000 chickens during a November hail storm. The worst floods were in 2000, when cyclone Eline claimed 136 deaths (The Herald, 2017). According to the FinScope (2011) Consumer Survey, 70% of the population in Zimbabwe is not insured. Crop insurance amounted to only 5% of the total written gross premium in 2015. It is the government and donor community that play a major role in helping the affected families.

For this reason, there is a need for a disaster recovery fund to support small farmers who cannot afford insurance coverage (The Herald, March 6, 2017). Tsholotsho flood victims appealed for more help in the form of blankets, food, tents at their makeshift camp at Sipepa clinic. About 800 people were displayed by floods in Tsholotsho and resources at the clinic were so scarce. When such disasters occur, the government plays a major role in helping the affected regions. The government can increase taxes or reallocate budgetary items from critical development projects to restore the falling gross domestic product. If the funds are not adequate to assist, it then appeals for help from private companies and the international donor community (Newsday, 2017). The governments all over the world find it difficult to raise funds when disasters occur. They need a longer period of time to provide assistance that exacerbates the effect of the disaster. Families will have to wait whilst their lives, property, and business will be disrupted. To overcome the challenges facing the government, parametric insurance should be in place. It is very important as it reduces the government reliance on international donor community assistance. Pay-outs for parametric insurance are processed as quickly as possible. Government assistance will be provided to mitigate the effect of natural disasters. Insurance companies should educate the government and non-governmental organizations on the importance of parametric insurance. The main objectives of the current study were to assess the applicability of parametric insurance in Zimbabwe and to find out how effective is parametric insurance in other countries.

The insurance sector in Zimbabwe is highly developed and fairly diversified when compared to most markets in the Sub-Saharan African region, with some of the best known broking houses in the region represented (Tsikirayi, Makoni, & Matiza, 2016). Zimbabwe has been affected by floods, cyclones, landslides and hailstorm in the past years. Risk levels are moderate, in particular, farming sector specific idiosyncratic risk, and providing appropriate conditions can make it difficult to other areas that are heavily affected. This led to the loss of human life, the destruction of infrastructure, crops and property damages. In seeking to resolve the disaster effect, the government raises taxes or uses funds intended for important projects. If sufficient funds cannot be raised, the government will appeal for assistance from the international donor community. In this context, is parametric insurance effective in managing disaster risk in Zimbabwe? Whether this issue is based on economic rationale is still a subjective debatable issue in the Zimbabwean academia.

1. LITERATURE REVIEW

UNDRO (1984) defined a catastrophe or disaster concentrated in space and chronology that threatens an area. Its occurrence brings losses to the community members, and important social functions will be prevented. According to United Nations (UNISDR, 2009), this is a dangerous disturbance for a given society that causes widespread loss of humans and materials. When this happens, society will not be able to cope with its own resources. EM-DAT (CRED) defined a catastrophe or disaster as an event that exceeds local capacity when it occurs. The event is usually non-predictable that

leads to great damage and general suffering. A request will be send nationally or internationally for external assistance. Disaster is defined as a function of hazard, exposure, vulnerability and capacity. It consists of various types of potential losses that are difficult to measure (UNISDR, 2017). However, disaster risk can be assessed in broad terms using knowledge of the socio-economic development and population (UNISDR, 2017).

Disaster risk management can be seen as the strategic resource management and responsibility for dealing with all aspects of humanitarian emergencies for particular preparedness (GFDRR, 2014). There is so much that can be done to reduce the exposure and vulnerability of population living in areas where natural hazards occur since a catastrophic disaster is not the inevitable consequence of a hazard event. Reduction can be achieved even if the hazards occur infrequently or frequently (GFDRR, 2014). Risk reduction has the political purpose of disaster risk management that contributes to strengthening resilience. It plays a major role in the achieving sustainable development (UNISDR, 2017). Disaster risk management includes building the community for resistance and recovery from disasters.

FAO (2011) considers disaster management cycle as a continuum that means it is an ongoing process of correlated actions initiated before, during and after disaster situations. The framework aims particularly at countries and regions that face recurrent exposure of natural disasters. Moreover, its actions strengthen the capacities and resilience of households and community to protect their livelihoods. Protection is achieved through the prevention and mitigation of the hazard and the timely prediction of hazard (FAO, 2011).

According to QIC Global Diversified Alternatives (2017), parametric insurance products were first used in early 2000s. They were designed to help affected nations after a drought, tropical cyclone and earthquake. In 2003, the government of Malawi received drought protection through the World Bank, which worked on hand with global reinsurers. The government would receive payments from insurers if the seasonal amount of rainfall collected at weather stations was under predetermined level. The objectives of such products were to simplify the process of loss assessment, deliver quick payouts and for the government to offer quick disaster relief. Caribbean Catastrophe Risk Insurance Facility (CCRIF) is the first multi-country parametric sovereign risk insurance formed in the world (kinetic analysis corporation).

According to Brooks (2012), CCRIF was formed in 2007 after Caribbean basin was swept away by a hurricane in 2004. Extensive damages were witnessed in Grenada, Cayman Islands and Jamaica. After a tireless effort by the governments to raise money for the disaster relief, it failed due to liquidity gap, especially in Grenada. A meeting was held by the Caribbean community as a measure to avoid future devastation due to natural disasters occurrence. With the World Bank assistance, the parametric insurance fund was formed for Caribbean states. Lucas (2015) indicated that CCIF provides insurance cover to Caribbean governments against earthquakes, cyclones and excess rainfall events. As Brooks (2012) and QIC Global Diversified Alternatives (2017) have indicated, parametric insurance came as a solution of managing disaster risk by governments. Before parametric insurance there was no insurance cover for natural disasters that left many countries' resources exhausted after disaster occurred.

