



REVISION of SEISMIC HAZARD MAPS IN TURKEY and ITS EFFECTS ON INSURANCE RATES

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Assessment of earthquake insurance rates is based on three major components: (a) probabilistic seismic hazard assessment, (b) estimation of potential damage to buildings, and (c) adjustment of risk premium rates to actuarial considerations. The first component addresses the intrinsic uncertainty in earthquakes and quantifies the ground-motion intensity measures for certain exceedance probabilities. The outputs of this component are inputs to the other components in the entire process. Thus, a reliable seismic hazard assessment is essential for the rationale calculation of insurance rates. Notwithstanding the importance of seismic hazard assessment in insurance rate assessment, the first solid endeavor for the preparation of nationwide seismic hazard map dates back to the beginning of 90s. Gülkan et al. (1993) published the probabilistic seismic hazard map for Turkey that, at the same time, forms the layout of current Turkish seismic zonation map. The Turkish seismic zonation map was used in the insurance rate forecasts for many years in the absence of more detailed and up-to-date studies. Particularly after the 1999 Marmara earthquakes in Turkey, various attempts were made for the updated versions of national seismic hazard map (e.g., Bommer et al., 2002; Demircioğlu, 2010). However, the impact of these efforts was limited as they were generally tailored to serve for the needs of a specific project. Needless to say, from the perspective of the Turkish Catastrophe Insurance Pool (TCIP), the delay in the updated Turkish seismic hazard map with a nationwide consensus causes difficulties in developing national models for earthquake insurance premiums. To this end, TCIP and the Disaster and Emergency Management Presidency of Turkey (AFAD) launched the Revision of National Seismic Hazard Maps project under a consortium established from the universities (Boğaziçi University, Çukurova University, Middle East Technical University and Sakarya University) and state agencies (AFAD and General Directorate of Mineral Research and Exploration). The project not only aims for responding the needs of TCIP for updating the earthquake insurance models but also will establish the basis of code-based design spectrum in the Turkish earthquake code. This paper summarizes the current progress in the aforementioned project and its end products that will be of use for the updated modeling of earthquake risk premiums in Turkey.

REFERENCES

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