Farmers' Perspectives on Risks and Social Capital in the Mekong Delta

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From Rice to Shrimp

By

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

FOREWORD

Dr. Ngô's book *Famers' Perspectives on Risks and Social Capital in the Mekong Delta: From Rice to Shrimp* makes an important contribution to economic anthropology and economic development. The work is based on the author's long-term fieldwork in two thriving shrimp farming communities, one in Long An and the other in Cà Mau in the Mekong Delta of Vietnam. Combining qualitative and quantitative analyses, the study sheds light on Mekong Delta farmers' strategy of diversifying and mitigating risks and the role of social networks or social capital in this strategy.

Dr. Ngô's book is based on her doctoral dissertation at Vietnam National University in Hồ Chí Minh City, which was unanimously rated "outstanding" by the members of her thesis defense committee. In my opinion, it meets the high academic standards of doctoral dissertations at the world's leading universities. The book *Famers' Perspectives on Risks and Social Capital in the Mekong Delta: From Rice to Shrimp* is an indispensable book for researchers interested in Vietnamese farmers and agriculture, in particular, and economic development in developing countries, in general.

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Last but not least, my thanks to my family for understanding, sharing, and accompanying me on the paths of the field and throughout the process of completing the project.

There are certainly many issues related to the topic of the study that this book has not covered. I look forward to receiving comments from readers. Please send all comments to the author at the following address:

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INTRODUCTION

Over the past few decades, economic restructuring in agriculture has become a prominent phenomenon in the Mekong River Delta, in particular, and Vietnam, in general. Mekong River Delta farmers often change their livelihoods to match the rhythm of market demand fluctuations. However, along with strong shifts in livelihoods with the market come refrains of "planting, chopping," and "winning crops, falling prices." Cyclical changes in the farmers' mode of living have not ended.

The process of agricultural economic restructuring has taken place according to many models of transition, from one crop to another, from one kind of livestock to another, or from crop to livestock and vice versa. Among the models of economic restructuring in the Mekong River Delta, the shift from low-yield rice cultivation to commercial shrimp farming has taken place on a large scale in recent years. This activity has brought many changes in the economic, social, and ecological aspects of the delta region. Through studying a typical shrimp farmer community within the whole picture of commercial production in the Mekong River Delta, from the ethnological/anthropological perspective of economic behavior and social relations, the author wants to discover the nature of farmers' economic behavior. Specifically, the author examines *farmers' quick response to market-based production*, *the characteristics of their community's social relationships*, and *their role in the context of world economic integration* as they participate in risky commercial production. Accordingly, economic behavior and social factors will be placed in an interactive relationship.

Following the approach to risk and social capital, this research provides an analytical, detailed description of an emerging means of livelihood as well as historical, economic, and socio-cultural aspects of the farming community in the context of spatial comparison. The theoretical contribution of the research is to provide concrete evidence at the micro-level, which supplements and conducts a dialogue with the theory of risk and social capital in the social sciences. In terms of practical significance, in the analysis process, the study identifies problems for agricultural activities in many aspects, especially the environmental and policy issues in the Mekong River Delta in particular and in Vietnam in general.

As part of this research on shrimp farming, social relations, and the social capital of Vietnamese farmers in the Mekong River Delta, the author

has explored many approaches to this topic, which are detailed in the following sections.

Rice and Shrimp Farming as Farmers' Livelihoods

Throughout history, farmers in Vietnam in general and in the Mekong River Delta in particular mainly cultivated paddy rice; thus, studies on traditional livelihoods have mostly been limited to economic activities. Studies on this livelihood method often focus on describing the agricultural economics of rice cultivation concerning the ecological characteristics of each locality. Rice cultivation serves as an important livelihood for the residents living in village residence units (Gourou 1936/2003; Hendry 1964; Hickey 1964; Nguyễn C. B. and Lê, 1990; Nguyễn V. H. 1944; Sansom 1970; Trần 1992).

Unlike rice farming, which has a long history of existence and development, shrimp farming as an independent agricultural activity is quite new. Documents indicate that shrimp farming has been around in the Mekong River Delta since the 1960s, but has mainly been natural farming (Tran 1994, 18). Modern shrimp farming only started in the 1980s, after Vietnam implemented an economic reform policy and encouraged shrimp farming (Tran et al. 1999). Shrimp farming officially appeared in the year 2000, accepted and encouraged by the state on a large scale following Resolution 09/NQ-CP, which allows farmers to convert paddy fields in brackish coastal waters into shrimp raising ponds. Since then, shrimp farming has become an important agricultural activity for some farmers. This was also the period in which the infrastructure for shrimp farming in the Mekong River Delta fully developed, especially in the field of shrimp seed and feed production, shaping farming areas until the present period. Due to this new movement, studies depicting the livelihoods of shrimp farmers have mainly focused on *farming techniques*, *economic efficiency*, and *environmental factors*. This research on shrimp farming in Vietnam will focus on the following themes.