According to Kaplan (2017), parametric insurance is defined based on the characteristics of a catastrophic event and not necessarily on the actual loss. Unlike traditional insurance, parametric insurance policy does not cover the actual damage suffered by the insured after a catastrophic event (Artemis, 2017). Parametric insurance sum insured is agreed in advance. The insurer and the insured agree on the amount to be paid in case of a particular natural event. For example, a hurricane payout can be initiated when winds reach the agreed speeds measured by a wind speed (Store, 2013). In other words, parametric insurance determines the payout according to a measured parameter structure. Moreover, if the parameter exceeds the predetermined threshold, payout is processed and measured parameter is analyzed during weather events (QIC Global Diversified Alternatives, 2017). Gullickson (2014) cited David Friedberg, the CEO of The Climate Corporation, saying that "parametric insurance only pays out on specified parameters rather than loss adjustment".

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Infrastructure owners can now reduce risk through parametric insurance products that are innovative in nature. This type of insurance is suitable for low frequent high severity losses and insufficient history of losses captured as insurance readable data (QIC Global Diversified Alternatives, 2017). Event characteristics that cause parametric insurance are as follows: objective, observable, easily measurable, independently verifiable and consistent over time (QIC Global Diversified Alternatives, 2017).

In order for parametric insurance to be successful, there is need for adequate infrastructure for quality data to be obtained (Hazel et al, 2010). Secured weather stations are very important in providing unbiased weather data and reducing basis risk. ESCAP (2015) emphasizes the importance of various SMEs' capabilities in insurance organizations in less developed economies. The authors also indicated that developing countries need to improve the efficiency and readability of weather infrastructure to make parametric insurance products work. According to Sirimanne (2015), investment in technological innovation, such as databases of hydro meteorological systems in the areas affected by drought, are the examples of the need for successful parametric insurance in developing countries.

Ogden et al. (2005) state that parametric insurance instruments require extensive environmental data with high spatial resolution and sophisticated modeling. They also indicated that education about parametric insurance in developing countries is necessary to make the development process successful. It is the duty of parametric insurance purveyors to educate developing countries. ESCAP (2015) also indicated the need to build capacity and awareness of local stakeholders. Private and public sectors must cooperate to allow a smooth adoption process of parametric insurance in developing countries. For example, China cooperated with various organizations all over the world in the parametric industry in 2008.

According to the Kinetic Analysis Corporation (2017), parametric insurance cover is well suitable for developing countries given the fact that they have limited data on indices. In order for parametric insurance to be a sustainable program, they recommend a quantitative assessment of long-term risks of hazards or impacts covered under parametric insurance as it is very important for risk pricing. Moreover, an analysis of the mechanism with respect to the hazards for the occurrence of policy events is also very important. It is used in policy trigger assessment.

According to Sirimanne (2015), in order for parametric insurance to be successful, reinsurance companies should be involved, which will allow the transfer of big catastrophic risk to international markets through retrocession. It is the responsibility of the government to attract reinsurance companies to provide parametric insurance cover using financial incentives and regulatory support. Reinsurer involvement in parametric insurance adoption also allows insurance companies to participate, which will increase the government capacity to gain from parametric insurance.

2. PARAMETRIC INSURANCE CHALLENGES

Even though parametric insurance is a good disaster relief instrument, there are some challenges that one may face. Parametric insurance lacks capacity and experience. Stakeholders do not have the capacity and experience to develop parametric insurance programs. This affects the implementation and adoption process. Education is very important since people do not purchase a product they do not understand (Charles, 2012). There are challenges relating to the product design. According to Charles (2012), appropriate parameters must be used to accurately capture the risks faced by an insured. Moreover, the process is more difficult because there is a lack of data on hazards and historical loss information. Some inputs are required to complete the modeling process. Quality matters when it comes to the basis risk reduction. For example, the Caribbean once suffered from a lack of data and the relevant bodies, namely, Met Offices and disaster management agencies, which take the responsibility of recording the level of loss associated with varying intensity event.

It is very essential when it comes to aiding the design of useful products that can meet the tar-

geted group insurance needs. Limited coverage: Parametric insurance only provides coverage for an agreed insurance amount, which will be less than the total loss the insured is exposed to. This type of insurance is more favorable for extreme events compared to slow onset events. Traditional insurance products might be better when it comes to slow onset events. Moreover, parametric insurance coverage is provided when damage can be directly correlated with a measurable index. This means that it is best suited to several natural hazards (ESCAP, 2015). Basis Risk: It is subject to basis risk because payouts are based on the index and not on actual losses.

Policyholders of parametric insurance may be either over-compensated or under-compensated compared to the actual losses occurred. This type of insurance does not compensate for losses that are below the minimum threshold. To increase confidence in the purchase of parametric insurance, there is a need to match the payout with the actual risk or damages (Jensen, Barrett, & Mude, 2014; ESCAP, 2015). Challenging environment: Some environments are very challenging to launching parametric insurance product. Given the experiences with CLICO, there are some reservations about insurance in the Caribbean.

