

## SUMMARY OF MASTER'S DISSERTATION

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Title			
Risk Management for Residential Buildings in View of Disaster Prevention			
Abstract			
<p>This study aims at demonstrating problems in risk management of residential buildings, through the cases of risk control in Japan and risk finance in the United States. For such purpose, the following two types of research were conducted:</p> <p>&lt;I. Risk Control&gt; With the aim of analyzing problems related to earthquake resistance improvement or reconstruction of residential buildings in Japan, two macro simulation models were developed using Microsoft Excel, and applied for analysis. Moreover, the obstacles of anti-seismic reinforcement through improvement and reconstruction were analyzed based on interviews with the Tokyo Metropolitan Government, and also the survey conducted by the government. The findings in this research are as follows:</p> <ol style="list-style-type: none"> <li>1) Currently, anti-seismic reinforcement is implemented by focusing on quake-proof rate. The government goal is, however, unlikely to be achieved in time as targeted (90% in 2015, and 95% in 2020) at the rate of progress so far, with the delay of 12 years and 18 years respectively.</li> <li>2) By implementing combined reinforcement of anti-seismic improvement and insulating improvement, it is likely that all the households are expected to complete quake-proof and insulated houses in 2035. Though this measure would meet the consumers' needs and the government's housing policy, there is only a small chance it will be implemented due to fiscal difficulties.</li> <li>3) If continuing anti-seismic reinforcement focused on quake-proof rate, of all the obstacles of anti-seismic reinforcement, it is most effective to remove the biggest cause "Recognized necessity of anti-seismic reinforcement" in order to accelerate the achievement of government's quake-proof rate target, achieving 90% and 95% earlier by 12 years and 8 years respectively.</li> </ol> <p>&lt;II. Risk Finance&gt; With the aim of analyzing problems related to hurricane-disaster prevention management in the US, a Net Present Value (NPV) calculation model, developed using Microsoft Excel, was applied to assess whether if the investment by each of the three major stakeholders (insured house owner, government, and insurance company) for hurricane disaster-prevention is economical. The basic scheme of this model is that an insurance company covers the losses incurred to an insured house owner due to a hurricane disaster to the extent of its liability; the government covers losses exceeding the liability of the insurance company up to the limit which the government sets; and a house owner pays for losses exceeding the liability of the insurance company and the maximum amount the government covers. The findings in this research are as follows:</p> <p>In a scenario set in this research where both the government and house owner, in addition to the insurance company, owe the loss, the optimized values for the decision variables were obtained to maximize the total NPV. In the scenario set in this research, the maximum amount of the insurance company's coverage was shown to be \$930 when the maximum rate of the government's coverage was 50%. The maximum rate of the government's coverage was shown to be 99% when the maximum amount of the insurance company's coverage was \$1140. The coverage limit of the three stakeholders was thereby visualized.</p>			
Key Word(5 words)			
Disaster prevention, Residential building, Risk management, Anti-seismic, Net Present Value			