

Hedonic pricing approach to estimate flood damage in Tokyo Metropolitan Area

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Abstract

Future climate change is likely to bring increased frequency of natural disaster including flooding events. Thus, much attention has been paid to adaptation policy against flooding. From the cost benefit analysis on adaptation policy, effective policy, estimation of the benefit of reduction in the flood damage is important. However, previous studies suffer from the concern on the omitted variable bias in estimating flood damage.

In this paper, we estimate Hedonic land price model by employing two step procedures to correct the bias on flood hazard and we find that the previous studies are likely to underestimate the perceived flood damage. In addition, the flood risk is estimated to lower the land price by 17.1% which reduces 220,770 yen/m² (approximately 2,597 US\$) on average and the perceived flood damage is estimated to be 7,483,723 yen/m² (approximately 88,044 US\$/m²). This estimate is fairly larger than the estimate by Tokyo metropolitan government, which indicates that the indirect damage cost is likely to be much higher than the direct damage cost (cost estimation based on the physical damage).

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