Shrimp Farming as a High-Risk Occupation

With high value in the early stages, shrimp farming is often considered a way to help farmers escape poverty and rise to wealth, and to increase the country's export value of aquatic products (Mai et al. 2006; Pham V. K. 2008). However, with the boom of shrimp farming in Vietnam, especially in the Mekong River Delta, this profession has been recognized as a potentially risky profession. Comments and warnings about the risks of

shrimp farming in Vietnam reported in the Environmental Equity Fund's (2003) *Risky Business: Vietnamese Shrimp Aquaculture—Impacts and Improvements* provided a comprehensive view of Vietnamese shrimp farming's environmental, economic, and social risks, and also provided recommendations for improving shrimp farming, thereby minimizing risks. This report stated that shrimp farming could not sustainably benefit the economy, agricultural land, or the environment. However, a report assessing relationships among trade liberalization, rural poverty, and the environment in shrimp farming (Mai et al. 2006) found that trade liberalization brought positive effects through enrichment, improving the lives of most people and increasing employment opportunities for the landless poor. Nevertheless, there are negative factors, such as the high level of risk in shrimp farming, so the poor may not benefit from trade liberalization. Furthermore, the government has been quick to respond to socio-economic issues with new policies, but ineffective in with providing environmental protection. Pham Van Khang's dissertation *Challenges to Shrimp Production in the Bentre Province, Vietnam* (2008) discussed environmental, social, and economic issues, policies, and markets that have posed challenges for shrimp farming. These included shrimp farming planning, capital production at the macro and micro level, seed and input services, the application of science and technology, irrigation, management, production organization, society, and the environment.

Among shrimp farming's risk factors, research has been particularly concerned with *environmental risks*. For example, *The Environmental Costs of Shrimp Culture in the Rice-Growing Regions of the Mekong River Delta*, by Tran Thanh Be, Le Canh Dung, and Donna Brennan (1999), focused on environmental cost estimation along with saline intrusion and sedimentation in rice monoculture, shrimp/rice co-farming, and the monoculture of shrimp. On that basis, the authors proposed appropriate policies such as taxing shrimp land equivalent to the salinization treatment cost for neighboring rice fields, planning in order to avoid conflicts over water salinity, and providing a credit system for farmers.

Because shrimp farming incurs high environmental risks, many studies have investigated sustainable shrimp farming models to minimize this risk factor. Tran Thanh Be's master's thesis, *Sustainability of Rice-Shrimp Farming Systems in a Brackish Water Area in the Mekong River Delta of Vietnam* (1994), concerned the sustainability of shrimp farming, especially the rice-shrimp rotation model as a means of livelihood. This case study of shrimp farming in the Mỹ Xuyên District of Sóc Trăng Province confirmed the sustainability of the shrimp-rice system in combination with ecological, production, and economic aspects of society. Due to the author's

interest in environmental aspects of sustainable production, this work focuses on analyzing many technical and economic factors. Regarding the socio-economic aspect, the author found that implementation of the rice-shrimp combination system had both positive and negative impacts on farmers' lives. The positive side included reducing social evils because farmers were busy with year-round production, thus leaving no time for drinking and gambling. In addition, shrimp farming encouraged better socialization because farmers spent valuable free time meeting and exchanging production experience. Another important positive point was that shrimp-rice agricultural activity helped improve farmers' material quality of life. The negative side was that there was a conflict between those in the community whose conditions allowed them to carry out this activity and those who did not; namely, the shrimp farmers and fishermen who caught wild shrimp and fish in the rivers and canals. At that stage, many shrimp farmers still depended on wild seed.

The sustainability of the rice-shrimp rotation system was confirmed in *Rice-Shrimp Farming in the Seawater Intrusion Zone of the Mekong River Delta, Vietnam* by Do Quang Tien Vuong and C. Kwei Lin (2001). Focusing on finding sustainable practices for shrimp farming, the report *An Evaluation of Rice-Shrimp Farming System in the Mekong River Delta* (Brennan et al. 2002) provided recommendations such as not using natural shrimp seed for water exchange because sediment generation will take a lot of effort to improve. The report also encouraged the use of artificial seed shrimp due to the diverse nature of the rice-shrimp farming system.