For this reason, it can be so challenging to launch an insurance product in such environment. To create a parametric insurance program that effectively interacts with reinsurance companies, one needs to transform disaster risks to international markets. For example, in the Pacific region the disaster reinsurance is still limited, which may hinder transfer of risk abroad (ESCAP, 2015).

3. RESEARCH METHODOLOGY AND SAMPLING

This study used a descriptive research design because it is suitable for collecting both qualitative and quantitative data. The research is qualitative in nature and the main reason is that it is mostly suitable for small samples (Burns, 1997). As parametric insurance is still being launched in Africa, this article seeks to explore the chances of its implementation. The qualitative method based on inductive approach was used in the critical analysis of data and discussing the results for making an informed decision. According to IPEC report (IPEC, 2017), there are eight reinsurance companies in Zimbabwe. For this research, the study population consists of eight operating managers from local reinsurance companies and the government of Zimbabwe represented by a regulator. The researchers chose reinsurance companies because they can transfer big risks associated with parametric insurance to other reinsurance companies on the international market through retrocession. A regulator of the insurance industry in Zimbabwe was selected. The study population consists of eight reinsurance underwriting managers and one employee from a regulatory body. In total, the study population is nine employees.

The researchers have used simple random sampling to select seven reinsurance companies from a total of eight companies. Reinsurance companies were selected because, according to ESCAP (2015), parametric insurance needs to be transferred to international markets through retrocession. Reinsurance companies can transfer parametric insurance risk to Swiss re and Munich re to increase their underwriting capacity. The names of the companies were put in a small box and the researcher had to pick seven times from the box. During the investigation, nomination of respondents was done through their respondent companies. The Insurance and Pension Commission was selected.

Saunders et al. (2012) provided that the larger the sample, the smaller the sampling error. The size of sample also depends on the acceptable margins of error. The acceptable margin of error for most researchers is the 5% or 95% confidence level. For this research, the sample stood at 28 of the 32 employees from seven reinsurance companies and 5 from a regulatory body, as justified in tables founded by Krejcie and Morgan (1970). Also, the sample has to be as small as possible so that time and effort may be minimized. At the same time, the sample had to be large enough to yield representative and reliable results. The triangular method is the use of two or more methods in data collection (Cohen & Manion, 1980). Self-administered questionnaires were distributed personally to reinsurance executives and some were sent electronically via emails and social platforms such as WhatsApp.

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For this research, the questionnaires consisted of structured and open ended questions. Thirty-two questionnaires were dispatched, whilst five questionnaires were for every reinsurance company. An in-depth interview was conducted among the researchers and an insurance regulator.

4. DATA PRESENTATION AND ANALYSIS

Data from seven reinsurance executives were gathered by the researcher through the use of questionnaires. All the seven companies completed and returned the questionnaires translating to a response rate of 100% because all the companies cooperated during the research (Table 1).

Table 1. Response rate

Source: Primary data (2019).

Response from	Questionnaires sent off	Questionnaires returned	Response rate (%)
Reinsurers	32	32	100%

4.1. Underwriting of natural disasters in Zimbabwe

61% of the respondents confirmed that they were underwriting natural disasters and the remaining 39% were not. From this, the intention follows to find out whether the reinsurance companies in Zimbabwe were underwriting natural disasters (Figure 1).

4.2. Natural disasters being covered and their relevant insurance products

The natural disasters are being covered in the insurance market, when insurance products stood at 61%. The underwritten disaster risks were crop insurance for snow/hail, flooding, rainfall and storm, whilst property insurance coverage is provided for earthquakes, fire, lighting, flooding, and storm (Table 2).

Table 2. Insurance products covering catastrophic natural disasters

Source: Primary data (2019).

Product	Perils covered
Crop insurance	It covers crop failure on growth, yields or transportation to the market. Any crop damage caused by hail/storm, flooding, storm, rainfall
Property insurance	It covers material or property damage against fire, earthquake, lighting, flooding (storm or hurricane), snow or hail

4.3. Main reasons why they do not underwrite natural disaster risks

About 39% of the reinsurance companies that are not underwriting natural disasters cited the major reasons why they do not. These include incapacity and a high degree of uncertainty when it comes to proper pricing by the cedent (insurer). They also indicated that cedents were limiting their retention, which had a negative impact on the spreading risk concept.

4.4. Strategies used to manage catastrophic portfolios

The study sought to find the strategies that reinsurers used to manage catastrophic portfolios (see Figure 2). Respondents provided three main strategies that underwrite natural disaster risk, which are as follows: mandatory cedent retention, retrocession and special risks consortium. 40% of the reinsurers indicated that they im-

Source: Primary data (2019).

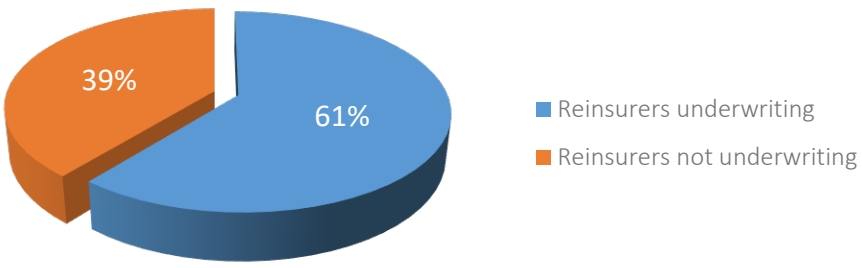

Figure 1. Underwriting of natural disasters in Zimbabwe

Source: Primary data (2019).

