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Title	The impact of natural disaster on households' decision in Vietnam : Analysis of food consumption and migration decision [an abstract of dissertation and a summary of dissertation review]
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学 位 論 文 題 名

The impact of natural disaster on households' decision in Vietnam

-Analysis of food consumption and migration decision-

（ベトナムにおける自然災害が世帯の意思決定に与える影響

－食料消費と労働移動に関する分析－）

This thesis comprises 64 pages, 5 figures, 17 tables, and five chapters, with two reference literatures.

Due to its geographical characteristics, a long seaside by the Pacific Ocean, Vietnam is prone to natural disasters and most vulnerable to climate change. Natural disaster prevention, response, and mitigation have become more important and indispensable than ever in the country. This study examines the impact of natural disasters on households' decisions by analyzing changes in food consumption patterns and labor migration decisions, and attempts to offer additional information to policymakers on households' response and mitigation strategies. Natural disasters occur more often and widely because of the El Niño phenomenon occurred in 2016.

The occurrence of natural disasters in Vietnam is described in Chapter 1. Chapter 2 discusses the national and household losses due to natural disasters in Vietnam, and the household response is analyzed using household-level data from the Vietnam Access to Resources Household Survey (VARHS) for 2012–2014 and 2014–2016. Reduction in consumption is found as the most frequently chosen reaction to natural disasters.

The impact of natural disasters on children is analyzed in Chapter 3 based on the food allocation decision called adult goods approach. Adult goods are the goods consumed by adults only such as alcoholic beverages, coffee, and eating outside, and assumed to be in a trade-off relationship between expenditure on children. Assuming that adult consumers in households reduce their consumption of adult goods once they have a child, and if the degree of reduction is greater for boys, households favor boys. Weather-related shocks generally cause a loss in income; therefore, households alter expenditure

patterns. Analyzing this change in expenditure patterns with adult goods approach reveals important information on the impact on human capital accumulation, such as child health and education. This study investigates the impact of weather shock on child-gendered allocation.

The results indicate that boys are preferred in normal situations, but they become balanced in emergencies. This is because total consumption is reduced, and affected households must manage the emergency situation, and they cannot look further into children's future, such as education or health conditions. Therefore, even if the allocation of food consumption is balanced, the food consumption itself is reduced. Chapter 3 concludes that a balanced allocation of consumption between boys and girls is not a preferred outcome in an emergency.

Natural disastrous events result in different extents of loss to affected households. In this situation, reducing consumption is generally the most frequently chosen option for the first reaction. However, to smoothen their consumption over the period, especially on the necessity goods consumption, households need to find additional income sources, and labor migration is a popular choice among the coping responses to climate-related disasters. This study offers additional evidence on the relationship between natural disasters and migration choice, and explicitly differentiates the role of remittances from household members and non-members called private transfers.

The impact of natural disasters on household decisions to send new or more migrants is analyzed in Chapter 4. The VARHS data from 2012–2014 and 2014–2016, when El Niño hit Vietnam, were employed. This study found that El Niño compelled households to send more or new migrants. Furthermore, a household's connection with the migrant society and the financial ability to cover migration costs significantly affect this decision. However, poor households are constrained by financial resources, and thus, face difficulty sending migrants. This may expand the income gap between poor households and those who can send migrants.

Chapter 5 presents the conclusions. In an emergency, children or poor households are more severely affected by natural disasters; thus, policymakers should consider the vulnerable population when considering coping measures in the face of natural disasters in Vietnam. Furthermore, developing strategies and plans mitigating natural disaster risks should focus on not only the instant aftermath, but also in longer perspectives.

Natural disasters in Vietnam are expected to increase their frequency and scale, thus, they may harm the development process of the economy. This research contributes to the policymaking process mitigating those negative impacts.

Therefore, we acknowledge that Huynh Thi Kim Uyen is qualified to be granted the Degree of Doctor of Philosophy in Food Resources from Hokkaido University.