MEASURING THE IMPACT OF INSURANCE ON NZ LANDSLIP, STORM AND FLOOD RECOVERY USING NIGHTLIGHTS

An executive summary of Motu Working Paper 19-19

Sally Owen, Ilan Noy, Jacob Pástor Paz & David Fleming

Motu Economic and Public Policy Research
ilan.noy@vuw.ac.nz

SUMMARY HAIKU

Extremes will worsen.
Recent history shows us
Damage can be fixed.

THE DEEP SOUTH | Te Kōmata o Te Tonga | National SCIENCE Challenges

INTRODUCTION

Climate change is predicted to make extreme weather events worse and more frequent in many places around the world. In New Zealand, the Earthquake Commission (EQC) was created to provide insurance for earthquakes. In some circumstances, however, homeowners affected by extreme weather events can also make claims to the EQC – for landslip, storm or flood events. In this paper, we explore the impact of this public natural hazard insurance on community recovery from weather-related events.

METHODOLOGY

We use a novel proxy for short-term economic recovery: satellite imagery of average monthly night-time radiance. By matching EQC claim payments, Land Information New Zealand property information, socio-economic data from the Statistics NZ Census, and night-light data from the USA's National Oceanic and Atmospheric Administration, we can connect changes in night-light to households. We construct our sample of exposed properties using rainfall data from NIWA.

Using this linked data, we compare properties which were exposed to damaging extreme weather events but did not make EQC claims, with those that did. We also control for neighbourhood effects using census data pertaining to household income and owner-occupier status.

We focus on three weather events which were the three most damaging recent events to the private insurance industry, according to Insurance Council of New Zealand data. We assume that all households that experienced significant insured damage submitted claims to the EQC; as residential insurance penetration is very high, excesses are very low, and premiums are not risk-based.

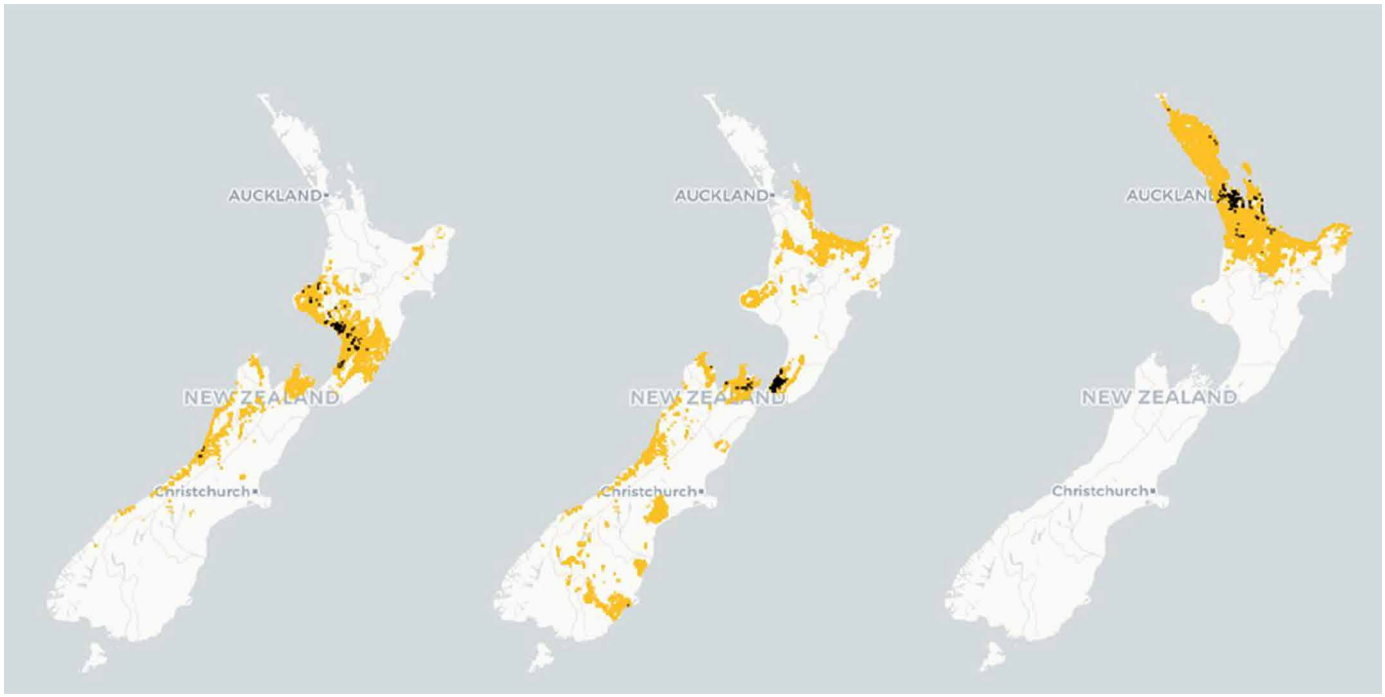
RESULTS

Figure 1 presents the location of properties exposed to the three weather events analysed in this paper. From left, these are: event one - the June 2015 storm (affecting ~150,000 homes), event two -the November 2016 flooding (affecting ~300,000 homes), and event three – the March 2017 storm (affecting ~750,000 homes). Events one and three were characterised by a short period of extreme rain. Event two was associated with heavy rainfall (but not as extreme), lasting for a few days during

This paper was prepared for the Deep South National Science Challenge's Impacts and Implications Programme with funding from the Ministry of Business, Innovation and Employment

a particularly rainy month. Yellow points represent all those properties exposed with higher than the threshold precipitation. The black points represent those properties which made EQC claims following the event.

Figure 1: Locations of exposed properties and claimants



We estimate regression specifications with the dependent variable being community recovery, measured by night- time radiance, and the explanatory variables including a proxy for the experienced damage and insurance variables (claims filed, claimed closed, and claims paid). We find that households which experienced damage and were paid in a timely manner by the EQC did not fare any worse, on average, than households that suffered no damage; in some cases they even recovered better. This finding suggests that EQC landslip, storm, and flood insurance is effective in protecting households from the negative impacts of extreme weather events.

CONCLUSION

Given the high penetration rate of insurance in New Zealand (likely around 98%), it is impossible to estimate what would have happened had properties been uninsured (there are very few examples of such properties). From a policy perspective, however, this may become an issue of some concern as climate change may end up changing the risk profile in some locations (see part 3 of this project). Currently, EQC insurance is conditional on the purchase of a private insurance policy. A private insurance withdrawal from high risk locations may lead to an increase in the number of publicly uninsured properties. Our evidence suggests that these properties will find it more difficult to recover, but a better understanding of the implications of such insurance retreat are still necessary before policy levers can be designed to deal with these changes.

FOR MORE NFORMATION ON THIS PAPER GO TO
HTTP://MOTU.NZ OR CALL US ON 04 939 4250