Besides its environmental impact, shrimp farming as a new livelihood also had *social impacts*. Many studies have focused on analyzing this social impact at the household level. For instance, the study *Economic and Social Characteristics and Farm Management Practices of Farms in the Brackish Water Region of Sóc Trăng and Bạc Liêu Provinces, Mekong Delta, Vietnam: Results of a 1997 Survey* (Brennan et al. 1999) identified the socio-economic and social characteristics of the system in the management of rice-shrimp farms. The report outlined important features of the new practice of shrimp farming. The authors noted that most shrimp farmers were middle-aged and that more than 90% had a primary school level of education. Most agricultural activities were undertaken by family members, and age, not gender, determined who participated in family labor. Farmers learned about farming by trial and error and from neighbors, and learned market information from traders and local markets. A high proportion of households' cash expenditures were for food, education, and social activities. Few farmers were self-sufficient. While they grew rice for their own use and sold it for cash, income from other sources was important.

A high proportion of farmers did unskilled jobs working as hired labor. Similarly, *The Social Impact Assessment of Brackish Coastal Aquaculture Activities* (Lê Xuân Sinh et al. 2006), a survey of the five shrimp farming provinces of the Mekong River Delta, provided an overview of the development of aquaculture (mainly shrimp farming) and the characteristics of aquaculture households, with attention to costs, income, and social issues such as gender, employment, capital, services, lifestyle, and conflict between aquaculture farmers.

Researchers from many fields have addressed rice and shrimp farming, mainly focusing on aspects of technical practice. In particular, attention has been paid to calculating the economic efficiency and environmental impacts of shrimp farming in the Mekong River Delta, aiming at sustainable production. A preliminary survey based on quantifying the life characteristics of shrimp farmers has also been conducted by some of the above authors. Such works provide data and evidence about shrimp farming that are useful for comparison and verification of the data presented in this research. However, to understand the life of the farming community practicing this new livelihood method, further analysis and depictions are needed. This is the mission that directed our research.

The History, Social Processes, and Adaptive Environment of the Mekong River Delta

The unique features of the Mekong River Delta's history, social processes, and adaptive environment have been depicted in research works using the following main approaches.

Social relations in farming communities in the Mekong River Delta operate in a context characterized as being "open" and "less self-contained," with "less autonomy" and "fewer bonds" (Mạc 1995, 75; Trần Q. V. 1998, 270). Terry Rambo compared the openness of southern farming communities with northern farming communities in *A Comparison of Peasant Social Systems of Northern and Southern Vietnam: A Study of Ecological Adaptation, Social Succession, and Cultural Evolution* (1972) and *Closed Corporate and Open Peasant Communities: Reopening a Hastily Shut Case* (1977). Rambo showed how the farming communities resembled the ideal types of Eric Wolf's (1966) closed and open village concepts. The causes of the difference are identified in variables such as the natural environment, human communities as different cultural-ecological groups, demographics, war, the environment, politics and administration, and the culture of the two regions. According to Rambo's studies, the openness of the southern village manifests itself in the following

characteristics: land ownership and transferability, unclear boundaries between communities, ostentatious consumption, continuous and extensive external exposure, production for the market, market dependence on inputs, and an ideological acceptance of improvement.

Gerald C. Hickey's *Village in Vietnam* (1964) is an important and comprehensive description of social relations in a community in the Mekong River Delta: Khánh Hậu village. The author characterized the village as an independent community, a small "autonomous" world. People held a uniform worldview deeply influenced by Buddhist, Taoist, and Confucian ideologies, sharing social expectations, lifestyles, and activities. However, Hickey found that Khánh Hậu village's isolation from the outside world was decreasing. He identified a "geographical gap" as an important factor in the depletion of community spirit and internal solidarity at the village level, explaining that Khánh Hậu did not have "real focal points" to increase social reciprocity (1964, 276–77). Social institutions such as communal houses, pagodas, council headquarters, and markets did not act as effective focal points to create social interaction among village residents. Furthermore, although religion is believed to support community solidarity, it operated only on a small scale in the village.

Hickey argued that war also increased separation and suspicion in the community. Family and resident groups clearly demonstrated fundamental supportive relationships. Social relationships were mainly based on close ties of kinship and intimate daily communication. Among all members of this society, there was much recognition and support. Relationships in small kinship groups (members of patriarchal families) were close, direct, and unrestricted, characterized by mutual participation in memorials. Sometimes, relationships among non-kinship households residing near one another were even more important than kinship relations, resulting in strong social bonds. Religion also bound resident groups (Hickey 1964, 282). Khánh Hậu's relationship with the outside world, especially Saigon, was reflected in administrative relations, education, and the introduction of new religious institutions such as Buddhism and Caodaism. These internal and external relationships shaped the farming community's social life.

