Regressivity in Public Natural Hazard Insurance: a Quantitative Analysis of the New Zealand Case

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remedied with modifications to the programs' structure, and point to how other insurance schemes internationally are likely to also be regressive.

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4. Kunreuther (2015) suggests that to address issues of equity and fairness, homeowners who cannot afford insurance could be given vouchers tied to loans for investing in loss reduction measures, but this kind of voucher program is yet to be implemented anywhere.

5. The three highest cost earthquakes in the Canterbury sequence are among the top 10 costliest earthquakes for 1980–2015 (by insured losses). Relative to damages, these events were at least twice as well insured as any of the others on the list.

6. *For a 'semi-random' sample of 8000 houses for which we have complete data on all houses (those homes that are in the Residential Red Zone), more than 98% of homes were insured.*

and Sutton (1992).

11. Wier et al. (2005), and Poterba (1991b).

12. In an ‘actuarially fair’ program, the two should be roughly equal.

13. Since the homeowners’ policies in NZ are always ‘all perils’, and there are few disclosure requirments regarding premium prices, we do not know what is the earthquake-peril component of the overall premium that homeowners pay to their private insurers.

14. Part of the motivation for this was the slow rates of repair following the 1931

17. On September 4th, 2010, Canterbury was hit by a magnitude 7.1 earthquake. This was followed by a series of aftershocks, the most devastating of which was a 6.3 earthquake on February 22nd, 2011, which took 185 lives.

18. A meshblock is the smallest unit for which Statistics New Zealand collects data, with boundaries related to population. Censuses are conducted every 5 years. The 2011 census was postponed to 2013 because of the earthquakes.

19. The top income is censored at $100,000. In 2006, there were 0.03% of meshblocks where the Med HH Income top censored at $100,000, and in 2001 0.01%.

level (rather than summing all claims for a single property). The results were very similar, and are available upon request.

22. we should note here that quantile coefficients tell us about effects on the distribution, not on individuals.

23. One possible reason for the differences across countries is the degree of implicit insurance, in the form of post-disaster assistance, that citizens expect their government to provide (often based on past experiences). See for example Goeschl and Managi (2018).

24. Whether or not it is desirable is outside of the scope of this paper, as answer this question requires also an examination of various unintended

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