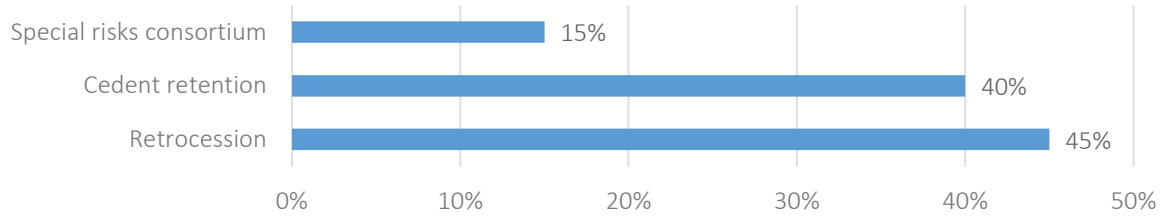

Figure 2. Strategies used to manage catastrophic portfolios

posed mandatory cedent retention, which could be either low or high depending on the insurer's capacity. 45% of the reinsurers used retrocession, whilst the remaining 15% used special risk consortium method. According to Voss law firm (2017), retrocession is a type of insurance when reinsurance companies transfer their excess risks to other reinsurance companies in/or outside the local market.

4.5. Government support for catastrophic risk underwriting

The research was aimed at finding out whether the government supported reinsurance companies in underwriting catastrophic risk. 100% of respondents confirmed that there was no support from the government in terms of underwriting catastrophic risks (see Figure 3).

4.6. Effectiveness of government disaster response through the civil protection unit

The study aims to find out whether the Zimbabwe government's response to disaster is effective when they offer disaster relief after drought or floods (see Figure 4). When conducting a case study of Tokwe Mukosi and Tsholotsho, 90% of the respondents said that the government disaster response was not effective, whilst 10% indicated that it was effective. 90% of respondents who said it was not effective gave the following reasons: failure of the government to offer evacuation and resettlement as quickly as possible after a disaster, food shortages at the temporary holding camps, and improper accommodation. According to the Herald (2014), Tokwe Mukosi incident left 3,000 people at risk and 4,000 people in need of evacuation. The flood victims had to leave their homes.

Source: Primary data (2019).

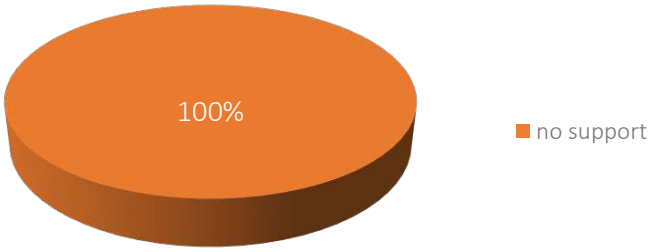

Figure 3. Government support to reinsurance companies to underwrite catastrophic risks

Source: Primary data (2019).

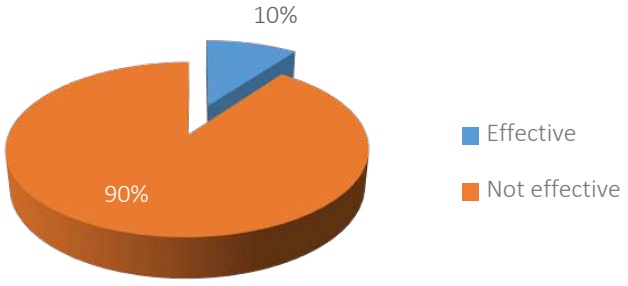

Figure 4. Effectiveness of government's disaster response to natural disasters

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Source: Primary data (2019).

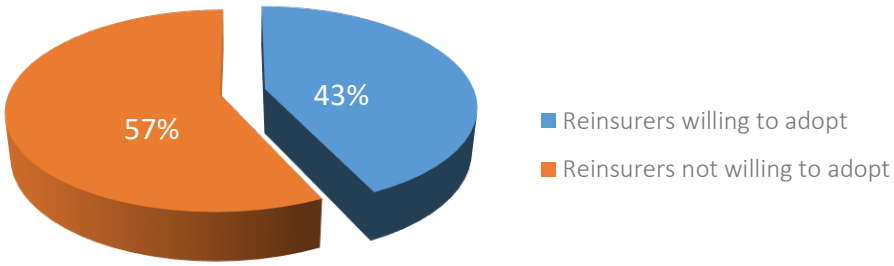

Figure 5. Reinsurers that considered adopting parametric insurance to cover disaster risk

4.7. Adoption of parametric insurance if the government is to accept disaster risk coverage

Out of seven companies, three are willing to adopt, whilst the remaining are not. 43% of the respondents are ready to adopt parametric insurance, whilst 57% are not (see Figure 5). This study intends to find out whether reinsurers in Zimbabwe are willing to adopt a new disaster risk insurance product called parametric insurance and provide coverage to the government and donor community. Companies are willing to adopt parametric insurance because its concepts do need proving. It is already in use by other international reinsurers.