The openness of the village community in the South was later considered in *The Village in Asia and Vietnam*, by Mạc Đường (1995). Many authors have mentioned the characteristics of social and community relations in the Mekong River Delta. For example, Nguyễn Công Bình analyzed the open personality formed in the village communities of the Mekong River Delta. Openness manifests itself in all aspects of natural, social, economic, and cultural dimensions. According to the author's analysis of social relations, in the village "the place of moving in is also the

place of departure" (2008, 113). Nguyễn Công Bình also argued that the cohesion of "village relatives" in the Mekong River Delta was laxer than in the Red River Delta (ibid., 113).

Two case studies of Đình hamlet, Khánh Hậu commune, Long An, showed the openness of a southern community compared with a northern community: *Four Rural and Urban Communities of Vietnam: Economic, Social and Cultural Landscapes* (Lương Văn Hy and Diệp Đình Hoa 2000) and *Gifts and Social Capital in Two Rural Communities in Vietnam* (Lương Văn Hy 2010). According to the authors, that openness is expressed through spatial, economic, and cultural/social indicators. Specifically, the Khánh Hậu community has a less centralized living space in the Red River Delta, a more diverse population, a high proportion of outside marriages, close relationships, and ethnicity with no degree of interlacing. Agricultural output was market-oriented. The community was without strong points of interest, such as a communal house or pagoda (Lương Văn Hy 2010, 400; Lương Văn Hy and Diệp Đình Hoa 2000, 56–75).

Research on social capital in the context of the "open" society of people in the Mekong River Delta is still quite lackluster. Groundbreaking research in this area is found in *Gifts and Social Capital in Two Rural Vietnamese Communities* by Luong Van Hy (2010). The comparison of gifts and social capital in the context of "closed" and "open" characteristics of two rural communities in the north (Hoài Thị community) and the south (Khánh Hậu community) shows the open nature of Khánh Hậu rural community. The "closure" and "openness" of the two communities are associated with differences in social capital. The kinship network in Hoài Thị is denser. In addition, non-official associations proliferated in Hoài Thị, obliging households to attend more feasts and give more gifts than households in Khánh Hậu. Participation in banquets more often reflects that households in Hoài Thị have greater social capital. Lương Văn Hy also examined differences in social capital between social strata in the two communities. While in Hoài Thị economic capital helped social capital to develop, the relationship in Khánh Hậu was less clear. Perhaps because the population was more volatile, the relationship seemed to be influenced by the local social structure, namely, how well a household integrated into the local social network.

Evaluating the research situation, the author found that research on rice and shrimp farming in the Mekong River Delta was mostly concerned with the economic, cultural, and social activities of the resident community. Issues of social relations and social capital in the Mekong River Delta need to be researched in the new context of strong market production. In this context, our ethnographic/anthropological survey of shrimp farming, social

relations, and social capital of the Vietnamese farming community in the Mekong River Delta is timely.

Research Questions and Hypotheses

The chorus of "planting, chopping"1 in the Mekong River Delta and the transition from low-value rice cultivation to high-value commercial shrimp farming took place in an economic context. Therefore, the first research question the author asks is, *What is the nature of farmers' risk-taking behavior in changing their livelihoods regularly according to the rhythm of market demand?* Farmers are willing to accept the transition from rice cultivation, a traditional profession requiring considerable experience but low investment capital, to shrimp farming, a completely new profession that requires knowledge of modern science and technology and high capital investment. From the contextual rationality approach in agricultural economics, it can be hypothesized that the farmers' production environment is more unstable (policy, environment, market, capital, etc.), so the nature of the economic behavior of farmers is to minimize and disperse risks instead of maximizing benefits, regardless of conditions.

Farming communities in the Mekong River Delta take part in a process of international economic integration through commercial agricultural production. This activity presents many potential risks. Hence, the second research question is, *What role do social relations play in the economic activities of the farming community*? And in the context of many opportunities and risks, which trend will become prominent, individualization or the consolidation of the group? Social capital often plays a role in economic activity, particularly in communities characterized by close social relationships based on kinship and residence. Shrimp farming is a completely new livelihood for these farmers, requiring a lot of knowledge and capital for production. Consequently, social capital hidden in their relationships can play an important role in their economic success.

Research Methods and Research Sites

On the basis of the research questions and hypotheses, the author chose a case study method to explore the issues raised by the research. Quantitative and qualitative methods, including observations of people's

[1] Due to the increase in market prices, there is a wave of planting fruit trees; but after many farmers do this, the price drops. As a result, farmers cut down trees and set off a new wave (of other trees).

participation in the two communities, were used to collect data.

