

CHALLENGES IN MANAGING RESIDENTIAL EARTHQUAKE INSURANCE: A POST-DISASTER REVIEW

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ABSTRACT

This paper examined the challenges associated with the management of the dual EQC-private insurance model offered in New Zealand after the Canterbury earthquake disasters. A mixed-methods approach comprising survey and semi-structured interviews were adopted in the study. The research findings highlighted key challenges associated with the dual insurance model that impeded post-disaster residential reconstruction. These challenges include policy holder's lack of knowledge of insurance policy underwritings and entitlements, high cost of insurance premiums and deductibles, and a complicated claim management process. Main recommendations proposed from this study to improve the post-disaster claims management processes, should another earthquake occur include ensuring property owners' due diligence, adopting a simplified and streamlined insurance claim management approach, good communication approach and providing clarity and consistency in policy underwritings and legislative provisions governing the dual insurance scheme. The findings highlight the significance of a streamlined approach to insurance claims evaluation and management in pre-disaster planning and post-disaster reconstruction.

KEYWORDS: Residential earthquake insurance, Earthquake Commission (EQC), Canterbury, Post-disaster rebuild

1.0 INTRODUCTION

Earthquake insurance is a major component in the overall risk management strategy that focuses on quick recovery of the insured individuals and organisations from disasters (Wang et al., 2009). Earthquake insurance policies differ widely, and are usually written by insurers and reinsurers with each new disaster event, arising from experiences and practices of previous policies. Different countries have specific ways of implementing earthquake risk insurance policy, with the main objective of accumulating adequate funds to expedite the emergency management and post-disaster rebuild. The Canterbury

earthquake swarms caused substantial damages estimated that US\$22 billion financial loss and significant social disruption (Cooper et al., 2012). The emphasis of the local and national governments is often to re-build swiftly and to provide a better sustainable community (Xie and Wen, 2000). Quick recovery and rebuilding the affected communities after a disaster often associated with the availability of insurance programs in affected areas. This study sought to examine the challenges associated with post-disaster residential insurance administration and management using the New Zealand Canterbury earthquakes as a study case. The following section provides a background on different government guaranteed residential insurance schemes.

RESIDENTIAL EARTHQUAKE INSURANCE PROGRAMS

Residential earthquake insurance policies generally cover property and contents and are designed and administered differently. The California Earthquake Authority (CEA) pricing scheme is designed to prevent insurance fraud prevalent during the 1994 USA Northridge earthquake claim management process, where policy owners claimed for damage that was not due to the earthquake. According to Risk Management Solution report (2005), CEA's insurance policy has a high premium rate that resulted to penetration rate (9-12%) for residential buildings. Consequently limiting the insurance protection for the homeowners exposed to earthquake risks. In Japan, earthquake insurance policy is written by private companies and reinsurance is provided as a joint venture between private insurance companies and the government (NLIRO, 2014). The sum of all claims payable for one earthquake is provided in stepped payments in accordance to the degree of loss by total, half or partial loss of the policyholder's insured limits (Clay Whybark, 2007). The pay-out presents a simplified and streamlined approach that offer a finite number of pre-determined settlement options, which could helped to reduce delays during a claim process. The Taiwan Residential Earthquake Insurance Fund (TREIF) provides coverage for actual total loss or constructive total loss for residential buildings. TREIF has a take-up rate of about 31.5% of the total residential households in Taiwan (TREIF, 2015). Though TREIF has a slightly higher earthquake penetration rate than the USA and Japan, its maximum pay-out amount is insufficient for post-disaster rebuild. The policy can only be claimed if the damaged dwelling is declared as total loss, with a damage ratio greater than 50% (RMS, 2005).