4.8. Reasons why reinsurance companies are willing to adopt parametric insurance

When finding the reason why reinsurers are willing to adopt parametric insurance, the following was obtained: 43% of the respondents were willing to accept parametric insurance (see Figure 5). They indicated that parametric insurance will reduce moral hazard. Risky behavior cannot change the likelihood of receiving a claim or the amount of the claim because insurance pay-outs depend entirely on external factors outside the policyholder's control (UNESCAP, 2015). Moreover, operating costs are reduced since payouts are made without online inspection.

4.9. Reasons why reinsurance companies are not willing to adopt parametric insurance

The study aimed to find out the reasons why reinsurers were not ready to adopt parametric insurance. 67% of the respondents who did not wish to adopt parametric insurance said that such a risk can bankrupt a company because of high demands. Companies do not have finance to buy the infrastructure they need to create such a disaster risk tool (Figure 6).

4.10. Practicability of adopting parametric insurance in Zimbabwe

This study intended to find out whether it is practical to adopt parametric insurance in Zimbabwe and the reasons on either decision. 57% of the re-

Source: Primary data (2019).

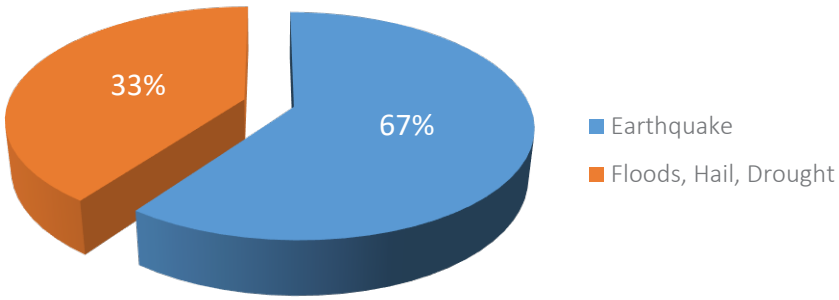

Figure 6. Natural disasters that reinsurers would prefer to cover if the government were to take parametric insurance

Source: Primary data (2019).

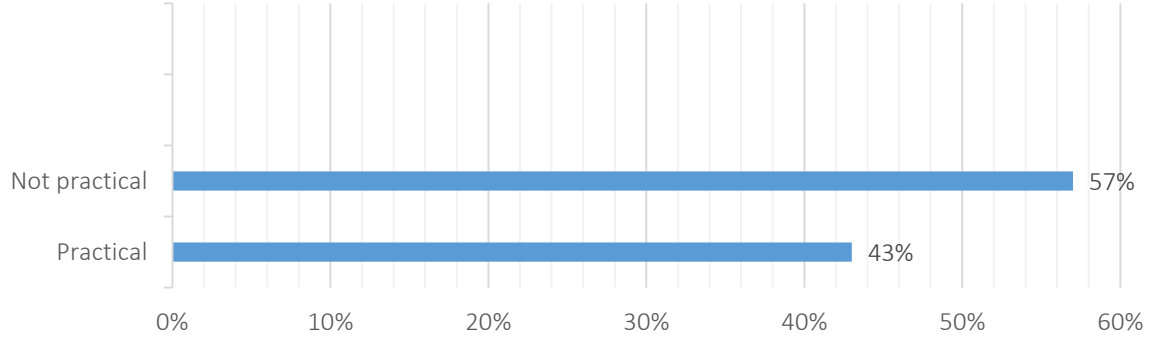

Figure 7. Practicability of adopting parametric insurance in Zimbabwe

spondents said that it was not practical to adopt parametric insurance, whilst 43% agreed that it was practical. These 43% indicated the following reasons for making such a decision: the developments in Zimbabwe, which can contribute to adopting parametric insurance.

5. FINDINGS FROM THE INTERVIEW

5.1. Interview conducted with the insurance industry regulator

Crop insurance was regarded as limited as Zimbabwe reinsurance companies underwrote only specific crops. An example of such a setup is that reinsurers are more interested in offering crop coverage for large scale commercial farmers. Respondents revised that Zimbabwe insurance players use a standard guide with rates when underwriting for natural disasters.

Regarding the practicability of applying parametric insurance in Zimbabwe, the regulator indicated that it was not expedient to adopt such an insurance coverage because many requirements need to be met in order for the adoption process to be successful. References to Zimbabwe and other neighboring African countries, which are also vulnerable to natural disasters, create a big market for parametric insurance in Africa.

The respondents also represented challenges related to the adoption of parametric insurance products in Zimbabwe. These include the lack of opportunities for the local insurance market to take high risks of natural disasters as well as the lack of proper equipment, technical skills and government support. The respondents stated that it was essential to find ways to solve these problems to successfully adopt parametric insurance in Zimbabwe.

CONCLUSION

Given the research objectives, the researchers concluded the following. Based on the success factors required to implement parametric insurance, it is not practical in Zimbabwe. Much effort is needed from the government to ensure that the success factors identified by the researchers are met. Without meeting the required success factors of parametric insurance, it is difficult for Zimbabwe to adopt such insurance products and coverage. Moreover, parametric insurance has been effective in other countries in managing disaster risks. Parametric insurance concept does not need proof because it is already in use by insurers and reinsurers. It has been 20 years since the insurance industry has expanded the use of insurance linked securities such as catastrophe bonds and industry loss warranties. Such instruments rely on parametric triggers and have earned a place alongside reinsurance programs and traditional insurance. Throughout the developing world, there is a significant opportunity. For countries with limited resources, there are several advantages of parametric insurance programs. There is no documentation

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and claim assessment required, which makes the arrangement of coverage and claim process easier compared to traditional insurance. The quick payout soon after a disaster allows the government to quickly offer disaster response before the damage is exacerbated. Successful development of climate-related parametric insurance programs requires risk assessment in all regions. Besides, constant monitoring of climate changes and weather conditions is required. Ongoing assessments boost the collective effectiveness of parametric insurance programs in overlapping regions.