People in the Mekong River Delta now cultivate shrimp in three ways: extensive (traditional extensive), improved extensive, and industrial methods. Extensive and improved extensive farming are the two most popular forms of shrimp farming today.[2] Therefore, the author selected two farming communities to study, one that practiced traditional extensive shrimp farming and one that practiced improved extensive farming. Both communities are in an area that was once an inefficient, one-crop, rice-producing region and that made a strong shift from rice to shrimp under the state's general incentive policy. However, the localities differed in the implementation process. One community underwent a simultaneous shift while the other experienced a gradual transition. In addition, to understand social relationships and their role in the lives of residents, the author sought two communities with different socio-cultural characteristics and resident typologies to compare. Accordingly, the research sites included a community in which residences were geographically concentrated and another with scattered residences.

On the basis of those criteria, the author chose a research area with a high population density in Long An Province, one of the two Mekong River Delta provinces with the smallest shrimp farming area. In Long An, the main form of shrimp farming is an extensive improvement. The other community, in Cà Mau Province, has the largest shrimp farming area in the Mekong River Delta. It has a scattered population, and transportation is difficult. Shrimp is mainly cultivated in the form of traditional extensive farming.[3] Because the research focuses on the model of shifting from rice

[2] Luong Van Hy's (2010) research showed that the strong integration of people in the Mekong River Delta with the global commodity market is reflected in the phenomenon of rice farming. The study found that people in Hoài Thị, a village in the Red River Delta, retained 85% of the rice produced for consumption, while people in Khánh Hậu in the Mekong River Delta sell 96% of the rice yield (mainly for export) and keep only 4% to eat (Lương Văn Hy 2010, 400–401).

[3] The survey data shows that intensive (industrial) shrimp farming is mainly based on science and technology. Shrimp are stocked at a high density, over 30 shrimp/m^2. Square pond water is treated regularly, and ponds are systematically dredged. Canvas is laid at the bottom of the ponds, and the surrounding banks are firmly reinforced. There are settling ponds, and fans are used to increase oxygen in the water. The fans require considerable diesel fuel to run.

Intensive farms are further divided into two forms: intensive (industrial) and semi-intensive (semi-industrial) according to stocking densities and technical application. The semi-intensive mode does not have a system of dredging or lining ponds, and the stocking density is 15–25 shrimp/m^2. In practice, however, people use the term "industrial farming" to refer to any farming that uses square ponds, water treatment

to shrimp, the author chose two hamlets exhibiting a strong shift from rice to shrimp, namely Thị Tường hamlet, Hòa Mỹ commune of Cái Nước District, Cà Mau Province, and Đình hamlet, Tân Chánh commune, Cần Đước District, Long An Province. The two hamlets feature farming households that have completely shifted from rice farming to shrimp farming and can be characterized as economically average for their communes. With the similarities and differences of the two communities in terms of history, economy, culture, social structure, and geographical environment, we consider the economic behavior and social relations of the farmers will show the common traits of their communities.

Research data is from our fieldwork from 2006 to early 2012 in the shrimp farming areas of the Mekong River Delta such as Kiên Giang, Sóc Trăng, Bến Tre, and Trà Vinh. The author conducted case studies in Cà Mau and Long An Provinces in 2009 and 2010; specifically, the survey and in-depth interviews took place in Cà Mau in May 2009 and in Long An in July 2009. After that, the author conducted in-depth interviews, community participation surveys, and additional data surveys from August 2009 to June 2010. To collect information and data, the author used both qualitative and

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chemicals, and machinery, especially fans.

Intensive farming is distinguished from two other types of farming: extensive and improved extensive methods. The average intensively farmed shrimp crop requires more than 1,000 liters of oil per hectare to run fans and pumps, while improved extensive farming takes about 300 liters. Traditional, extensive farming is characterized by low investment in pond construction and farming techniques that depend on nature. Artificial shrimp are stocked at low densities and the main food source is from nature. People find ways to catch and kill fish, use lime to lower water acidity, and use chemical fertilizer to create algae as food for shrimp. Farmers usually stock shrimp at intervals of one to two months, depending on the results of the first stocking, to ensure that the natural food source in the square pond is sufficient for the number of stocked shrimp. People usually drop one batch from 10,000 to 20,000 heads/ha. After four months, farmers harvest the first season. The method of harvest is to place shrimp every day, choosing big ones to sell, and small ones to raise for rearing. In other types of farming, farmers usually stock the animals once and harvest once, while in the extensive mode, farmers can harvest daily and regularly replenish seed sources. This is a form of "alternatively collecting and accordingly compensating." The stocking density is the sparsest of the raising types, from one to two shrimp/m^2. The improved extensive mode requires more capital and technical investment than the extensive one in the preparation of square ponds, mainly using seed and artificial feed, chemicals during pond treatment (fish killers, disinfectants, probiotics), annual dredging and pond embankment, and pumps to replace and replenish water. Technically, the stocking density of this kind of shrimp is from 3 to 5 shrimp/m^2. However, in Long An, to gain a high yield in a limited area, people often drop at a higher density, from 10–20 shrimp/m^2.

quantitative information collection methods.