In New Zealand, residential earthquake insurance is administered by the Earthquake Commission (EQC), and is a mandatory government guaranteed scheme that covers both land and property from natural hazards. EQC insurance policy cost homeowners about NZD 150 per annum, with provided protection up to NZD 100,000 for damaged

properties, NZD 20,000 for personal effects and an unlimited cover for the land and under land within eight meters of a dwelling (EQC, 2015). The policy has a compulsory endorsement to fire insurance at a small additional cost. When the building's rebuild value from a disaster is beyond the EQC limit, homeowners are responsible for the difference, either from savings or additional private insurance. Home owners are often encouraged to purchase additional insurance from private insurers, adopt self-insurance through savings or to strengthen their properties against earthquake disasters (Benbya and McKelvey, 2006). In New Zealand, insurance is a requirement of mortgage lending therefore about 95% of privately owned dwellings and 60% of contents are insured against earthquake risks (Muir-Wood, 2012). EQC policy's has a high penetration rate and level of coverage. As an aftermath of the Canterbury earthquakes, insurance companies now require home owners to specify a rebuild value, which represents the insured amount payable to the property owner in a disaster event, as opposed previously where house cover packages offered a full repair/rebuild policy with no assigned monetary figure. Over 95% of all claims from the Canterbury earthquakes have been paid-out by EQC as at January 2015 (EQC, 2015). Summarily, the objectives of the many earthquake residential insurance programs are to provide cover for the insured, increase penetration rate, provide affordable premiums and accumulate sufficient fund necessary to expedite the post-disaster reconstruction process, however this idea situation never happens after a disaster.

CONSTRAINTS ASSOCIATED WITH EARTHQUAKE INSURANCE

The management and administration of earthquake residential earthquake insurance is associated with various constraints such as low penetration rate, inadequate claim database, inability to cover maximum loss, and low seismic loss estimation could impede the post-disaster recovery process (Kunreuther and Michel-Kerjan, 2009). Perception of earthquake risks and the cost to purchase the policy are significant challenges associated to the adoption of adequate insurance cover (Egbelakin et al., 2014). According to Egbelakin *et al.* (2014), individuals may decide to risk a rare natural disaster or underinsure themselves because of the uncertainty an probability associated with an earthquake event, even with favourable premiums. Low penetration of insurance policies have been found prevalence in areas of high earthquake risks and awareness of seismic risks, which was attributed to the high cost of insurance premium (RMS, 2005). Risk zones play an important part in insurance estimation. However, there appears to be a lack of importance placed on the matter by insurers. Many insurance companies insolvencies were attributed to risk underestimation, inadequate claim database, overwriting policies in high risks zones and the inability to cover the losses associated with severe earthquake damages (Goda and Yoshikawa, 2012). The availability

of a great number of policy holders could increase the insurer's risk exposure and consequently, inability to cover maximum loss. The inability to cover losses associated with severe earthquake damages can be partly solved by reinsurance and government guarantees (Kunreuther and Michel-Kerjan, 2009). However, many government guaranteed insurance programs are not set in a competitive environment, and do not fit an environment driven by market forces (Middleton, 2012). Building code requirements and mandatory insurance policies encourage individuals to seek buildings that are seismically safe. Such approach could help to minimise recovery costs and increase the potential for cheaper premiums (Lee and Bui, 2000). According to Goda & Hong (2008), mandatory insurance program is appealing if the policy is seemed as fair to risk-averse customers, however risk-seeking customers may prefer not to purchase the policy. There is still a need to implement effective mechanism for code enforcement regarding insurance premiums and deductibles to reflect seismic mitigation adopted in retrofitted buildings (Egbelakin et al., 2015b). It is common in previous research on residential insurance to examine the adequacy an existing insurance schemes after disaster by using a range of measures to benchmark recovery progress and insurance contributions to recovery (CEBR, 2012). This study sought to examine adequacy of the New Zealand dual insurance model for post-disaster residential claim administration and management.

