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Turkish Compulsory Earthquake Insurance and "Istanbul Earthquake"

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The city of Istanbul will likely experience substantial direct and indirect losses as a result of a future large (M=7+) earthquake with an annual probability of occurrence of about 2%. This paper dwells on the expected building losses in terms of probable maximum and average annualized losses and discusses the results from the perspective of the compulsory earthquake insurance scheme operational in the country.

The TCIP system is essentially designed to operate in Turkey with sufficient penetration to enable the accumulation of funds in the pool. Today, with only 20% national penetration, and about approximately one-half of all policies in highly earthquake prone areas (one-third in Istanbul) the system exhibits signs of adverse selection, inadequate premium structure and insufficient funding.

Our findings indicate that the national compulsory earthquake insurance pool in Turkey will face difficulties in covering incurring building losses in Istanbul in the occurrence of a large earthquake. The annualized earthquake losses in Istanbul are between $140-300 million. Even if we assume that the deductible is raised to 15%, the earthquake losses that need to be paid after a large earthquake in Istanbul will be at about $2.5 Billion, somewhat above the current capacity of the TCIP. Thus, a modification to the system for the insured in Istanbul (or Marmara region) is necessary. This may mean an increase in the premia and deductible rates, purchase of larger re-insurance covers and development of a claim processing system. Also, to avoid adverse selection, the penetration rates elsewhere in Turkey need to be increased substantially.

A better model would be introduction of parametric insurance for Istanbul. By such a model the losses will not be indemnified, however will be directly calculated on the basis of indexed ground motion levels and damages. The immediate improvement of a parametric insurance model over the existing one will be the elimination of the claim processing period, which would certainly be a major difficulty for the expected low-frequency/high intensity loss case of Istanbul.