DISASTER RISKS, ECONOMIC GROWTH AND DYNAMIC MITIGATION POLICY

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Large-scaled natural disasters destroy a large number of physical assets and capital existent in society. The higher society is developed, the more severe it is deprived of its constituents and the longer the restoration time takes, which results in deceleration of economic growth.

Restoration is regarded, in general, as a condition where physical and human capital, industrial output level, residential environment, mentality of sufferers, and so on, are recovered to a state where the economy had been just before the occurrence of the disaster. However, taking ongoing growth of the economy into account, economic losses consist essentially not only of reduction of consumption level during the restoration period, but loss of opportunity for economic growth. Suppose that economic losses by disaster are evaluated by integrating inter-temporally the decrease of welfare compared to an imaginary path where the disaster had not occurred. Even though the society is "restored", the realized path of the economy is still located under the latter, namely "the level effect" remains perpetually. In other words, the growth path of the economy once damaged is incapable of catching up with the path without disaster as far as the economy continues to develop. Technologies that mitigate catastrophic disaster risks should be effectively applied as infrastructure in society. This study claims that the disaster mitigation facility, as well as the productive capital, should be sequentially invested, being synchronized with economic growth, which can be regarded as dynamic strategy of disaster mitigation investment. In this paper, an endogenous economic growth model is formulated to investigate a dynamic strategy for controlling the level effect and the optimal allocation of investment between productive capital and disaster mitigation facility.