RESEARCH METHOD

The paper report part of the findings of a recently completed study at Massey University, undertaken to investigate customers' satisfaction and the efficacy of the dual EQC-Private residential insurance model after the Christchurch disasters. The study reported in this article investigated the challenges associated with the claim administration and management of the dual EQC-private insurance model after the Canterbury disasters. A mixed-methods approach comprising survey and interview methods were adopted. Questionnaire survey was used to capture the opinions of building owners and insurance industry participants, and because of its adequacy to generalise the research results to a wider audience. Respondents were asked to rate their level of agreement to which a number of factors that posed as constraints to the managing pay-out claims based on their experiences before and after the Canterbury earthquakes. A five-point Likert scale from 1 (none at all) to 5 (to a large extent) was used in the questionnaire. A simple random sampling method was used for participant selection. Building owners comprise those have owned their homes at least two years before the earthquake in the Canterbury region, and whose properties suffered damage from the disaster. Insurance industry participants include insurance brokers and managers of insurance companies who have being in the industry for at

least 2 years before, and are still operative after the Canterbury earthquakes. A total of five hundred online questionnaires administered, and 118 questionnaires were returned and used for data analysis. Data were analysed using IBM SPSS software 22. The mean of each variable was compared. A test value of 4 was used to test whether the means were significantly different from a mid-point of 4 on a Likert rating scale of 1 to 5. A factor is considered as a challenge to post-disaster residential insurance administration and management, when it has a mean score greater than 4.

In addition, semi-structured interview were employed to elicit in-depth information from the research participants, using an interview protocol as a data collection instrument. Twelve interviews which ranged from one to two hours were conducted with participants within Christchurch region. Interviews were recorded and transcribed with participants' written consents. Care was taken to exclude the interview participants from the survey. Thematic content analysis was used to analyse the qualitative data. The thematic analysis process includes an analytical framework developed with coding scheme details, with an explanation of the operational definitions. Major themes emerged from the interviews, and supported with key participants' phrases and quotes. The participants and industry experts reviewed the survey and interview findings to establish the data validity.

Participants Characteristics

The interview participants' and survey respondents' profiles are summarised in Table 1. A total of 64% were home owners of the survey respondents. The insurance industry participants comprise of 36%; which include middle (54%) and senior managers (46%), who have an average working experience of seven years. The average working experience of seven years indicates that this category of participants have reasonable working in residential earthquake insurance and post-disaster claim assessment and rebuild processes. Hence, the participants are able to provide reliable information.

RESEARCH FINDINGS

Research findings from this study revealed key challenges associated with residential insurance scheme post-disaster reconstruction in the Canterbury region. The main challenges include lack of policy owners' knowledge of policy underwritings and entitlements, high earthquake premiums and deductibles and a complicated claim process. Key results are discussed below within the context of the investigation and are summarised in Table 2.

Table 1 - Profile of Research Participants

Survey respondents profile				Interview participants profile			
Category		Frequency	%	Category		Frequency	%
Home owners	Single storey	43	36	Home owners	Single storey	2	17
	Two storey	20	18		Two storey	1	8
	Three storey	12	10		Three storey	3	25
Insurers	EQC	19	16	Insurers	EQC	3	25
	Private insurer	24	20		Private insurer	3	25
Level of damage to property	Severe	54	46	Level of damage to property	Severe	4	33
	Moderate	41	35		Moderate	1	8
	Minor	23	19		Minor	1	8
Residing in house at time of earthquakes	Yes	109	92	Residing in house at time of earthquakes	Yes	6	50
	No	9	8		No	0	0
Additional insurance purchased	Yes	26	22	Additional insurance purchased	Yes	3	25
	No	92	78		No	0	0

Table 2 – Practices Acting As Challenges to Post-Disaster Reconstruction

Factor Number	Factors	Mean scores	p-value
F1	Knowledge of policy owners of insurance policy underwritings and entitlements	4.80	0.00
	Claim process not explained adequately to claimants	4.72	0.04
	Adequacy of explanations on claim pay-out value	4.64	0.00
	Understanding of compensation scheme	4.51	0.01
F2	Cost of insurance policy	4.46	0.03
F3	Claim management process	4.31	0.02
F4	Communication	4.20	0.00
	Post-Disaster Claim Pay-outs	4.14	0.00
	Inconsistent pay-out estimation values	4.11	0.01
	Adequacy of compensation scheme	4.10	0.02
F5	Database management	3.91	0.06
F6	Adequacy of government guaranteed insurance program	3.83	0.15
F7	Insurance penetration rate	3.62	0.36
F8	Insurance level of coverage	3.48	0.86