Natural disasters are underwritten under property and crop insurance in Zimbabwe insurance market. Crop insurance coverage is still limited because only few crops are being underwritten. Reinsurers in Zimbabwe use mandatory cedent retention, retrocession and special risk consortium as strategies to manage catastrophic portfolios. However, their ability to underwrite parametric insurance is limited due to lack of government support, making it too risky to participate in catastrophic insurance contracts because they can bankrupt them. Adopting parametric insurance in Zimbabwe is still an idea on paper. The introduction of weather-based insurance products has created a good foundation for adopting parametric insurance in Zimbabwe. The government's response to natural disasters is not effective as it concerns the evacuation and resettlement of affected families. Improper accommodation and shortage of food to the flood victims are some of the reasons for disaster response to be regarded as not effective by the majority of respondents. The economic challenges faced by Zimbabwe were considered to be the main cause of poor disaster response.

The results can be used to solve problems related to parametric insurance and the ability to work on ways and strategies to reduce risk in the country. Parametric coverage is not new to the Zimbabwean insurance industry, but there is a growing demand for it as buyers look for alternative insurance solutions that will assist in recovering more quickly from certain environmental conditions, weather events or catastrophic perils. However, the results show it is not practical to adopt such an insurance coverage because a number of requirements need to be met to adopt the process successfully. Further research may analyze the problems of home protection and how climate changes affect parametric insurance in Zimbabwe, and other at-risk areas in South Africa. Also, further research can examine how modelling the probabilistic components of wildfire risk in the African context can be addressed.

Based on the research findings, the following recommendations were made which the researcher felt, if applied, would allow successfully implementation of parametric insurance in Zimbabwe.

The use of catastrophe bonds to boost capacity. Kampa (2010) noted that insurance carriers used them by to obtain supplemental protection for high-severity low probability events. Catastrophic bonds provide crowd reinsurance coverage, meaning that they give reinsurers capacity to underwrite catastrophic risks. For example, Parametric Catastrophe bonds are related to physical event parameters such as wind speed. If long parameters are not met, the bond will not pay. In order for reinsurers in Zimbabwe to increase their ability to underwrite catastrophic risks, they should use parametric catastrophic bond.

Government incentives and support. The insurance industry in Zimbabwe does not have the capacity to underwrite catastrophe risk which parametric insurance covers. In order for reinsurers to participate in the adoption of parametric insurance in Zimbabwe, the government should offer financial and regulatory incentives. According to Sirimanne et al. (2015), the government is required to engage reinsurance companies to provide parametric insurance coverage using financial incentives and regulatory support. This helps to adopt parametric insurance in Zimbabwe since reinsurance companies are given the motive to underwrite disaster risk. Moreover, the government should support weather-based index products in Zimbabwe.

Set up a clearing house. The government of Zimbabwe must take a step towards parametric insurance adoption with a clearing house. The World Bank (2017) proposes that a clearing house is responsible

for gathering data on climate and weather. The data is collected for collective use to reduce the costs of risk assessments and index tracking. A central source for information on parametric insurance designs and best practices is also provided. An example of clearing house is the Green Climate Fund which is managed by an international financial institution.

Involve international organization and developing countries. In order for the government of Zimbabwe to meet the success factors of parametric insurance, it should ask for assistance from G7 countries and international organizations. Developing countries, such as China and Japan, are assisting developing countries in setting up parametric insurance products. Developing countries having the least capacity to respond for the effects of climate change are the most vulnerable (World Bank, 2017). For parametric insurance to work, international support from Group 7 countries, multilateral development banks and private sector is very important. Their support plays a major role in facilitating climate-related risk insurance. The development of the nation's ability to access insurance market will be achieved, and necessary economic and environment data will be collected. Moreover, to reduce costs in the first phase, associated with insufficient experience and limited liquidity, which may prevent private insurers from entering new insurance markets. For example, the World Bank helped Malawi in implementing index-based insurance.

Reinsurance and insurance companies should work together. To be able to underwrite disaster risk in Zimbabwe, reinsurance and insurance companies should be allowed to work together. According to GFDRR (2014), in Malawi, when weather index-based insurance was implemented, nine insurance companies worked together to underwrite the risk from the program. They did this to increase underwriting capacity.

Successful adoption of parametric insurance in Zimbabwe requires the following:

- Weather infrastructure development. For example, the development of a weather station with advanced equipment to obtain quality weather data.
- Sufficient financial capacity Assistance from developed countries is needed for parametric insurance to be successful in Zimbabwe, given the economic challenges facing the country.
- Government support to the insurance industry by providing financial incentives to increase reinsurance potential to underwrite catastrophe risk.
- Flexible legislation that allows more players to be willing to join parametric insurance is very essential.
- Moreover, education about parametric insurance by the providers is very important for easy implementation.

