Managed Retreat, Private Insurance Retreat, Public Insurance and the Connections Between Them

Prepared by: Ilan Noy

Organisation: Victoria University of Wellington

Email: ilan.noy@vuw.ac.nz

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Executive Summary

Adaptation to natural hazard risks, and to climate change, requires weighing trade-offs associated with every adaptation policy choice. Trade-offs can be described as a Trilemma of choosing between two out of three goals: Reducing inequities and hardship, incentivising risk reduction, and ensuring fiscal sustainability. Three main approaches dominate adaptation and align with these goals: Government investment, private adaptation, and risk finance and insurance. Any economic assessments of adaptation policy choices should quantify this Trilemma trade-offs; and any combinations of adaptation policies should be designed to minimize trade-offs and maximize synergies.

In this project, we analyse policy choices for two trilemmas facing policymakers in Aotearoa, and elsewhere. The first focuses on the 'insurance retreat' – the decision by private insurers to reduce or no longer offer insurance coverage for specific risks, usually for risks that are increasing because of climate change (e.g., flood risk) or because the risk is becoming better understood (e.g., liquefaction). The second trilemma we focus on is about the role of insurance – private and public – in 'managed retreat' – the decision to relocate communities and households away from areas that have become more risky (e.g., new slope instability) or where the risk is now better understood (e.g., flood risk, based on new flood mapping). We briefly outline the two, in turn.

For large-scale natural hazard disasters, governments have historically played a major role in providing this assistance, especially as comprehensive private disaster insurance coverage can rarely be sustained over time. In several countries, including Aotearoa New Zealand, publicly owned disaster insurance schemes were established as early as a hundred years ago. For risks that have been covered by private insurers, however, private insurance retreat is happening now more frequently in more places, and the need to devise sustainable public disaster insurance systems to replace retreating private ones is gaining policy attention. Useful lessons can be extracted from analysing the processes that have led to the establishment of existing public schemes. Using a narrative review, we describe the process of pubic insurance establishment and identify recurrent themes associated with this process, including the incentives involved, role of risk knowledge, government deliberations, legislative proposals, and associated changes in disaster mitigation policies. We analyse the main implications of these past experiences for current and future transitions to public insurance systems following private insurance retreat, and explore what is still missing in our knowledge about the performance of public insurance.

Managed retreat, a policy choice to move people and infrastructure permanently from a disaster-prone area, may in some cases be the best strategy to protect people and reduce long-term natural hazard risk. Considering the increasing need for managed retreats due to sea level rise and the increasing frequency and severity of extreme weather events, traditional funding and implementation modes for managed retreat, which mostly rely on government-sponsored buyouts, may not be sufficient. We review and discuss the roles of insurance in managed retreat - how insurance affects managed retreat incentives and feasibility, and how it can be designed to facilitate successful implementation and adequate funding of managed retreat programs. Insurance-related factors influence disaster exposure and relocation incentives, affecting the scale and the feasibility of managed retreats. Insurance mechanisms can be utilised for managed retreat funding, possibly covering not only damage-related compensation but also, through new insurance models, they could be used for funding managed retreat more comprehensively. In addition, insurance policies can be structured to help facilitate managed retreat. This could, for example, include designing insurance policies with buyout precommitment clauses, in which property owners pre-commit to future relocation should a damaging event occur.

Keywords

Insurance Retreat; Managed Retreat; The Adaptation Trilemma; Multi-Hazard; Supporting People and Policy Decisions; Climate Change; Insurance

Introduction

Adaptation to climate change, in human systems, is defined by the Intergovernmental Panel on Climate Change (IPCC) as "the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities." The same IPCC glossary also defines adaptation options: "The array of strategies and measures that are available and appropriate for addressing adaptation. They include a wide range of actions that can be categorised as structural, institutional, ecological or behavioural."

What is not defined is how policymakers can identify the various strategies and measures available, and how they can choose between these different options. It is clear that well-designed climate adaptation policies, matched with appropriate emission reduction policies, are necessary for building resilience, protecting communities, and sustaining economic stability in the long term, in the face of the growing challenges associated with climate change. The basic challenge facing policymakers when deciding between adaptation options is that successful climate adaptation requires the weighing of trade-offs between various social, economic and environmental objectives. These trade-offs can sometimes be difficult to conceptualise and consequently assess and quantify. It is that conceptualisation that we focus on here.