Policy Holder's Knowledge of Insurance Underwritings and Entitlements

The lack of policy holders' knowledge of insurance underwritings and entitlements was identified as the most significant challenge to the post-disaster insurance claim process and administration, with a mean value of 4.8 (see Table 2). Many home owners/policy holders within the Canterbury region did not fully understand their policy underwritings, entitlements and compensations details before the earthquake disaster. Questions regarding whether details of the policy cover were explained to them showed that only 16% of the respondents felt that their policy was explained to them to a reasonable extent. 79% of the homeowners were not well-informed about the details of their policies and entitlements when the policy was purchased. Interview findings suggested that the lack of knowledge amongst the policy holders can be attributed to insurance brokers downplaying issues relating to the probability of a potential earthquake event, so that the sale transaction period is not reduced. One of the participants wrote that; *"policy details were not fully explained to me at the time of purchase. I only understood that I did not have a full cover after the earthquake and with depreciation assessment, I was not entitled to any claim except landscaping.* This assertion amidst many suggest a lack of knowledge on insurance policy information misled many home owners regarding issues surrounding entitlements and are under-protected from the Canterbury earthquakes impacts. This lack of knowledge consequently led to property owners' inability to access reasonable amount of money to rebuild of their properties, which contributed to the slow progress of the region's reconstruction rate.

The insurance industry participants sector agreed to a large extent that policy holders appeared unaware of their entitlements and policy underwritings. However, they disagreed that they contributed to the lack of adequate information necessary for home owners to make informed decisions. These participants claimed that all required information is available online, at the local branch or through insurance brokers at the time of purchase, but many policy holders failed in their due diligence. The participants recognised the need for improved staff and brokers' training regarding the provision of information to policy holders.

High Cost of Insurance Premiums and Deductibles

There is a general consensus among the respondents that the cost of premiums and deductibles is relatively high in New Zealand, which was considered an impediment to the quick recovery of the Canterbury region (mean score =4.46; see Table 2). 75% of the respondents agreed that owners of renovated buildings previously damaged in the 2010 earthquake often find it difficult to obtain earthquake insurance, and in

most cases pay high premiums and were subjected to higher deductibles. Owners of buildings further damaged after the 2011 disaster mentioned that they could not afford the deductibles and hence opted to demolish their buildings after a long consideration. Difficulty to purchase insurance and high premiums further worsen home owners' financial situation, thus becoming an obstacle to informed decision for property renovation and rebuild. The high earthquake insurance premiums and deductibles in New Zealand were attributed to the country's high seismicity and short-term insurance policy program. Participants from the insurance industry occupying senior management positions responded that the high premiums could be attributed to risks associated with earthquake uncertainty, building characteristics (age and material), location and how the market responds to earthquake risks and disaster. They argued that the insurance market reacts to risk and uncertainty by increasing the investment risk premium.

Post-Disaster Claim Management Process

The post-disaster claim management process was considered a key challenge to the Canterbury rebuild (see Table 2). The processes of making claims and receiving entitlements by home owners appeared to be straight forward before the disaster. The claim process involves submitting a claim to EQC and if the damage is over the 'cap' (\$100,000 for home and \$20,000 for contents), the excess is covered by the homeowner or private insurer. Many respondents explained that processing their first claim from the 2010 earthquake was quite simple and straight forward. After the earthquakes swarm in 2011, claims are processed on a 'per event' basis, which meant that for each earthquake that caused damage, a separate claim needs to be made. This claim per event basis, led to a situation where EQC have to manage more than five times the number of claims they have previously managed. The survey results showed that the insurance claim process become rather complicated. 95% of the claimants interviewed explained that the process was very time-consuming, 94% of the respondents felt that the process was too complicated and wrote specifically about the stress involved in having to deal with EQC and their private insurers separately for the same incident. One of the participants explained that, *"EQC assessment was initially very easy; however time frames for the claim process were significantly understated after the second earthquake. Making progressive claims and the process of clarifying issues have been very difficult. Now, EQC has finally paid out and we now have to deal with our private insurance company who have failed to provide a clear process or assist with the progression of the claim"*.