Quantitative information was gathered through questionnaires of 354 households in both locations. It provided background on socio-economic characteristics and the overall picture for the rice-shrimp transition of the two communities. Qualitative information was gathered through in-depth interviews and participatory observations that provided in-depth information about farmers' progress, dynamics, analyses, and assessments of their economic behavior and social relationships.

To select the survey sample, we used a random sampling method with a deviation of 5%, a level commonly accepted in social science research (Bernard 1994). Accordingly, in Thị Tường hamlet (Cà Mau Province) we selected 202 households out of a total of 409, and in Đình hamlet (Long An Province) we selected 152 of 245 households. For the in-depth interviews, we chose shrimp farmers with attention to their economic strata because new production factors play an important role in economic behavior. The stratification of rich, middle-income, and poor households was based on community evaluation. In both communities, we conducted 72 in-depth interviews and informal conversations with people in different positions in society, on topics related to the shift in rice-shrimp farming, policies related to shrimp farming, market networks, historical issues, cultural activities, social relations, and the economic impact on each community. Methods used to elicit problems for the interviews and verify qualitative data included observation as well as participation in activities related to shrimp farming. Participant observation also took place at family parties, ceremonies, and local meetings.

Besides economic stratification, the author also paid attention to gender and age when selecting participants for in-depth interviews. In shrimp farming, men are the main labor force, so the informants in shrimp farming interviews were mostly men. Such a gendered division of labor, according to the people, is due to the "complex knowledge" of shrimp farming and the relevance of men's health to shrimp farming. However, due to social changes, women have also been involved in certain jobs in this profession, so women's voices are also included. The author also paid attention to gender and age when selecting interviewees to discuss issues related to community activities.

Outline of Chapters

In addition to the introduction, conclusion, and references, this book is divided into four chapters.

Chapter 1, "Conversion from Rice to Shrimp and an Overview of Shifting Communities in the Mekong River Delta," presents a picture of the economic restructuring in agriculture in the Mekong River Delta, and the study area in particular, as exemplified by the shift from rice cultivation to shrimp farming. In addition, to delve thoroughly into farmers' economic behavior, we present two case studies illustrating the appearance of the shrimp farming community.

Chapter 2, "Risks and Social Capital Concepts and Theoretical Review," discusses important building concepts such as farmers, risks, instability, social relations, and social capital, along with theories related to the research issues, such as political economy, ethical economics, scattering, minimizing risks, and the functions of social capital.

In Chapter 3, "Risk Mitigation in the Economic Activities of Shrimp Farmers in the Mekong River Delta," the author analyzes the nature of the economic behavior of farmers in a way that uses a distributed mindset and minimizes risk. On the basis of the analysis of the behavioral shift from rice farming to shrimp farming, the author answers the first research question.

In Chapter 4, "Social Relations and Social Capital in Shrimp Farmers' Economic Activities in the Mekong River Delta," we outline the social relationships among shrimp farmers in the current context. On the basis of the answer to the second research question, we will explore the use of social capital in the lives of farmers, especially in their economic activities. In addition, we also identify social relations that play an active role in farmers' current economic activities in the context of social stratification.

The conclusion will summarize the research results and their analysis, adding comments on agricultural policies relevant to the case of this research.

CHAPTER 1

CONVERSION FROM RICE TO SHRIMP AND AN OVERVIEW OF SHIFTING COMMUNITIES IN THE MEKONG RIVER DELTA

Vietnam has a coastline of 3,260 kilometers, which is ideal for brackish aquaculture (Lê Bá Thảo 2002, 8). According to the statistics of the Ministry of Agriculture and Rural Development in 2010, the area devoted to shrimp farming in Vietnam covers 613,000 hectares. The large temperature difference between seasons and the low temperature in winter have prevented the northern provinces from carrying out shrimp farming throughout the year. Specifically, marine and brackish shrimp are farmed in Hải Phòng, Nam Định, Thái Bình, Ninh Bình, and Quảng Ninh. At the same time, the central region not only specializes in shrimp farming but also is the center of shrimp breeding nationwide. Shrimp farms in this area are located in Thanh Hóa, Nghệ An, Hà Tĩnh, Quảng Bình, Quảng Trị, Ninh Thuận, Bình Thuận, Đà Nẵng, Quảng Nam, Quảng Ngãi, Bình Định, Phú Yên, and Khánh Hòa. Most importantly, after the successful piloting of shrimp farming in the 1980s, Khánh Hòa Province came to be regarded as the center of shrimp farming in the country and remains so today.