Our framework posits what we call the Climate Adaptation Trilemma (henceforth the Trilemma). Its structure is adopted from the International Monetary Trilemma (i.e., the Mundell-Fleming Trilemma – see, for example, Obstfeld et al., 2005). A trilemma defines three different objectives, and posits that only two of these objectives are achievable with any policy or combination of policies. Put differently, no policy combination can achieve all three objectives.

In this project, we analysed policy choices for two trilemmas facing policymakers in Aotearoa, and elsewhere. The first focuses on the 'insurance retreat' – the decision by private insurers to reduce or no longer offer insurance coverage for specific risks, usually for risks that are increasing because of climate change (e.g., flood risk) or because the risk is becoming better understood (e.g., liquefaction). The second trilemma we focus on is about the role of insurance – private and public – in 'managed retreat' – the decision to relocate communities and households away from areas that have become more risky (e.g., new slope instability) or where the risk is now better understood (e.g., flood risk, based on new flood mapping).

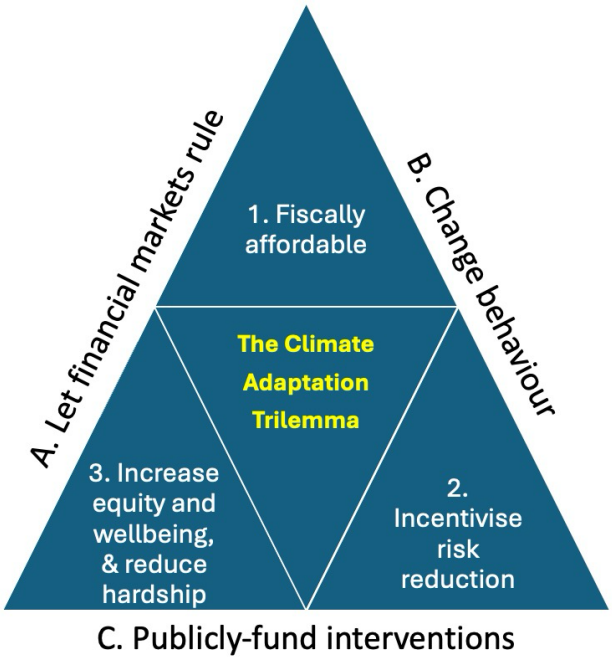
We analysed these policy choices using The Adaptation Trilemma we describe below, by reviewing the available literature written on these two topics, and by conducting to expert workshops, where we asked for advice and insights from a large and diverse groups of academics, policy-makers, researchers, and private sector leaders (in banking and insurance).

Methodology

Ultimately, with adaptation we would like to guarantee that peoples' lives are improved, given that natural hazard extremes are becoming more intense, more frequent, and more costly because of anthropogenic climate change and sea level rise, other ecosystem changes are also increasingly posing a challenge for coastal and forest communities, and exposure is increasing as people move to live in places where natural hazard risk is higher. When designing policies for achieving this overarching goal, we have three objectives that are widely considered as important to achieve:

1. We want policies to be fiscally affordable. The basic and non-ideological premise underlying that view is that taxes are almost always distortionary. So, it is always better, ceteris paribus, if we achieve our goals with fewer government resources.
2. We want to incentivize smart risk management, so that all the stakeholders involved 'do the right thing' and do not exacerbate risks, and when making choices, they consistently choose those that reduce risk.
3. We want to increase equity and reduce hardship, or at the very least not exacerbate existing inequities and hardships with our actions and increase personal wellbeing. Wellbeing is interpreted broadly here to encompass physical and mental health, community and cultural ties, and the environment communities have access to.

The Trilemma facing decision makers is that it is impossible to achieve all these three objectives with any adaptation policy choice (or possibly even with a mix of policies). No policy choice can be fiscally affordable, can incentivize risk reduction, and can enhance equity and wellbeing and reduce hardship. Any plausible policy choice will inevitably achieve only two of these three outcomes. Put differently, any choice will involve trade-offs and a compromise that will fail to fully achieve at least one these outcomes.