It was also a well noted consensus among the homeowners that many EQC staff seemed under-skilled and lacked competence, in some cases

over paying some home owners or simply delaying the claim process. The findings showed that the complicated claim process led to friction between insurance companies and EQC on the one side and property owners on the other, highlighting the need to implement clear communication procedures. Most insurer employees interviewed claimed that the majority of claims have been settled as at September 2014, and it is up to the home owners to make decision as to how they want to progress; whether to seek additional fund to rebuild or demolish their property. Overall, the complicated claim process could be attributed to the special characteristics of the 2011 earthquakes swarm that include several earthquakes and aftershocks occurring at close periods, intricacies built into insurance contracts, regulatory changes, resource constraints, number of agencies involved, and the dual EQC-private insurer model.

Post-Disaster Claim Pay-outs

The post-disaster insurance claim pay-outs in this study relate to how the claim values were estimated and the inadequacy of the money paid out for post-disaster residential reconstruction, which was considered a significant impediment to post-disaster reconstruction (see Table 2). The research findings showed that the pay-out scheme from the dual model appeared to be a misunderstood concept to majority of respondents as at 2012 and 2013. Many home owners mentioned that no clear information was provided to them early by the government to aid their understanding of what its EQC policy covers and what it excludes. Five years post-earthquake, the pay-out scheme has become clearer to many home owners. Many home owners feel that while it's good of the government to offer some cover, the cover is not adequate and was not administered correctly. An interviewee mentioned that; *"Our understanding was that our EQC levies would be used to make everything right as fast as possible for our living conditions. Full entitlement was expected without different claim per earthquake event costing us additional excess for each event"*.

In addition, these owners explained that the estimated claim pay-outs values presented to them differed significantly between the property valuers' value and insurers, usually with EQC and private insurers being the lower of the estimates. Questions arose from the common complaint of pay-out claims being too low and insufficient for the amount of work required as assessed by an engineer, builder and valuer. The discrepancies in the estimated values resulted into significant misunderstandings and inconsistencies in explanations, which increased social tensions within the Canterbury region at that time.

Many home owners claimed that they are not provided with adequate information on how the property replacement or repair values were calculated. 86% of the home owners interviewed were confused about which value to accept, the model or criteria used in calculating these

differing figures. Another issue attributed to these discrepancies raised was around timing of the valuations, as the costs to repair/replace have since increased after each earthquake event. Private insurers will not accept such increase as many of the delays are being attributed to the EQC's slow claim process. This research results highlighted the complexity and challenges associated with assessing the level of damage, repair or build costs of the different earthquakes, up to the event that made the property uneconomic to repair.

There also appeared to be "*uncertainty as to what is covered in terms of landscaping, fences and pathways*", creating another grey area for discrepancies between EQC and private insurers values. The research results showed that apportioning differing damage level and repair/replacement costs led to disagreements between the insured, private insurers and EQC, and in some instances resulted into legal battle. As a result of these discrepancies, the insurance industry landscape in New Zealand has changed in the way they administer policies; the previous full cover approach has been replaced with insured predicted rebuild costs.

