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## 学 位 論 文 内 容 の 要 旨

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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—)

Due to its geographical characteristics—a long seaside by the Pacific Ocean—Vietnam is prone to natural disasters and most vulnerable to climate change. Thus, 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 migration decisions and attempts to offer additional information to policymakers on households' response and mitigation strategies. Furthermore, natural disasters occur more often and widely because of the El Niño phenomenon that 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 national response using household-level data from the Vietnam Access to Resources Household Survey (VARHS) for 2012–2014 and 2014–2016. Reduction in consumption is 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 the adult goods approach. Adult goods are goods consumed by adults only, such as alcoholic beverages, tobacco, adult clothes, entertainment, and gambling, assumed to be in a trade-off relationship between child consumption. 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 reveals important information on the impact on human capital accumulation, such as child health and education.

This study investigates the demand for adult goods in normal and emergency situations by constructing a household panel of beer and rice wine consumption. It investigates the impact of weather shock on gendered allocation by applying ordinary least square regressions with fixed effects,

representing the unobserved factors affecting household consumption patterns, such as specific preferences or local conditions.

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. 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 consumption situation is reduced. Moreover, 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 the necessity consumption, households need to find additional income sources, and 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. It 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 in this study. Natural disasters in Vietnam in 2014 were seasonal. However, under the extreme El Niño phenomena in 2016, the damage caused by disasters such as droughts and salinity intrusion became widespread and more severe.

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. It was found that households that received remittances from members in the previous period were more likely to send more migrants in the following period when El Niño occurred. Regarding the connection to migrant society, private transfers also provided financial support for migration. 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. Therefore, it is important to expand working opportunities and education as ex-ante risk-coping measures, especially for the poor.

Chapter 5 presents the conclusions of this study. 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 for natural disaster prevention should focus on the instant aftermath and longer perspectives.