In the south, shrimp are raised in the southeast (Ho Chi Minh City, Đồng Nai, and Bà Rịa–Vũng Tàu) and the southwest of Vietnam (Long An, Tiền Giang, Bến Tre, Kiên Giang, Trà Vinh, Sóc Trăng, Bạc Liêu, and Cà Mau). Thanks to good soil and weather conditions, a network of fertile rivers and canals, and diverse mangrove areas, shrimp production in the Mekong Delta accounted for 75% of the country's shrimp production and 89.3% of the country's aquaculture area in 2009 (General Statistics Office 2009b, 344). Of the eight shrimp farming provinces in the Mekong Delta, Cà Mau has the largest farming area, accounting for 50% of the entire region. The Vietnam National Bureau of Statistics' 2006 *Rural, Agriculture, and Fisheries Census* showed that, of 337,614 shrimp farmers, 292,522 (86%) were located in the Mekong Delta. About half the Mekong delta shrimp farmers cultivated an area of only 0.5 hectares, and only 16% of them had adopted industrial or semi-industrial farming models. For comparison, 87%

of shrimp farmers in the central region had adopted industrial or semi-industrial farming at the time (GSO 2007, 436, 437, 448, 449, 453).

It is believed that shrimp farming in the Mekong Delta originated in Cà Mau Province in 1980 when farmers spontaneously built dikes and brought in brine to raise shrimp. However, some documents indicate that since the 1960s, rice and shrimp models have been present among farmers (Vuong and Lin 2001, 4), and it is believed that Sóc Trăng was the first province to implement a transformation policy in 1989 with only rice and one shrimp crop each year.[1] Considering that shrimp has higher profits than rice, farmers in the Mekong Delta have turned to this new livelihood business under favorable conditions. For example, in 1997, there were already 7,510 hectares of shrimp farms in the Cái Nước District of Cà Mau Province, and by 2002 it had grown 8.5 times to 64,000 hectares (Mai et al. 2006, 8). At the same time, farmers in Đầm Dơi District took the lead in "destroying dams and dams" from 1995 to 1999 and "secretly pumping brine" into rice fields to raise shrimp.

Despite different starting points, shrimp farming models in the Mekong Delta share characteristics of spontaneous practice. Since 2000, government incentive policies have played an important role in the booming of commercial shrimp farming. The government has motivated large-scale changes through policies that support the development of shrimp farming. From 2000 to 2002, shrimp farming in the entire Mekong Delta underwent a major transformation. This was also a period of vigorous development in shrimp farming throughout Vietnam, reflected by an increase in a farming area and farming output. This brought huge economic benefits as Vietnam joined the global shrimp export market and became one of the top five exporters in this category (Xinhua 2008, 34). Cà Mau Province has the largest shrimp farming area in the Mekong Delta, which has increased by about 2.5 times, from 90,551 hectares in 1999 to 239,398 hectares in 2003 (Mai et al. 2006, 7). The period 2001–3 was also the setting for the development of most of the brackish shrimp breeding areas in the country and the Mekong Delta.

[1] Data collected after discussion with the provincial leaders of Sóc Trăng Province and the Gia Hòa commune in the Mỹ Xuyên District; Sóc Trăng Province Leadership Discussion on August 15, 2007.

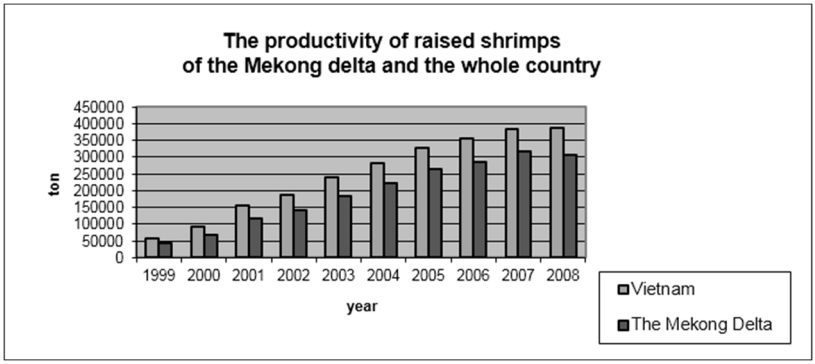

Figure 1.1. Shrimp production in Vietnam and the Mekong River Delta, including both freshwater prawns and saline/brackish shrimp, in which saline/brackish shrimp farming accounts for around 97% of the total production.
Source: General Statistics Office of Vietnam 2009.

