The contribution of diversified farming system to household farm income: Evidence from rural households in Vietnam

M.Sc. Thesis
"Sustainable International Agriculture"
Specialization in "International Agribusiness and Rural Development Economics"
Faculty of Agricultural Sciences
Georg-August-University of Göttingen, Germany

By Xuan Lam, DUONG
Matriculation number: 21168870

Supervisors:
1. Prof. Dr. M. Qaim
2. Dr. T. Gödecke

Accomplished at the
Department of Agricultural Economics and Rural Development
Faculty of Agricultural Sciences
Georg-August-Universität Göttingen
27. February 2014

STATUTORY DECLARATION

I herewith declare that I composed my thesis submitted independently without having used any other sources or means than stated therein.

Date: 27th February, 2014   Signature:

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

CIP	International Potato Center
DFS	Diversified Farming Systems
IFAD	International Fund for Agricultural Development
GSO	General Statistics Office (Vietnam)
FAO	Food and Agriculture Organization (United Nations)
SID	Simpson Diversity Index
SWDI	Shannon-Weiner Diversity Index
SEI	Shannon Equitability Index
OECD	Organization for Economic Co-operation and Development
VND	Vietnamese Dong (Vietnamese currency)

ABSTRACT

Farm diversification, income and crop diversification have been identified as essential strategies for sustaining household income and reducing rural poverty. The contribution of diversified farming systems was analyzed based on empirical data collected from two rural areas in northern uplands and north central coast of Vietnam under the support of the Food, Feed, Fiber and Fuel for a Greener Future (4FGF) project. The aim of the paper is to examine the determinants of farm income diversification and investigate the impact of diversification on household farm income of rural household. The determinants of income diversification were examined using the Simpson Index of Diversity, the Shannon Equitability Index, and number of farm income sources. Our results suggested that the determinants of crop income diversification were gender and ethnicity of the household heads, number of crop grown and regional dummy for northern uplands area. The determinants of livestock diversification were age of household head, ethnicity of the household head, number of livestock holding, access to agronomic-related training and regional dummy. From the overall mix of farm income diversification, the education and ethnicity background of household heads together with some specific assets such as land, crops, and livestock owning and regional dummy are the main determinants of income diversity in sample area. We also find that diversification has negative effect on household farm income per capita. Furthermore, those households who residing in northern uplands region and possessing respective specified assets for agriculture production is likely to contribute to overall farm income per capita. In order to promote diversified farming systems and income diversification targeting rural household, one of the first priorities is to improve capacity and enhance human resource management in agricultural production, especially taking into account the role of women and ethnic minority groups on different income generating opportunities.

ACKNOWLEDGEMENT

Table of Contents

CHAPTER ONE: INTRODUCTION

1.1 Problem statement

Vietnam has been one of the success stories in the attack on poverty and successfully concretized Millennium Development Goals. The poverty rate has recently dropped from 58.1 percent in 1993 to 14.23 percent in 2010 (UNDP, 2012). Rural households in Vietnam depend largely on agriculture as the main source of income. However, income from agriculture has a tendency to become unstable due to the increasing environmental risks and the economic risks incurred in accordance with Vietnam's rapid development. Therefore, achieving secure household income is generally assumed to be a fundamental step out of poverty and food insecurity. To achieve a secure income, diversifying livelihood and income is considered the most important strategy.

There have been numerous agricultural economics literatures on diversification, particularly focus on issue of income diversification in the context of economic growth and poverty. It has been identified that the increasing in returns of productive factors or reducing the risk of agricultural activities were the main reasons to diversify farm activities. DEJANVRY *et al.* (1991) showed that income diversification is not only positively correlated with wealth but also with increased ability to cope with shocks and diversification is a strategy rural household insuring themselves against the occurrence of such shocks. ERSADO (2003) conducted a study in Zimbabwe and found that in rural areas, richer households had more diversified income sources, while in urban areas the reverse was true. This is coincide with studies conducted by REARDON *et al.* (1998); ABDULAI and CROLEREES (2001) who co-revealed evidences that poorer households have fewer opportunities in non-cropping activities such as livestock rearing and non-farm work, and hence less diversified incomes. They also indicated that households with educated heads are more likely to participate in the non-farm sector than those with illiterate heads. Targeting to evaluate the role of land on income diversification and poverty reduction in rural Kenya, KARUGIA (2006) discovered that poorer households tend to depend more heavily on food-crop production and seasonal wage labor activities

9

for their incomes and are therefore, likely to be vulnerable in face of personal and covariate shocks such as droughts. ELLIS (2000) observed a linear negative relationship between non-farm income share and either total household income or landholding in Asia and Latin America. A linear positive relationship, conversely found in rural Africa where livestock and human capital are the assets that separate the rural better-off from the rural poor. A U-curve relationship was found where the nonfarm income share is relatively high for small farms and poor households.

In Vietnam, MINOT *et al.* (2006) examined the trend of income diversification and poverty in northern upland of Vietnam. They concluded that income diversification including crop diversification has increased over time. Poorer household are more diversified in crop production than richer ones whereas rural households are more diversified than urban counterparts. This contradicts to a study by BABATUNDE and QAIM (2009) which indicated that richer households tend to be more diversified. Using the same dataset with MINOT *et al.* (2006), VAN DE VALLE *et al.* (2004) examined the role of the participation in rural nonfarm market economy on the poverty and found that it would not be the route out of poverty for every household. They argued that education, ethnic minority and geographical characteristics were concurrently influencing on the consumption growth and level of diversification. Some other factors have opposite effects such as household size is positive for diversification but negative for welfare, land size has positive impact on the welfare but negative on diversification. PHUNG and WAIBEL (2009) analyzed the relationship between the allocation of labor and land, the number of crops grown and income sources of rural household in Vietnam and different types of shocks and risks. The results show that the households diversify their portfolio into different income generating activities in order to cope with shocks. Agriculture, economic shocks and risks are the main factors to explain the risk-coping strategies and the risk management of the households. The number of crops grown and the number of income sources from the households experienced with shocks are higher than others.

Diversified farming systems (DFS) is defined as agricultural production systems that integrate agro-biodiversity at multiple temporal and spatial scales (KREMEN *et al.* 2012). This farming system includes poly-culture, integration of livestock or fish with crops (mixed cropping systems), and rotation of crops or livestock over time, including