In Zimbabwe, it is hoped that parametric insurance of floods and drought coverage can be arranged as more automated weather stations was installed by Econet wireless in cooperation with Meteorological services department when they implemented weather index product. The same weather data applied to determine payouts can be used for parametric insurance. Parametric insurance is not practical in Zimbabwe. More needs to be done by the government to meet the success factors for adopting parametric insurance as listed above.

http://dx.doi.org/10.21511/ins.10(1).2019.04

REFERENCES

1. Artemis. (2014). *Investor demand for catastrophe bonds remains high in January*. Retrieved from https://www.artemis.bm/news/investor-demand-for-catastrophe-bonds-remains-high-in-january/
2. Barrett, C. B., Barnett, B .J., Carter, M. R., Chantarat, S., Hansen, J. W., Mude, A. G., ..., & Ward, M. N. (2007). *Poverty Traps and Climate Risk: Limitations and Opportunities of Index-Based Risk Financing* (IRI Technical Report No. 07-02). IRI, Columbia University, New York. Retrieved from http://barrett.dyson.cornell.edu/Papers/WP_Poverty_IRItr0702.pdf
3. Brooks, L. (2012). The Caribbean Catastrophe Risk Insurance Facility: Parametric Insurance Payouts Without Proper Parameters. *Arizona Journal of Environment Law and Policy, 2*(4), 1-16. Retrieved from https://a0af5022-c1e5-45af-9c8a-b11d448e331e.filesusr.com/ugd/952f0d_a0b188373a-7445d2a9978237446e4c18.pdf
4. Bryman, A., & Bell, E. (2003). *Business research methods*. Oxford, UK: Oxford University Press. Retrieved from https://www.worldcat.org/title/business-research-methods/oclc/243598215
5. Burns, N., & Groove, S. I. (2008). *The practice of nursing research: Appraisal, synthesis and generation of evidence* (6th ed.). St. Louis: Saunders Elsevier. Retrieved from https://www.amazon.com/Practice-Nursing-Research-Appraisal-Generation/dp/1455707368
6. Burns, R. B. (1997). *Introduction to research methods*. Oxford University Press, USA
7. Charles, L. (2012). *Climate Risk Insurance in the context of adaption and loss damage*. Hilton Hotel. Barbado.
8. Chidoori, T. (2017). Parametric Insurance critical instrument to manage natural disaster risk. *Risk and Insurance Zimbabwe*. Retrieved from https://ri.co.zw/2017/01/11/parametric-insurance-critical-instrument-to-manage-natural-disaster-risks/
9. ESCAP/IDD. (2015). *Financing Disaster Risk Reduction for Sustainable development in Asia and the Pacific* (Working Paper No. WP/15/09). United Nations Economic and Social Commission for Asia and the Pacific (ESCAP). Retrieved from https://www.unescap.org/sites/default/files/9-ESCAP-Financing%20Disaster-July2015_share_2.pdf
10. FAO. (2011). *Agricultural insurance In Asia and the Pacific region* (RAP Publication 2011/12). Food and Agriculture Organization of the United Nations, Regional Office for Asia and the Pacific Bangkok Retrieved from http://www.fao.org/3/i2344e/i2344e00.pdf
11. FinScope. (2011). Fin Scope Financial Survey Zimbabwe. Retrieved from http://www.finmark.org.za/wp-content/uploads/2016/02/Zimbabwe_Report_FNL2012.pdf
12. GFDRR. (2014). *Weather Index Based Crop Insurance in Malawi*. Retrieved from http://siteresources.worldbank.org/EXTDISASTER/Resources/Malawi_WeatherInsurance_Final.pdf.
13. Ghesquiere, F., & Mahul, O. (2010). *Financial protection of the State against natural disasters: a premier.* (Policy Research Working Paper No. WPS5429). Washington, DC: The World Bank. Retrieved from http://documents.worldbank.org/curated/en/227011468175734792/pdf/WPS5429.pdf
14. Hazel., P., Anderson., J., Balzer, N., Hastrup, C., Hess, U., & Rispoli, F. (2010). *The potential for scale and sustainability in weather index insurance for agriculture and rural livelihoods.* World Food Programme (WFP). Retrieved from https://pdfs.semanticscholar.org/f4ed/c50de49fb13bee390a01a326e72f07b8a6b8.pdf
15. IPEC. (2017). *IPEC Report*. Harare, Zimbabwe. Retrieved from https://ipec.co.zw/publications/reports/
16. Kampa, C., & Siegert, P. (2010). *Alternative Risk Transfer: The convergence of the insurance and capital markets.* Retrieved from https://www.researchgate.net/publication/228232146_Alternative_Risk_Transfer_The_Convergence_of_the_Insurance_and_Capital_Markets
17. Lucas, B. (2015). *Disaster risk financing and insurance in the Pacific (GSDRC helpdesk Research report 1314).* Birmingham, UK: University of Birmingham.
18. Newsday. (2014, February 7). *32 000 lives at risk of flooding.* Retrieved from https://www.newsday.co.zw/2014/02/32-000-lives-risk-flooding/
19. Newsday. (2017, March 1). *Tsholotsho floods victims in urgent need of food, blankets, tents.* Retrieved from https://www.newsday.co.zw/2017/03/tsholotsho-floods-victims-urgent-need-food-blankets-tents/
20. Ogden, P., Bovarnick, B., & Hoshijima, Y. (2015). *Key principles of climate related risk insurance.* Centre of American progress. Retrieved from https://cdn.americanprogress.org/wp-content/uploads/2015/08/26131302/ClimateRiskInsurance-report.pdf
21. PreventionWeb. (2017*). United Nations Office for Disaster Risk Reduction (UNDRR).* Retrieved from https://www.preventionweb.net/organizations/1171
22. QIC Global diversified alternatives. (2017). Retrieved from https://www.qic.com.au/about-qic/about-us/who-we-are
23. Saunders, M., Lewis, P., & Thornhill, A. (1997). *Research methods for business students.* Prentice Hall, Essex. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.475.7307&rep=rep1&type=pdf
24. Sirimanne, S., Srivastava, S., Kim, S. E., Li, H. M. D., Firer, A., & Sinha, S. (2015). Building Resilience to Droughts: Scaling up Weather Insurance in