To quickly respond to the growing market demand, farmers fully utilized the competitive advantages of the natural environment to produce commercial shrimp. They adopted different aquaculture models related to the ecological conditions of the area where they live. People living in mangrove forests cut down trees and adopted a forest-shrimp mixed model, while those who grew monoculture rice in salty areas used intensive farming or rice-shrimp rotation. Rice-shrimp rotation seemed restrictive and offered limited benefits, so many farmers insisted on intensive farming and counted on high profits from shrimp. Shrimp farming resulted in deforestation, but farmers continued using forest land to raise shrimp (Mai et al. 2006, 10).

In 2006, an investigation was carried out in Thuận Hòa commune, U Minh Thượng District, Kiên Giang Province. A similar investigation was carried out in Gia Hòa Town, Mỹ Xuyên District, Sóc Trăng Province from 2007 to 2008. Despite the decline in shrimp production due to disease and falling prices, as of November 2008, the export value of frozen shrimp in Vietnam held the highest value share of exported seafood products, with a volume of 158,527 tons and a value of US $1,354 billion. Compared with the data from 2005 and 2006, shrimp exports in 2008 did not decrease.[2] Therefore, shrimp farming remained very attractive to farmers.

[2] According to the statistics of the Center for Fisheries Informatics, shrimp exports in 2005 were 155,858 tons in volume, US $1,359,146,658 in value, and in 2006 they were 143,614 tons in volume 1,335,777,305 USD in value (www.fistenet.gov.vn).

Due to the large-scale development and high-risk nature of shrimp farming, land mortgages and mortgages have emerged in shrimp farming areas, as well as environmental pollution, degradation of biodiversity, and conflicts between freshwater and saltwater areas.

On the basis of research on two rice-growing communities, the overall situation of economic restructuring from rice to shrimp is detailed in this study.

Ethnological Description of Two Farming Communities Shifting from Rice to Shrimp

Although both communities have changed from rice to shrimp and occupy similar areas where saline-alkali and freshwater ecosystems are intertwined, residents of Thị Tường hamlet, Hòa Mỹ commune, Cái Nước District, Cà Mau Province, and residents of Đình hamlet, Tân Chánh commune, Cần Đước District, Long An Province, have different historical, social, and political characteristics. These can be summarized by the following quantitative comparisons: Table 1.1. Population, land area, and shrimp farming rates in Long An and Cà Mau Provinces

Table 1.1. Population, land area, and shrimp farming rates in Long An and Cà Mau Provinces.

	Long An Province		Cà Mau Province	
	Đình hamlet, Tân Chánh commune	**Tân Chánh commune**	**Thị Tường hamlet, Hòa Mỹ commune**	**Hòa Mỹ commune**
Rate of shrimp farming	80%	60%	94%	90%
Natural Area (ha)	163	1,700	637	3,536
Shrimp Farming Area (ha)	95	945	484	2,600
Population (people)	1,339	12,136	1,856	9,028

Source: Survey data, Hòa Mỹ commune People's Committee 2009a, Hòa Mỹ Commune People's Committee 2009b, People's Committee Tân Chánh commune 2009a, UBND Tân Chánh commune 2009b.

Table 1.2. Number of households that have raised/are raising shrimp in Đình and Thị Tường hamlets.

	Đình hamlet, Long An	**Thị Tường hamlet, Cà Mau**
Number of households that used to raise/are raising shrimp farmers	122 (80.2%)	190 (94.0%)
Number of households that do not raise shrimp	30 (19.8%)	12 (6.0%)
Total	152 (100%)	202 (100%)

Source: Survey data.

Table 1.3. Shrimp farming models in Đình and Thị Tường hamlets (%).

Farming model	Đình hamlet, Long An	Thị Tường hamlet, Cà Mau
Extensive farming	0	91.6
Improved extensive farming	100	2.6
Industrial farming	0	10.0

Source: Survey data.
Note: As many households applied several farming models at the same time, the percentage of each model is calculated on the basis of the ratio of each model in the total surveyed households.

Table 1.4. Number of generations in the household in Đình and Thị Tường hamlets (%).

Number of generations	Đình hamlet, Long An	Thị Tường hamlet, Cà Mau
1	2.6	5.9
2	63.8	71.8
3	33.6	20.8
4	0	1.5
N	152	202

Source: Survey data.