DISCUSSION OF FINDINGS

The research results provided insights into the key challenges associated with the management of residential insurance after the Canterbury earthquakes swarm and its impacts on post-disaster rebuild. The existence of the dual EQC-private insurer model while beneficial in increasing penetration rate and reducing potential fraud during the claim process, the model have a number of operational difficulties. These difficulties include lack of consistency in the model for estimating the payout value, poor communication management, a lack of clarity of policy underwritings and entitlements, lack of capacity for increased number of claims, blurred lines between what EQC and private insurance companies covered, and misinformation between claimants, claim assessors, EQC and insurance companies. Also, the research revealed that the lack of knowledge among many policy holders regarding the policy underwritings and entitlements was prevalent. Many policy holders believed that some of the complications experienced during the claim process were a by-product of the inadequate information provided to them, when the policy was purchased. The contradictory opinions of the insurance industry participants suggested that both parties need to be more diligent and active in their roles when entering into a contract. Insurers need to ensure that policy information is readily available, easy to follow and simple to understand, have less variability of terms and encourage or even enforce that the information is read and understood by the clients. Customers need to ensure that they clearly understood the policy underwritings and insurance terms when making insurance purchase.

In order to reduce the complexities associated to this dual arrangement model, a better communication strategy should be implemented. Such strategy should include information on settlement timeframes and the availability of more face-face meetings between the insured and damage assessment team (Stevenson, 2011b), rather through telephone and emails as reported by many of the participants. In addition, the implementation of government guaranteed residential insurance program that include a simplified and streamlined approach to claims evaluation in the aftermath of a disaster is recommend in this study. The streamlined assessment process offer a number of pre-determined settlement options, which could helped to reduce the claim processing time, administrative costs and provide clearer information to policy holders. Also, simple and clearer policies wordings, jointly adopted policy definitions, terms and interpretations, and a uniform damage assessment and claim estimation method is necessary among the insurance providers involved in the dual model.

The new post-disaster insurance scene with its increased pricing and stricter terms in New Zealand could increase the risk of underinsurance among property owners. Underinsurance increases home owners risk exposure in a potential earthquake event, and could create additional social and financial costs to all taxpayers in the form of government disaster assistance. There is a need to develop an education awareness program for property owners and insurance brokers in order to improve their understanding of other mitigation strategies such as seismic retrofitting their properties and securing house contents. Egbelakin et al. (2015a) found that some building owners perceive insurance as the only means of dealing with earthquake risks rather than to seismically strengthened their properties. This perception of insurance is an example of a moral hazard, where insurance diminishes the insured's motivation to act safely, resulting in under-investment in mitigation plans. Although purchasing insurance is a major component in a property risk management plan, insurance itself is not a method of improving the resilience of a building to earthquake damage. A better risk management strategy to combine earthquake insurance with compliance to seismic retrofitting, where premiums reflect the extent of the seismic risk mitigated in the building (Egbelakin et al., 2014). Insurance premium rates that reflect the building seismic risk will provide risk signals and future savings to individual owners and encourage them to engage in cost-effective mitigation measures to reduce their vulnerability. There are several benefits of adopting a good earthquake insurance policy in both property risk management and earthquake disaster management, but its role in managing seismic residual risk in New Zealand is yet to reach its full potential.

CONCLUSION

The devastating effects of the Canterbury earthquakes provided an avenue to test the viability of one of the globally acclaimed government guaranteed residential insurance program from New Zealand. The objective of this study is not to benchmark the performance of this insurance model to others residential programs, but to examine the challenges relating to the management of dual EQC-private insurance model, and provides recommendations for improvement and pre-disaster planning. It is important to understand that the findings reported in this paper are limited to the views of the research participants and based on the unique characteristics of the Canterbury earthquakes swarm, which was not anticipated by the insurance industry. The aftermaths of the Canterbury earthquakes has changed policy underwriting criteria for the country as a whole. The main recommendations for overcoming some of the identified challenges include the implementation of a simplified and streamlined approach to claims evaluation in the aftermath of a disaster. The streamlined assessment process offer a number of pre-determined settlement options that could helped to reduce the claim processing time, administrative costs and provide clearer information to policy holders. Simple and clearer policies wordings and uniform damage assessment and claim estimation methods are necessary among the insurance providers. Implementing good communication procedures between all parties involved, and providing a clear demarcation regarding the protection provided by EQC and private insurance companies were recommended. The implementation of these recommendations would help to improve clients' satisfaction.

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