China, India, and Thailand. In *7th Wold Water Forum*. United Nation Economic and Social Commission for Asia and the Pacific (ESCAP). Retrieved from https://www.researchgate.net/publication/275017034_Building_Resilience_to_Droughts_Scaling_up_Weather_Insurance_in_China_India_and_Thailand

25. Skees, J., Hazell, P., & Miranda, M. (1999). *New Approaches to Crop Yield Insurance in Developing Countries* (EPTD Discussion Paper No. 55). International Food Policy Research Institute, Environment and Production Technology Division, Washington, DC. Retrieved from https://ideas.repec.org/p/fpr/eptddp/55.html

26. Skees, J., Barnett, B. J., & Collier, B. (2008, April 7-8). Agricultural Insurance: Background and Context for Climate Adaptation Discussions. Proceedings of the *OECD Expert Workshop on Economic Aspects of Adaptation*. Paris, France, Geneva, Switzerland, Forthcoming. Retrieved from https://www.munichre-foundation.org/de/dms/MRS/Documents/Microinsurance/MIC_Agriculture_Bibliography/20080821_SkeesBarnettCollierOECDPaper.pdf

27. Skees, J., Barnett, B. J., & Murphy, A. G. (2008). Creating insurance markets for natural disaster risk in lower income countries: The potential role for securitization. *Agricultural Finance Review, 68*(1), 151-167. https://doi.org/10.1108/00214660880001224

28. The Herald. (2014, December 29). *Tokwe-Mkosi disaster relived*. Retrieved from https://www.herald.co.zw/tokwe-mkosi-disaster-relived/

29. The Herald. (2017, January 16). *Rains open gates to blessings, curses.* Retrieved from https://www.herald.co.zw/rains-open-gates-to-blessings-curses/

30. The Herald. (2017, March 6). *Floods damage infrastructure in southern Zimbabwe.* Retrieved from: https://www.herald.co.zw/floods-damage-infrastructure-in-southern-zimbabwe/

31. Tsikirayi, C., Makoni, E., & Matiza, J. (2016). Analysis of the uptake of agricultural insurance services by the agricultural sector in Zimbabwe. *Journal of International Business and Cultural Studies,* 1-14. Retrieved from https://www.aabri.com/manuscripts/121360.pdf

32. United Nations International Strategy for Disaster Reduction (UNISDR). (2007). *Building Disaster Resilient Communities: Good Practices and Lessons Learned*. Global Network of NGOs for Disaster Risk Reduction. Retrieved from https://www.unisdr.org/files/596_10307.pdf

33. United Nations International Strategy for Disaster Reduction (UNISDR). (2009). *2009 UNISDR Terminology on Disaster Risk Reduction.* Retrieved from https://www.unisdr.org/files/7817_UNISDRTerminologyEnglish.pdf

34. United Nations International Strategy for Disaster Reduction (UNISDR). (2011). *Hyogo Framework for Action 2005–2015.* Building the Resilience of Nations and Communities to Disasters. Mid-Term Review 2010–2011. Geneva. Retrieved from https://www.unisdr.org/files/18197_midterm.pdf

35. United Nations office for Disaster Risk Reduction (UNISDR) (2017).

36. World Bank. (2005). *Managing Agricultural Production Risk. Innovations in Developing Countries.* Washington, DC: World Bank. Retrieved from http://siteresources.worldbank.org/INTARD/Resources/Managing_Ag_Risk_FINAL.pdf

37. World Bank. (2007). *World Development Report 2008: Agriculture for Development.* World Bank, Washington, DC. Retrieved from https://openknowledge.worldbank.org/handle/10986/5990

38. World Bank. (2008). The Caribbean Catastrophe Risk Insurance Facility: Providing Immediate Funding After Natural Disasters. *Operational Innovations in Latin America and the Caribbean, 2*(1), 1-16. World Bank, Washington, DC. Retrieved from http://documents.worldbank.org/curated/en/662481468045833433/pdf/446950NWP0ONS41Box0327407B01PUBLIC1.pdf

39. World Bank. (2010). *A review of CCRIFS operation after its second season* (Working Paper No. 84636). Washington DC: World Bank Group. Retrieved from http://documents.worldbank.org/curated/en/164301468225617268/pdf/846360WP0Box380CCRIFReview200802009.pdf

40. World Confederation for Physical Therapy. (2017). *2017 congress.* Cape Town, South Africa. Retrieved from https://www.wcpt.org/wcpt2017

http://dx.doi.org/10.21511/ins.10(1).2019.04