In any adaptation toolkit, there are three main tools or levers that can be employed:

A. Enabling risk finance and insurance markets that are mostly centred on the main finance-providing institutions (especially banks and mortgage lenders), the private insurance companies, and any public insurer that exists (it is quite common for extreme events to be insured by a government entity or with a government backstop; see Paudel, 2012).
B. Personal choice and private responsibility. All else being equal, we prefer systems and tools that empower and incentivise individuals and households to 'make the right choice' for their own wellbeing and benefit.
C. Publicly-funded (and often mandated) climate adaptation programmes focusing on accommodation, protection, or relocation out of harm's way.

The structure of the Trilemma framework can easily be seen in the diagram above and is essentially composed of these challenges:

If we choose to emphasise tool C (publicly-funded programmes), we will not achieve outcome 1 (fiscal affordability). Public accommodation, protection, or relocation programmes are often very costly.

If we choose to emphasise tool A (risk finance and insurance), we are unlikely to be able to achieve outcome 2 (incentivize risk management), as financing systems, and especially limited-liability insurance, dull the incentives for households to reduce their risk.

If we choose to emphasise tool B (personal responsibility), we cannot achieve outcome 3 (increase wellbeing and reduce hardship), as the risks we face are not distributed evenly and have catastrophic implications for some households (often the least prepared for them).

Ultimately, we will want to design systems that solve the two problems we focus on – finding a solution to private insurance retreat, and the optimizing the role of insurance in managed retreat. The constraint we face is that these systems will combine tools that can only imperfectly achieves our desired outcomes (1-3). Every single point within the Adaptation Trilemma triangle involves a consideration of the trade-offs between these three outcomes, and these combinations of tools.

Results and discussion

Transition from Private to Public Insurance After Insurance Retreat

In the first project deliverable (published as Noy and Uher, 2025), we described the steps in the often-occurring transition from a disaster response system that relies on a combination of private insurance and state assistance to one that implements a Public Disaster Insurance scheme (PDI). Ultimately, the transition process to PDI involves a continuous and continuing set of decisions. As the failures and deficiencies of the existing systems are exposed, the impetus for change arises, and this in turn leads to a decision to institute a PDI.

The process then requires a whole menu of decisions that are shaped by considerations of the incentives they create, and the political realities in which they are being weighed. This process can take from months to decades and requires periodic re-assessment even once a PDI has been implemented. The strengths and weaknesses of a PDI scheme sometimes become apparent only over time or especially when the new system is tested by a catastrophic event (as was the case after the Canterbury earthquakes of 2010-2011 in Aotearoa New Zealand).

Importantly, evaluation approaches for analysing the transition process or the consequent performance of the scheme are made challenging by the fact that we often lack appropriate metrics that can help us address the question of whether the transition process and the resulting insurance scheme have been successful. The evaluation of different private-to-public disaster insurance transition approaches would benefit from a more robust evaluation framework identifying the key goals that such a scheme aims to achieve. However, the development of such a framework may be challenging, since there may be multiple goals and these may conflict with each other. A real quantification of the Trilemma trade-offs, in this context, is still impossible as there are many dimensions of these considerations that are not yet well understood.

Some of the topics that require analysis and need to be resolved, once a decision to set up PDI has been taken, are:

- Is risk assessment required to determine eligibility for the public scheme?
- How can risk assessment be completed accurately and on time, and by whom?
- Should premiums be set so that they reflect the true risk (risk-based pricing), or should property owners be charged a flat fee, or somewhere in between?
- Should affordability concerns or risk-reduction concerns guide or even dominate pricing decisions?
- How can the PDI minimize the risk of moral hazard and adverse selection?
- How can the PDI overcome other issues related to suboptimal decision making (i.e. predictable irrationality)?
- How can the scheme be set up to ensure that it has sufficient funds to cover large-scale disasters?
- What happens if the system is not adequately funded when a costly event happens?
- How can the PDI ensure equitable access to affordable insurance?
- Should the PDI try to address geographic (or other) disparities in risk exposure across different regions, groups, communities and peoples?
- How can the PDI be set up so it can adapt to changing risks, especially as anthropogenic climate change is increasing the frequency and severity of some natural hazards?
- How can the scheme maintain social and political support? How can the scheme remain transparent in how it operates and how claims are processed so that social acceptance does not wane?
- How can the PDI support an efficient claims settlement process that facilitates a rapid response that assists long-term recovery?
- How can the PDI ensure that recovery does not lead to re-establishment of already realised risks and instead promotes build-back-better outcomes?

As is clear from this long list of open questions, designing a PDI scheme that responds successfully to all these challenges is, well, challenging. The effort to do so is often stymied by the political and electoral constraints inherent in democratic politics, but more importantly for our purpose, by a substantial lack of knowledge and the evidence-base required to answer to these questions.

Private and Public Insurance in Managed Retreat

As communities in highly exposed areas face mounting risks, the need for managed retreat grows, and traditional funding and implementation models for managed retreat which mostly rely on government-sponsored buyouts may no longer be sufficient. New and innovative ways of funding and implementing managed retreat need to be developed, and insurance-based solutions have the potential to play a constructive role in filling these financing gaps.

Insurance is relevant for managed retreat at multiple stages of the retreat process. Insurance-related factors shape the pre-retreat environment in terms of disaster exposure, which affects the need for managed retreat. Importantly, subsidized insurance, which allows property owners to avoid paying the full cost of living in highly exposed areas, incentivises people to occupy these areas, reduces their relocation willingness, and therefore reduces the feasibility of voluntary retreats. Unfortunately, this makes insurance 'complicit' in sustaining these excessive exposures to risk. However, risk modelling by insurers can be instrumental in identifying properties for retreat, though their short-term horizons often dis-incentivizes private insurers from identifying future risks, and especially risk that may materialize maybe only decades from now.

As regards managed retreat funding, traditional disaster insurance arrangements can be employed so that insurance payouts for property damage are used as part of the compensation offered for post-disaster retreats, reducing the amount of funding required from governments or other actors. Insurance schemes, managed retreat schemes, and the wider regulatory environment in which these schemes function can be crafted so that such an option is encouraged.

Importantly, novel insurance arrangements could be designed to fund managed retreat costs more comprehensively, including the costs not related to property damages. This type of comprehensive managed retreat funding through insurance represents a shift from how insurance traditionally functions and entails taking on complex considerations as regards the design of such a scheme. Importantly, it needs to be specified who will contribute to the funding scheme and to what degree.

The option of implementing a managed retreat levy on insurance policies needs to be carefully considered. Various levy designs will have different implications and trade-offs for fairness, effectiveness, equity, administrative complexity, insurance affordability, and as a tool to incentivise risk reduction. How the levy is used (for which purposes) is also important in determining the incentives it creates. Other important considerations associated with a comprehensive managed retreat funding scheme may concern whether the scheme is operated by the public or private insurers, eligibility criteria or levels of compulsion.

In sum, the involvement of insurance mechanisms in managed retreat offers both opportunities and challenges for enhancing disaster risk reduction and climate adaptation outcomes. Insurance could provide a structured and pre-financed means of funding property acquisition, relocation, and even broader retreat-related costs, and help facilitate more predictable and timelier implementation. However, such schemes need to be crafted carefully, so that their implementation does not create affordability barriers and exacerbate existing social inequalities. Ultimately, leveraging insurance for funding and implementing managed retreat will require the coordination between insurers, governments, and communities to align financial incentives with equitable and sustainable retreat outcomes.

Conclusions

The two topics analysed in this project involve complex economic considerations about the trade-offs between fiscal sustainability and the maintenance of wellbeing standards in communities exposed to natural hazard risks. More importantly, these considerations are also shaped by ethical and moral considerations of equity, equality, and justice, and political and electoral constraints. The project, as such, does not offer any *answers* to these complicated Trilemma trade-offs, as no such answer exists. Ultimately, any policy decision will ideally involve and transparent and thorough evaluations of these trade-offs, and will quantify these trade-offs if these quantifications are feasible. In many cases, they are, and we hope that our analysis pointed in some of the directions that these quantifications can take.

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